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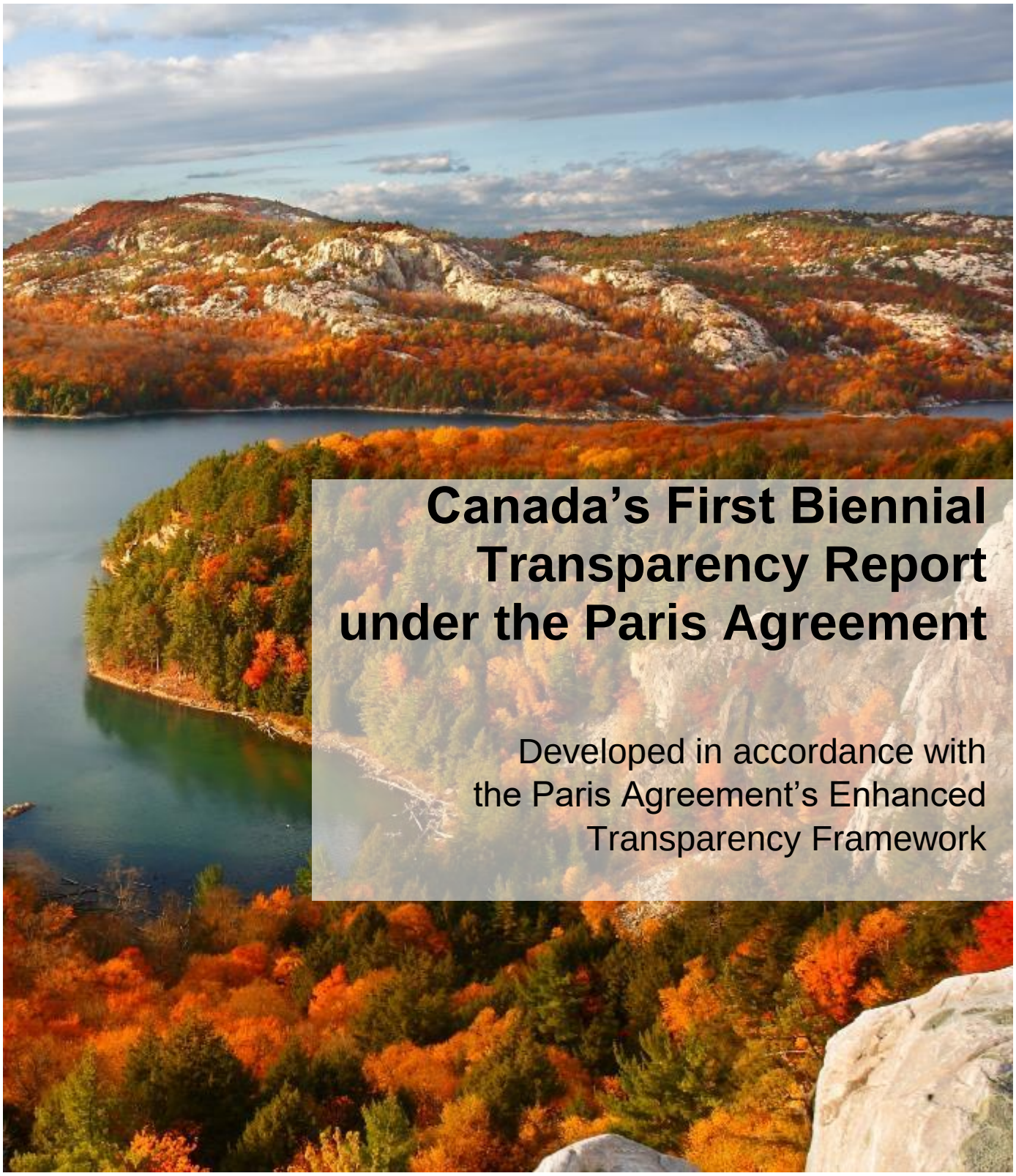
Canada



Canada's First Biennial Transparency Report under the Paris Agreement

Developed in accordance with the Paris Agreement's Enhanced Transparency Framework

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Minister's Message

As 2024 draws to a close, I present Canada's First Biennial Transparency Report under the Paris Agreement. This report underscores the important climate action journey Canada is travelling. While many of Canada's efforts over the last nine years to reduce emissions have generated strong results, we are reminded it won't be easy to reach our goals. This report showcases our commitment to transparency, accountability, and collaboration as we continue our journey to address the urgent challenge of climate change.

Since the Paris Agreement was adopted by countries around the world in 2015, Canada has taken bold steps to reduce emissions, adapt to climate impacts, and lay the groundwork for a low-carbon economy. Our targets to cut emissions by 40 to 45 per cent below 2005 levels by 2030 and to achieving net-zero by 2050 are backed by one of the world's most comprehensive climate plans, the 2030 Emissions Reduction Plan. After the 2022 release of the 2030 Emissions Reduction Plan, we released a National Adaptation Strategy in 2023. Earlier this month, we announced our target for 2035, to cut emissions 45 to 50 per cent below 2005 levels by 2035.

Like our international partners, Canada has been working diligently to reduce its emissions and limit global warming. The Government of Canada has more than 140 climate measures to support our pathway to lower emissions. Canada's provinces, territories, communities, and industries are also taking action to reduce emissions and support Canada's transition to a low-carbon future. While there is still work to do, our plan is working.

This report highlights our progress to date, including the implementation of measures like pollution pricing, the proposed cap on oil and gas GHG pollution, the *Electric Vehicle Availability Standard*, and over $60 billion in investments to enable affordable and reliable clean electricity, underpinned by the recently published *Clean Electricity Regulations*. It also demonstrates Canada's leadership in supporting global efforts, including following through on our $5.3 billion climate finance commitment to help other countries tackle climate change.

Thanks to our collective efforts, we are now seeing the results, with emissions dropping in many sectors. While we continue to be on track to surpass our previous target of 30% below 2005 levels by 2030, we have more work to do to achieve our enhanced 2030 target of 40-45% below 2005 emissions. Our new 2035 target aims to put Canada in a good position to reach net-zero emissions by 2050. Challenges remain— the lack of urgent climate action by some industrial sectors has cancelled out emissions reductions elsewhere, negating so much of the hard work done to reduce emissions across the country.

Recent natural disasters and extreme weather events are a harsh reminder of the importance of taking action, with the impacts of climate change continuing to be felt across Canada. Climate events can lead

to higher emissions, as demonstrated by the drought on the Canadian Prairies in 2021, which contributed to higher emissions in 2022. Canada also set a new record for insured losses in 2024, with climate events including flooding, hail, and fires resulting in over $8 billion of losses, during what was a second year of record high temperatures.

Adaptation and resiliency have never been more important. Despite efforts to reduce emissions, climate change is upon us, and we must be prepared for what we are experiencing now and what is still to come. This report includes our second Adaptation Communication, demonstrating Canada's commitment to transparency and ambition on adaptation. This follows our first Adaptation Communication in 2021, which was submitted to the UNFCCC prior to the release of Canada's final National Adaptation Strategy.

While the journey is far from over, this report illustrates the need for Canada's continued determination in meeting its international obligations and ongoing collaboration with partners domestically and around the globe. Despite year-to-year fluctuations from events such as a drought reducing the ability to absorb carbon, to the risks presented by speculative oil and gas energy production forecasts, the overall trajectory of deep cuts against Canada's projected emissions is clear. Our actions today are building the foundation for a sustainable, resilient, and inclusive future for all Canadians—and the world.

As we look to the future, the imperative is upon us to take the action needed today to safeguard our future. This requires a collective effort by all Canadians, including all levels of government and every industry.

Only together can we achieve the emissions reductions needed to create a healthier, more sustainable future.

The Honourable Steven Guilbeault,

Minister of Environment and Climate Change

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About this report

Key acronyms, including the names of Government of Canada federal departments and agencies, provinces and territories, and units of measurement, can be found at the beginning of this report.

A glossary of terms and their definitions can be found in Annex 1.

Unless explicitly stated otherwise, all emissions estimates given in Mt represent emissions of GHGs in megatonnes of carbon dioxide equivalent (Mt CO_2 eq).

List of Acronyms

Federal departments and agencies

AAFC: Agriculture and Agri-Food Canada

CIRNAC: Crown–Indigenous Relations and Northern Affairs Canada

CMHC: Canada Mortgage and Housing Corporation

CRA: Canada Revenue Agency

DFO: Fisheries and Oceans Canada

ECCC: Environment and Climate Change Canada

ESDC: Employment and Social Development Canada

FIN: Finance Canada

GAC: Global Affairs Canada

HC: Health Canada

HICC: Housing, Infrastructure and Communities Canada (formerly known as Infrastructure Canada)

ISC: Indigenous Services Canada

ISED: Innovation, Science and Economic Development Canada

NRC: National Research Council

NRCan: Natural Resources Canada

NSERC: Natural Sciences and Engineering Research Council of Canada

PC: Parks Canada

PSPC: Public Services and Procurement Canada

SSHRC: Social Sciences and Humanities Research Council

STC: Statistics Canada

TBS: Treasury Board of Canada Secretariat

TC: Transport Canada

Canada, provinces and territories

AB: Alberta

BC: British Columbia

CA: Canada

MB: Manitoba

NB: New Brunswick

NL: Newfoundland and Labrador

NS: Nova Scotia

NT: Northwest Territories

NU: Nunavut

ON: Ontario

PE: Prince Edward Island

QC: Québec

SK: Saskatchewan

YT: Yukon

Common acronyms

BCAs: border carbon adjustments

BMPs: beneficial management practices

BR: Biennial Report

BTR: Biennial Transparency Report

CCI: Canadian Climate Institute

CCME: Canadian Council of Ministers of the Environment

CCUS: carbon capture, utilization and storage

CESD: Commissioner of the Environment and Sustainable Development

CESI: Canadian Environmental Sustainability Indicators

CG: Canada Gazette

CIB: Canada Infrastructure Bank

CNZEAA: *Canadian Net-Zero Emissions Accountability Act*

COP: Conference of the Parties

EF: emission factors

ERP: Emissions Reduction Plan

EV: electric vehicle

FPT: Federal-Provincial-Territorial

FSDS: Federal Sustainable Development Strategy

GDP: Gross Domestic Product

GHG: greenhouse gas

GWP: Global Warming Potential

HFC: hydrofluorocarbon

HWP: harvested wood products

ICL: Indigenous Climate Leadership

IPCC: Intergovernmental Panel on Climate Change

ITMOs: internationally transferred mitigation outcomes

LCEF: Low Carbon Economy Fund

LDV: light-duty vehicle

LULUCF: Land Use, Land-Use Change and Forestry

MHDV: medium- and heavy-duty vehicle

MHZEV: medium- and heavy-duty zero-emission vehicle

MOU: memorandum of understanding

MPGs: modalities, procedures and guidelines of the enhanced transparency framework under the Paris Agreement

NC: National Communication

NC8/BR5 – Canada's Eighth National Communication and Fifth Biennial Report

NDC: Nationally Determined Contributions

NIR: National Inventory Report

NZAB: Net-Zero Advisory Body

OBPS: Output-Based Pricing System

PCF: Pan-Canadian Framework on Clean Growth and Climate Change

PTs: provinces and territories

RD&D: research, development and demonstration

SDG: Sustainable Development Goal

SIF-NZA: Strategic Innovation Fund – Net Zero Accelerator

SFAC: Sustainable Finance Action Council

SMR: small modular reactor

UNEP: United Nations Environment Programme

UNFCCC: United Nations Framework Convention on Climate Change

WAM: With Additional Measures

WM: With Measures

ZEV: zero-emission vehicle

Units of Measurement

bbl: Barrels (used to describe quantity of crude oil, natural gas liquids, and petroleum products)

Bcf: billion cubic feet

°C: degrees Celsius

g CO_2 eq/MJ: Grams of carbon dioxide equivalent per megajoule

GWh: Gigawatt-hour

kg: kilograms

kt or kt CO_2 eq: Kilotonnes of carbon dioxide equivalent

kWh: Kilowatt hour

Mb/d: Thousand barrels per day

mm: millimetres

MMb/d: million barrels per day

MMBtu: Metric million British Thermal Unit (used to describe price of natural gas)

Mt or Mt CO_2 eq: Megatonnes of carbon dioxide equivalent

MW: Megawatt

MWh: Megawatt-hour

PJ: Petajoule

t CO_2 eq or tonnes: Tonnes of carbon dioxide equivalent

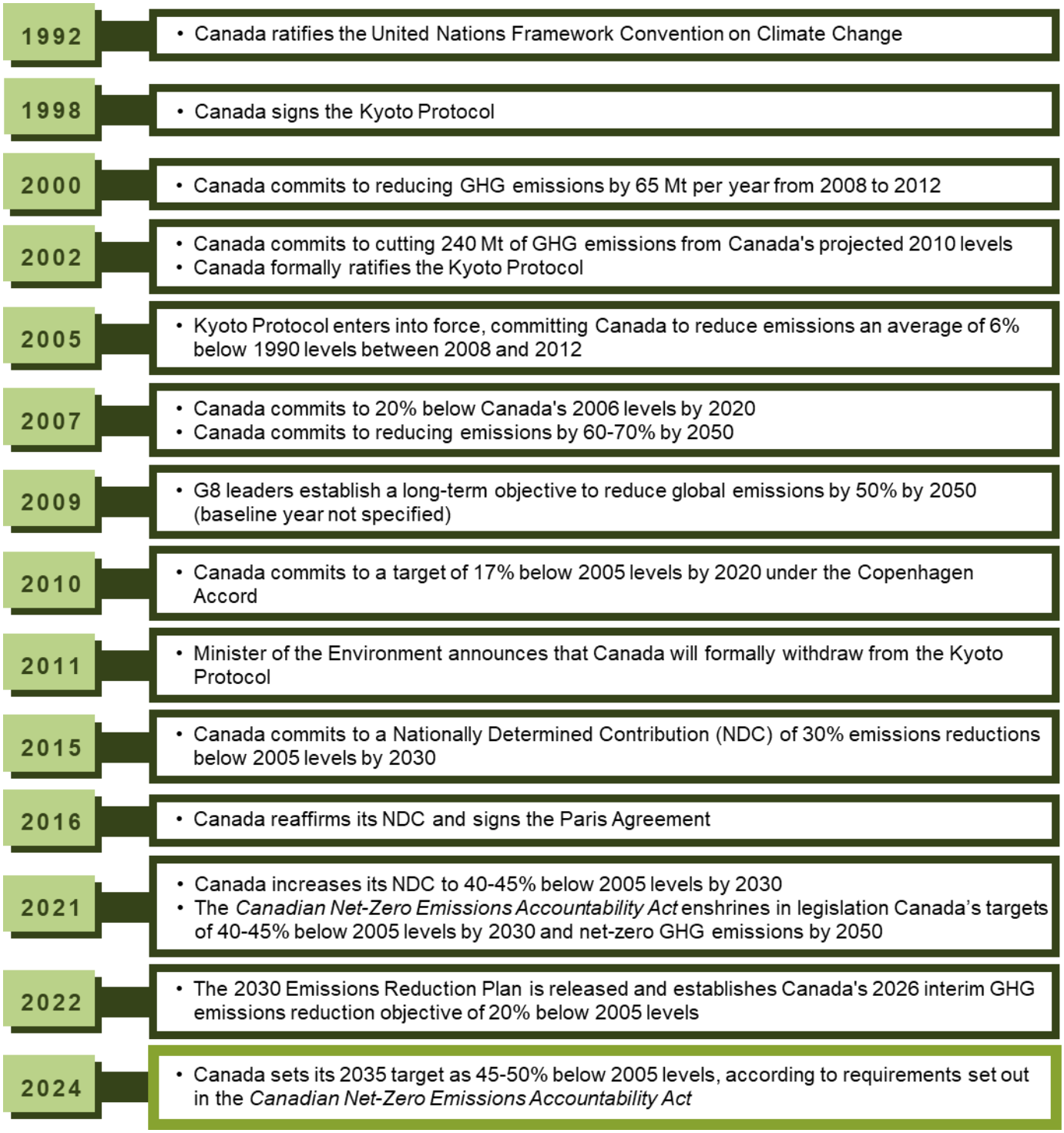
TWh: Terawatt-hour

Chapter 1: Introduction and Executive Summary

Canada was a signatory to the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 and set its first national emissions target in 2000. Despite these and other commitments, emissions in Canada continued to rise. While emissions hit a peak in 2007, projections in 2015 indicated that that peak would be temporary. Canada's emissions were projected to hit a new peak in 2020 and continue to rise. In 2016, Canada ratified the Paris Agreement and in 2021 submitted an enhanced national 2030 emissions reduction target. Also in 2021, Canada adopted the *Canadian Net-Zero Emissions Accountability Act*, enshrining Canada's international commitments to address climate change in domestic law. In 2024, as per the Act, Canada set its 2035 target. Canada's Nationally Determined Contribution (NDC) for 2035 will be submitted in early 2025.

Canada has successfully bent its emissions trajectory, is now consistently below 2005 emissions levels and is tracking towards significant emissions reductions by 2030. Canada's economy is also 31% less carbon-intensive than it was in 2005 due to energy efficiency improvements, decarbonization of the electricity grid, and structural shifts in the economy. Canada is taking actions that are reducing emissions and paving the way to net-zero by 2050, including the Oil and Gas Emissions Cap, *Clean Fuel Regulations*, *Clean Electricity Regulations*, supports for clean technology development and adoption and carbon pricing measures such as the Fuel Charge and Output-Based Pricing System. Canada continues to pursue opportunities to reduce emissions and secure a prosperous low-carbon future for Canadians and to support climate action around the world.

Figure 1-1: Timeline of climate commitments in Canada



Canada is pleased to present its First Biennial Transparency Report under the Paris Agreement. Canada has prepared this report in accordance with the adopted modalities, procedures, and guidelines of the Enhanced Transparency Framework.

The following Introduction and Executive Summary provides an overview of Canada's progress in reducing emissions and establishing the conditions for a low-carbon future.

1.1 National circumstances and institutional arrangements

Canada is a geographically large federation composed of a central federal government, ten provincial governments, and three territorial governments. The Canadian Constitution and convention assign different powers to each order of government. Protection of the environment is not specifically addressed under the Constitution and is an area of shared responsibility.

The Constitution also recognizes and affirms the Aboriginal and treaty rights of First Nations, Inuit, and Métis. The Government of Canada recognizes that Indigenous Peoples' leadership is key to Canada achieving its climate objectives and is committed to working collaboratively to advance distinctions-based and self-determined climate action.

Canada's unique geographic, demographic, and economic circumstances influence its greenhouse gas (GHG) emissions profile. While Canada has a relatively small population, it also has one of the largest landmasses in the world, with most of it located in the northern half of the northern hemisphere, leading to higher emissions from the transportation of people and goods. Although Canada is often associated with a cold climate, Canada experiences a wide range of climate conditions. Most of the heavily inhabited regions experience distinct seasons, including very warm summers, which can exceed 40°C, and very cold winters, often below -30°C and sometimes much lower. The requirements for heating and cooling buildings have a significant impact on energy use, and these factors contribute to a higher intensity energy use and associated GHG emissions.

Canada's emissions profile is also influenced by its economy. As of 2023, Canada was the world's 10th largest economy with a GDP of $2.1 trillion. On a GDP-per-capita basis, Canada ranks 26th in the world. While all countries face unique decarbonization challenges, Canada must navigate a unique socio-economic structure relative to other advanced economies, creating less favourable conditions for rapid emissions reductions. Due to its carbon-intensive industries, Canada is one of only two countries from the Organisation for Economic Cooperation and Development (OECD) that exports more GHGs than it imports, with up to 40% of domestic GHGs being driven by foreign demand (thrice as much as in the US). Canada's economy is more reliant on natural resources (19.2% of nominal GDP in 2022, including but not limited to fossil resources), with revenues more than 20 times the G7 average and four times the US. Canada is both a major energy producer and exporter, with overall Canadian energy exports in 2022 totalling $240.5 billion, representing 33% of total Canadian goods exports. The goods-producing sector, comprising 26% of Canada's GDP in 2023, is led by manufacturing, construction and mining, quarrying, and oil and gas extraction industries. These emissions-intensive industries contribute significantly to Canada's emissions. In contrast with most OECD countries, Canada has an electricity grid that is overwhelmingly clean and cannot rely on the decarbonization of electricity generation—the cheapest and least disruptive mitigation action—to contribute a large share of emissions reductions.

These factors exacerbate near-term transition costs and carbon leakage risks, all while exposing Canada's economy to greater vulnerabilities, such as declining demand and value for carbon-intensive commodities (carbon leakage refers to a process by which emissions reductions in Canada could be

offset by an increase of emissions in other countries with lower environmental standards). Carbon leakage goes hand-in-hand with reduced competitiveness and capital flight, and compromises benefits for the climate. While economy-wide carbon leakage is low, emission-intensive and trade-exposed (EITE) sectors that are particularly vulnerable to carbon leakage account for a significant share of Canada's annual emissions, including cement, lime, chemical, iron, steel, aluminum, and industrial gas manufacturing, as well as oil and gas and pulp and paper. They also account for over 35% of Canada's exports, most of which goes to the US. However, Canada's abundant natural resources, skilled workforce, and competitive business environment also provide opportunities to grow its expanding cleantech industry and low-carbon economy, including through clean fuels, nature-based solutions, and critical minerals development and battery production, to help support not only Canada's but the world's net-zero future. Canada's climate has been increasingly warming over the last several years, with Northern regions being the most affected. Canada has also experienced many extreme climate events such as drought, heat waves, forest fires, floods, and severe thunderstorms, which are happening more frequently and at higher intensities. The cost of associated disasters is rising as a result, with 2024 being the most expensive year in Canadian history for insured losses, with four weather events over a two-month span resulting in over $8 billion in insured losses.

The Government of Canada recognizes the necessity to take ambitious climate action. In 2021, the Government of Canada enacted the *Canadian Net-Zero Emissions Accountability Act*. The Act sets legal requirements for current and future governments to plan, report, and course correct on the path to net-zero emissions by or before 2050. It commits Canada in legislation to achieving its 2030 Nationally Determined Contribution under the Paris Agreement of 40% to 45% below 2005 emissions levels, as well as committing Canada to setting national targets for the reduction of GHG emissions every five years starting in 2030, with the objective of attaining net-zero emissions by 2050.

Canada published the 2030 Emissions Reduction Plan in 2022. The Plan is an ambitious and achievable roadmap that outlines a sector-by-sector path for Canada to reach its 2030 emissions reduction target and net-zero emissions by 2050. In 2023, the first Progress Report on the Plan was released. It provides an update on progress towards Canada's emissions reduction targets, as well as updates on the implementation of federal measures and strategies, and key cooperative measures and agreements with provinces and territories. Under the legislation, the next progress report on the 2030 Emissions Reduction Plan is required to be completed by the end of 2025. Under the Act, Canada was also required to set a 2035 target. In December 2024, Canada announced its 2035 target of 45% to 50% below 2005 levels. Canada will submit its Nationally Determined Contribution for 2035 in early 2025.

1.2 Implementing and achieving Canada's Nationally Determined Contribution

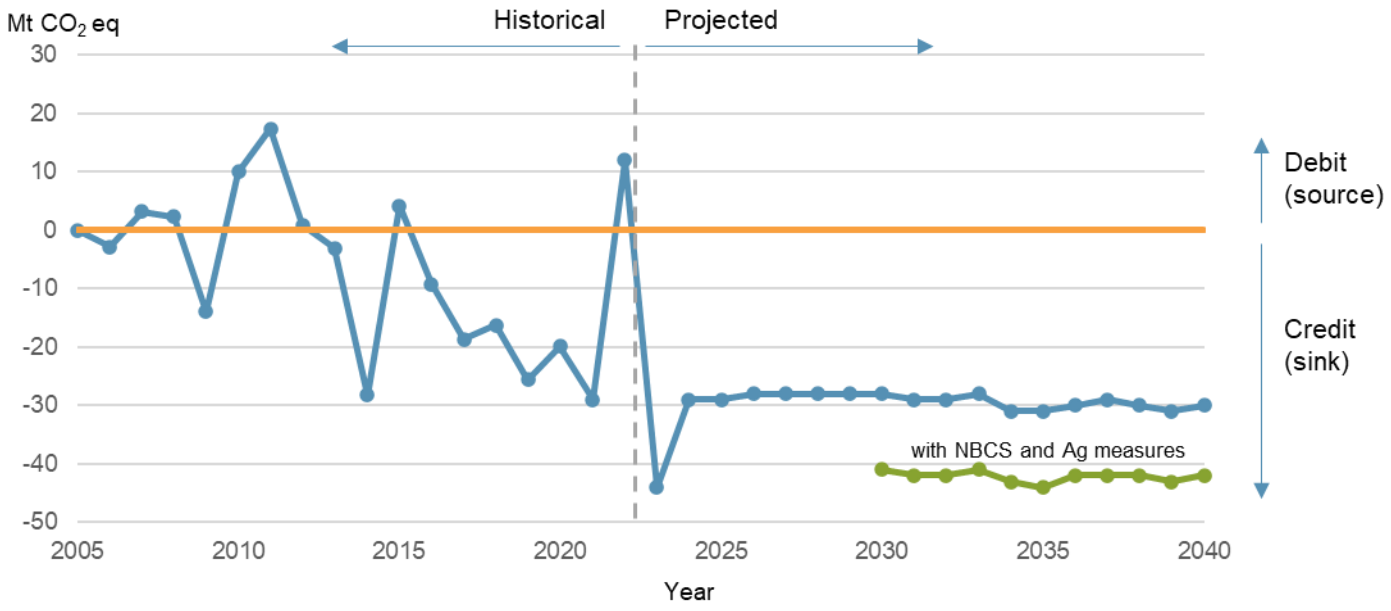
With its 2021 submission of an enhanced Nationally Determined Contribution, Canada committed to reducing economy-wide GHG emissions by at least 40% to 45% below 2005 levels by the 2030. For reporting on Canada's progress towards achieving its NDC, Canada's 2030 emissions, and emissions in the years leading up to 2030, will be its national total emissions (excluding LULUCF) plus the LULUCF accounting contribution. Canada will officially assess its NDC achievement using the NIR published by 2032.

In May 2024, Canada published the 2024 National Inventory Report, detailing Canada's emissions up to and including 2022. With this report, Canada is publishing updated LULUCF accounting contribution estimates, also up to and including 2022.

In 2022, Canada's national total GHG emissions (excluding LULUCF) were 708 Mt CO_2 eq, a decrease of 54 Mt (-7.1%) from 2005, and an increase of 9.3 Mt (1.3%) from 2021, while remaining 44 Mt below (-5.9%) pre-pandemic (2019) emissions levels. With the addition of the LULUCF accounting contribution, Canada's GHG emissions in 2022 were 720 Mt CO_2 eq, a decrease of 41 Mt (-5.5%) from 2005, and an increase of 50 Mt from 2021, while remaining 6.7 Mt below pre-pandemic (2019) emissions levels.

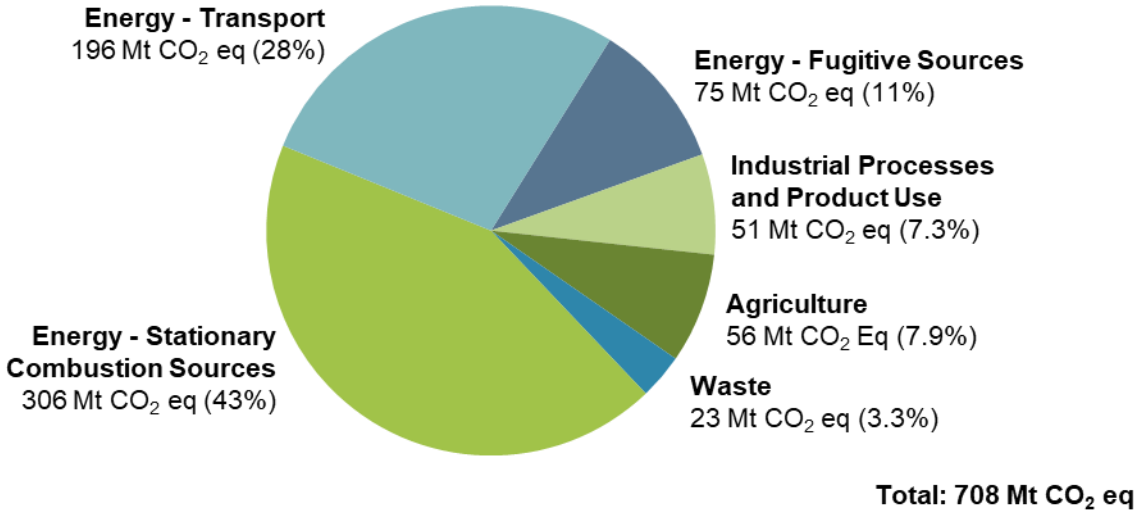
While the LULUCF accounting contribution is typically a net credit (sink) for Canada, the accounting contribution was a net debit (source) in 2022. This was mainly due to a significant one-year change in LULUCF, owing to a significant drop in carbon input from crop production in 2021 due to the drought in the Canadian prairies, which in turn led to a large increase in cropland emissions. This is not expected to be a trend that continues and the LULUCF accounting contribution is expected to return to being a net credit in 2023.

Figure 1-2: Historical and projected LULUCF accounting contribution (including reflecting the projected impact of Nature-based climate solutions (NBCS) and Agriculture measures for the period 2030 to 2040), (Mt CO_2 eq)



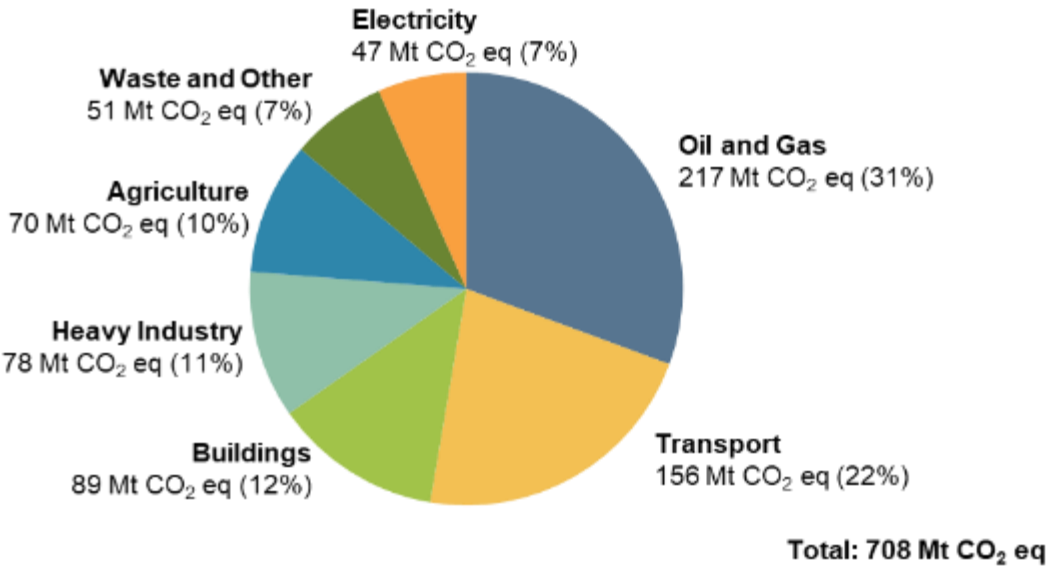
Emissions by sector are presented in Figure 1-3.

Figure 1-3: Breakdown of Canada's emissions by Intergovernmental Panel on Climate Change Sector (2022)



In addition to the inventory reporting requirement of allocating emissions by IPCC GHG categories, it is useful to allocate emissions by economic sector for the purpose of analyzing economic trends and policies (see Figure 1-4). Overall, GHG emissions trends in Canada's economic sectors are consistent with those described for IPCC sectors. The Oil and Gas, Agriculture, and Buildings economic sectors showed emissions increases of 21 Mt (11%), 4.6 Mt (7.0%) and 3.9 Mt (4.5%), respectively, since 2005. These increases have been more than offset by emissions decreases in Electricity (-69 Mt or -59%), Heavy Industry (-10 Mt or -11%), and Waste and others (-4.3 Mt or -7.8%). Since 2005, Transportation emissions have generally increased, with an important drop in 2020. Emissions in 2022 from the Transportation sector are now similar to 2005 levels.

Figure 1-4: Breakdown of Canada's emissions by economic sector (2022)



Canada's emissions are projected to continue to decline as policies and measures are implemented across the country. With this report, Canada is providing updated emissions projections, extending out to 2040 for the first time.

Canada has made substantial and enduring progress toward emissions reductions since the establishment of the *Pan-Canadian Framework on Clean Growth and Climate Change* with provinces and territories in 2016. Emissions projections are updated each year to account for new measures, to address changing conditions in the domestic and global economy, and to incorporate the historical emissions from the most recent NIR. The underlying data and methodology for estimating emissions are also revised over time in line with the principle of continuous improvement.

Based on data from Canada's most recent NIR and the projections presented in this report, Canada's GHG emissions peaked in 2007. This represents a significant accomplishment, given that in 2015, as reported in *Canada's Second Biennial Report to the UNFCCC*, Canada's emissions were projected to be 2.2% above 2005 levels in 2020, and to continue to grow, reaching 9% above 2005 levels by 2030. The historical emissions results for 2022, which included a notable emissions increase due to a climate-related event (drought), further highlights the imperative to take climate action and the risks that a changing climate can in turn lead to higher emissions. Despite this, Canada continues to reduce emissions and is on track to exceed the previous climate target of 30% below 2005 levels by 2030, while recognizing that additional efforts will be required to achieve Canada's 2030 target.

Figure 1-5: Canada's projected emissions trajectory

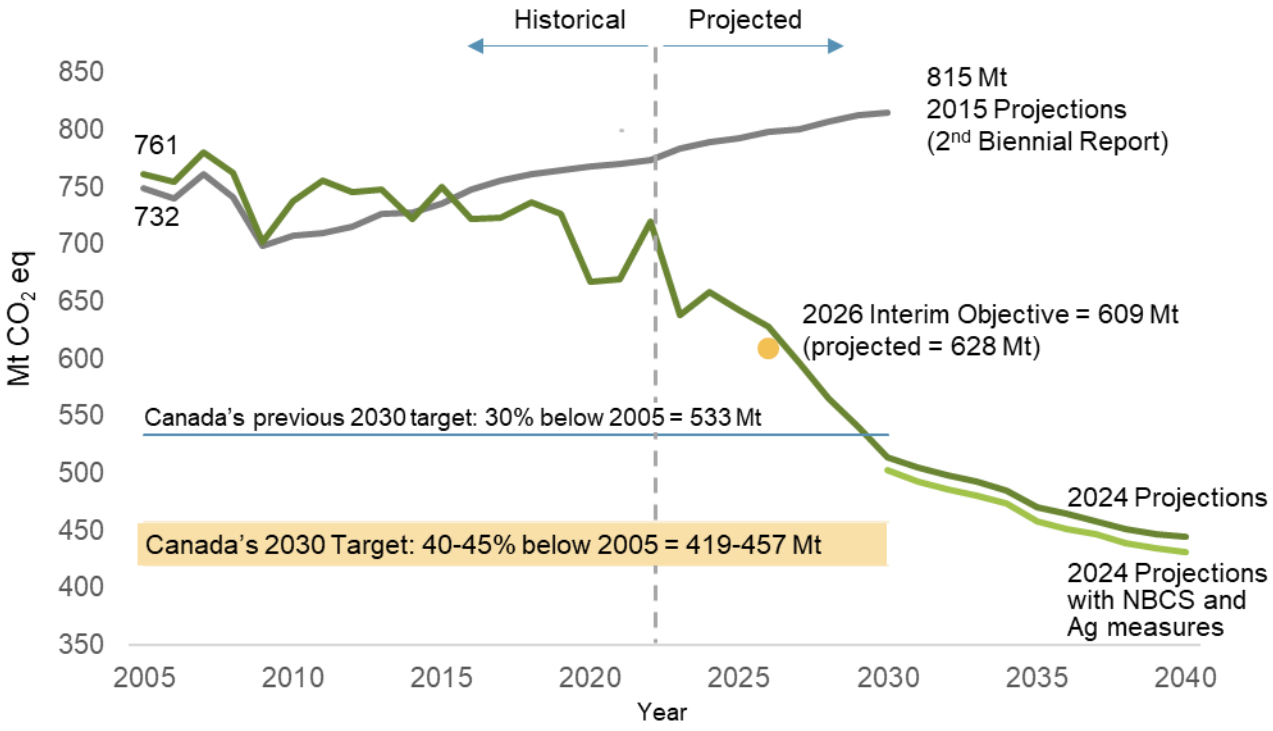
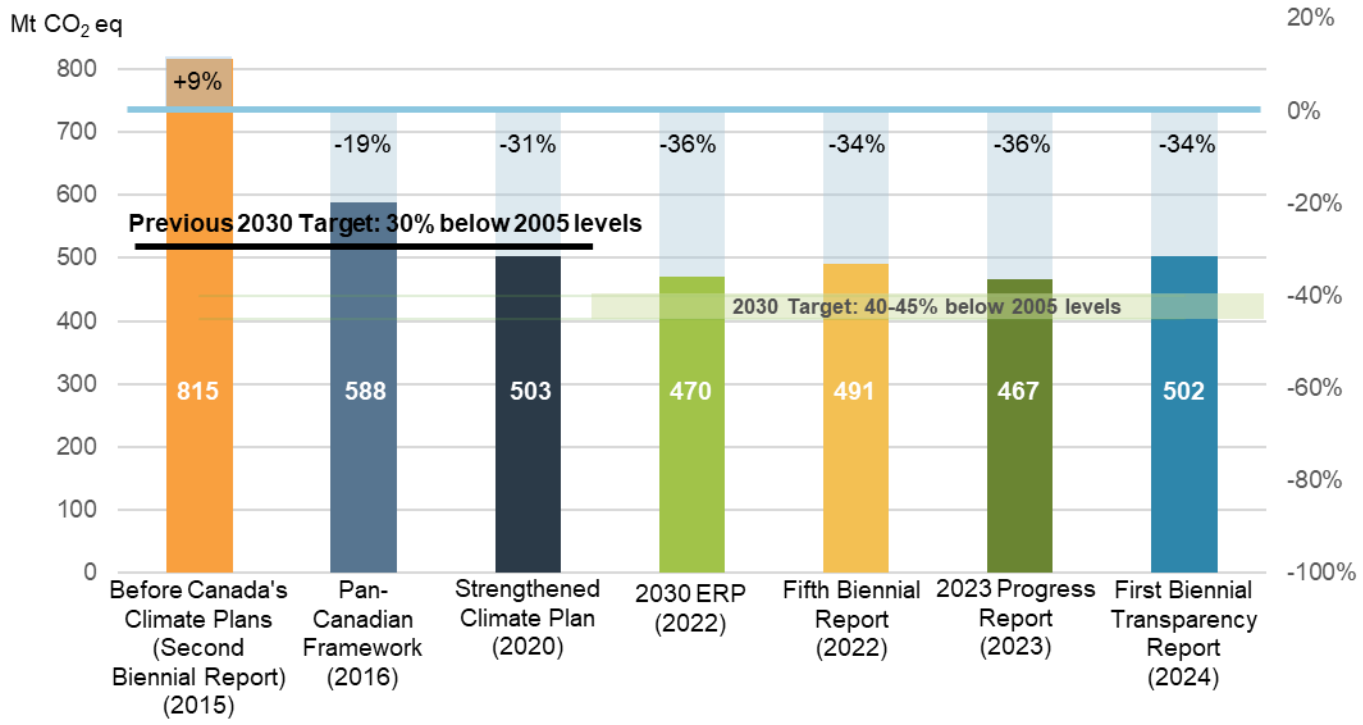
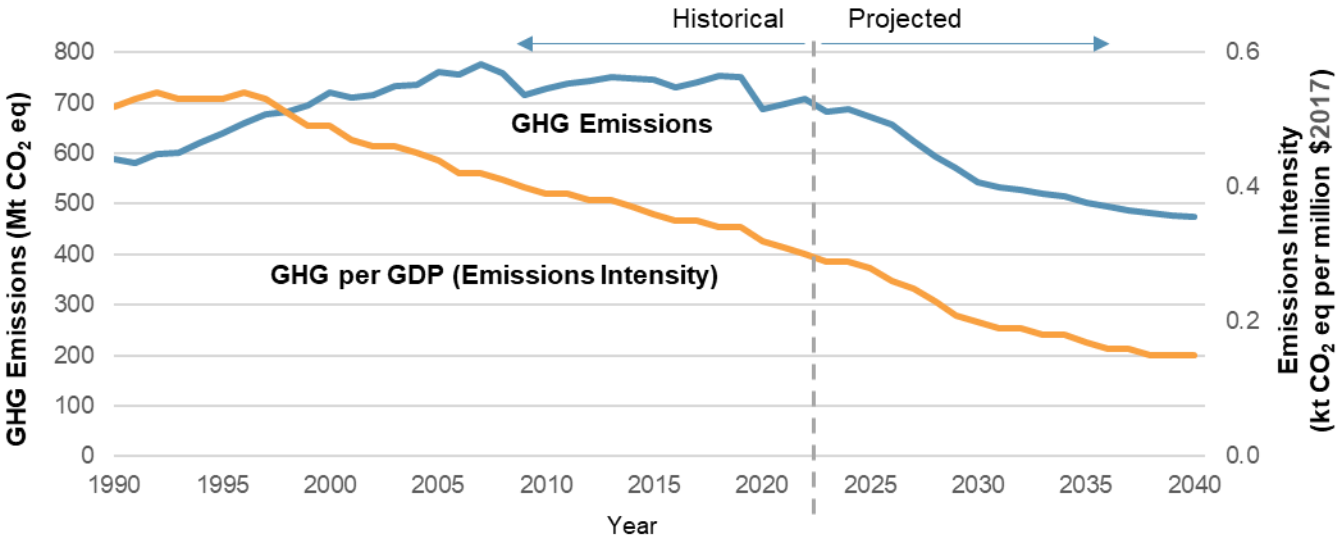


Figure 1-6: Progression of Canada's projected emissions in 2030 (Mt CO_2 eq)



Canada accounts for approximately 1.4% of global GHG emissions, making it the 12th largest emitter.[1] While Canada is one of the highest per capita emitters, per capita emissions have declined since 2005 from 24 t CO_2 eq/capita to 18 t CO_2 eq/capita in 2022.[2] Since 2005, Canada's economy has grown more rapidly than its GHG emissions. As a result, the emissions intensity for the entire economy (GHGs per GDP) has declined by 30%. While the COVID-19 pandemic undoubtedly impacted recent emissions, the sustained decline in emissions intensity over time can be attributed to factors such as fuel switching, increases in efficiency, and the modernization of industrial processes.

Figure 1-7: Canadian GHG emissions and indexed trend emissions intensity excluding LULUCF, NBCS, and agriculture measures, WAM scenario, 1990 to 2040



The entire Canadian economy has a role to play in reducing emissions and responsibilities for climate action are shared between federal and provincial and territorial governments. This report provides an update on 149 federal measures and 249 provincial and territorial measures, demonstrating the depth and breadth of action being taken by governments across Canada in the fight against climate change. These measures are contributing to emissions reductions, directly and indirectly, and the establishment of the necessary conditions for a prosperous low-carbon future for Canada.

1.3 Climate change impacts and adaptation

While reducing emissions may help to mitigate future climate change impacts or severity, Canada's climate is already undergoing irreversible changes, with consequences for current and future generations of people across the country. Climate change is increasing the frequency and intensity of many kinds of severe weather and climate events nationwide; additional climate warming will exacerbate the risks of such events. Additionally, slow-onset changes such as permafrost thaw and sea-level rise are transforming landscapes and coastlines, affecting communities, livelihoods, and identities.

Canada's National Adaptation Strategy was developed with provincial, territorial, and municipal governments, Indigenous partners, the private sector, non-governmental organizations, adaptation experts, and youth. It outlines a shared vision for a climate-resilient Canada and offers the opportunity to scaleup ongoing actions and advance new initiatives and leadership through shared priorities and collaboration.

The Strategy was informed by key climate impacts and risks identified through the *Canada in a Changing Climate* National Assessment Process, the 2019 *Canada's Top Climate Risks* report by the Canadian Council of Academies, and Indigenous Knowledge Systems. It aims to direct whole-of-society action to achieve adaptation outcomes across five interconnected systems:

- reducing the impacts of climate-related disasters;
- improving health and well-being;
- protecting and restoring nature and biodiversity;
- building and maintaining resilient infrastructure; and,
- supporting the economy and workers.

Building climate resilience is a long-term challenge that requires ambitious and sustained action. The National Adaptation Strategy is designed to be iterative as climate risks and adaptation needs and priorities evolve.

The Strategy is underpinned by a set of guiding principles intended to direct and inform decisions on how adaptation actions are designed and advanced. They acknowledge the importance of how Canada reaches its goals and objectives. These principles are:

1. respect jurisdictions and uphold the rights of Indigenous Peoples;
2. advance equity, climate, and environmental justice;
3. take proactive, risk-based measures to reduce climate impacts before they occur; and,
4. maximize benefits and avoid maladaptation.

All the actions taken by government, private and non-profit organizations, and individuals across the country collectively support the improvement of resiliency to climate change impacts across Canada.

First Nations, Inuit, and Métis are already leading Canada's efforts to adapt to the impacts of climate change and are developing climate change strategies and actions to set out a long-term vision for adaptation in their communities and regions.

Chapters 3 and 4 of this report also serve as Canada's second Adaptation Communication under the Paris Agreement.

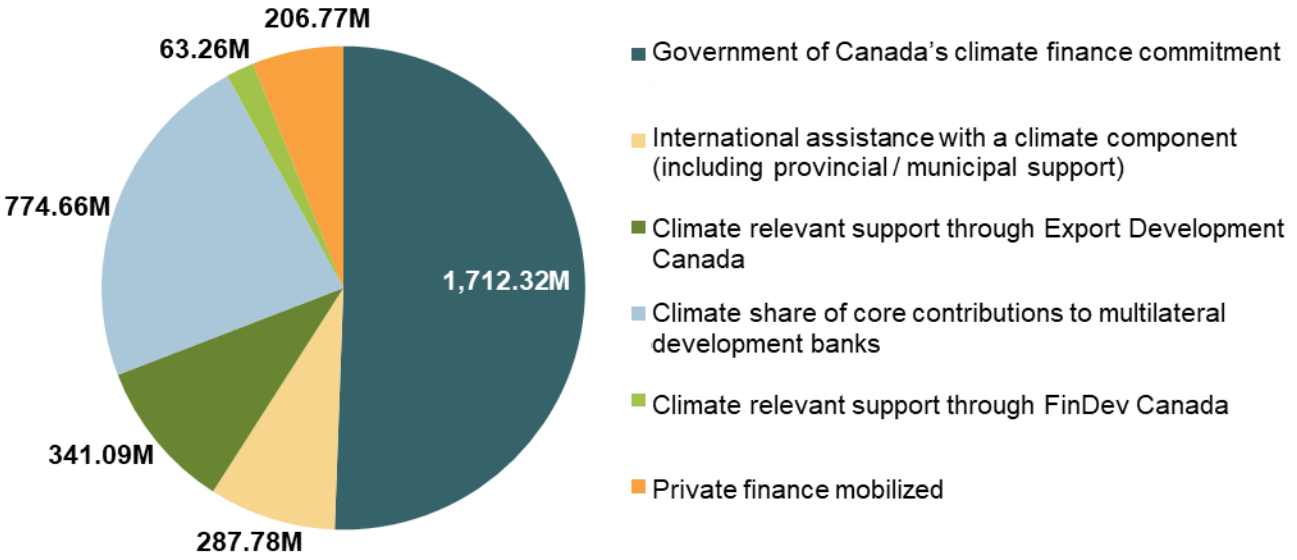
1.4 Provision of financial, technological, and capacity-building support

Climate change is a global challenge that requires global solutions. Developing countries, particularly the poorest and most vulnerable, are the hardest hit by climate change. Many face capacity constraints to mitigate and cope with the consequences of climate change, like severe weather, drought, and flooding. Transformational financial investments are needed to help communities around the world better address climate change and adapt to its harmful consequences. International climate finance plays a key role in achieving this.

Canada is committed to supporting low- and middle-income countries affected by climate change to transition to sustainable, low-carbon, climate-resilient, nature-positive, and inclusive development. This includes providing climate finance, technology, and capacity-building support to help developing countries mitigate and adapt to climate change and to support those most vulnerable to its effects. Efforts focus on obtaining clean and reliable sources of energy and enhancing resilience in their fight to adapt to the impacts of climate change.

Between 2021 and 2022, Canada provided and mobilized over $3.39 billion in climate finance to support developing countries in their transition to low-carbon, climate-resilient economies. This support, drawn from various sources, includes Canada's international climate finance commitments, as well as other climate-relevant support to developing countries.

Figure 1-8: Canada's total climate finance delivered over 2021 and 2022, by source ($ millions)



Building on its previous $2.65 billion climate finance commitment (2015 to 2021), Canada announced its five-year (2021 to 2026) $5.3 billion climate finance commitment in 2021. This commitment features four main thematic areas to guide programming: clean energy transition and coal phase-out; climate-smart agriculture and food systems; nature-based solutions and biodiversity; and climate governance.

In addition to thematic areas, Canada's $5.3 billion climate finance commitment includes the following policy targets: 40% of funding towards adaptation to help developing countries build resilience to climate change impacts; a minimum of 20% of funding to projects that leverage nature-based climate solutions and projects that contribute biodiversity co-benefits; and, 80% of projects that integrate gender equality considerations, in line with Canada's Feminist International Assistance Policy.

In 2021 and 2022, Canada provided a total of $1.61 billion in bilateral climate finance support. This funding was allocated to 87 developing countries across a wide variety of geographies. Canada also delivered climate finance through various multilateral channels. These channels include the Green Climate Fund, the world's largest international climate fund dedicated to supporting developing countries pursue climate action, and the Global Environment Facility, through which Canada is able to support developing countries implement multilateral environmental agreements and priorities such as biodiversity, land degradation, and sustainable forest management.

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[1] Environment and Climate Change Canada. (2024). *Canadian Environmental Sustainability Indicators: Global greenhouse gas emissions.* https://www.canada.ca/en/environment-climate-change/services/environmental-indicators/global-greenhouse-gas-emissions.html.

[2] Environment and Climate Change Canada. (2024). *National Inventory Report 1990-2022: GHG Sources and Sinks in Canada* (Cat. No. En81-4/4E-PDF). Government of Canada. https://publications.gc.ca/collections/collection_2024/eccc/En81-4-2022-1-eng.pdf

Chapter 2: Implementing and achieving Canada's Nationally Determined Contribution

2.1 National circumstances and institutional arrangements

The following section addresses paragraph 59 of the MPGs.

This section outlines national circumstances within Canada that contribute to implementing and achieving Canada's Nationally Determined Contribution. For the purposes of this report, Canada defines national circumstances as a relatively inflexible characteristic of a state, not easily shaped by government policy, which significantly influences its GHG emissions.

2.1.1 Government structure

Canada is a geographically large federation composed of a central federal government, 10 provincial governments, and three territorial governments. The Canadian Constitution and convention assign different powers to each order of government. Protection of the environment is not specifically addressed under the Constitution. It has become an area of shared jurisdiction, as governments have taken action according to their respective authorities. Constitutional jurisprudence continues to evolve in this area.

Federal environmental laws are based on federal constitutional powers such as international borders, international relations, trade and commerce, navigation and shipping, seacoasts and fisheries, criminal law, and the power to legislate in the national interest.

Provincial environmental laws are based on provincial constitutional powers, which include municipalities, local works and undertakings, property and civil rights, provincially owned (public) lands, and natural resources. Territorial governments exercise delegated powers under the authority of the Parliament of Canada. The devolution of powers, or the transfer of province-like responsibilities from the federal government to territorial governments, is ongoing.

Every jurisdiction has an environmental ministry or agency, but climate responsibilities can be widely shared within each government. Within the federal government, for example, several departments and agencies have mandates that have a significant climate component: Environment and Climate Change Canada (ECCC); Fisheries and Oceans Canada (DFO); Natural Resources Canada (NRCan); Agriculture and Agri-Food Canada (AAFC); Transport Canada (TC); Parks Canada Agency (PC); the Impact Assessment Agency of Canada (IIAC); Finance Canada (FIN); Housing, Infrastructure and Communities Canada (HICC); Indigenous Services Canada (ISC); and Innovation, Science, and Economic Development Canada (ISED). Several other departments are implicated, as well, including Health Canada (HC).

In addition, many of the federal ministers leading these departments have formal mandate letter commitments to work with Environment and Climate Change Canada in addressing climate change. For instance, in the most recent ministerial mandate letters (December 2021), the Minister of Energy and Natural Resources was asked to work with the Minister of Environment and Climate Change to cap oil and gas sector emissions at current levels and ensure that the sector makes an ambitious and achievable contribution to meeting the country's 2030 climate goals. The Minister of Environment and Climate Change was also tasked to work with the Minister of Public Safety, the President of the King's Privy Council for Canada, and the Minister of Emergency Preparedness, with support of the Minister of Energy and Natural Resources, Minister of Innovation, Science and Industry, and the Sustainable Finance Action Council, to develop a climate data strategy to ensure that the private sector and communities have access to data to inform planning and infrastructure investments. Given the many different federal departments with varying responsibilities with respect to climate change, a Deputy Ministers' committee was established to oversee the implementation of climate change-related action across government, facilitating coordination and promoting coherence across different departments. The progress of federal actions to address climate change is tracked, as well, to inform senior management governance committees, ministers, and the Prime Minister.

Natural resources, including energy, fall mainly under provincial jurisdiction. Provincial governments own the resources within their boundaries and have broad responsibility for managing resource development activities, except on some federal lands (e.g., national parks, north of the 60th parallel, offshore) and some Indigenous lands (e.g., lands managed by an Indigenous government established through a land claim). Provincial governments manage resource ownership, royalties, land-use planning, and allocations, as well as exploration, development, conservation, and use of natural resources within their boundaries.

The federal government has responsibility for interprovincial and international trade, and the Canada Energy Regulator regulates interprovincial and international pipelines and energy exports and imports. The federal government conducts environmental assessments of major projects with the greatest potential for significant adverse environmental impacts.

Given that the environment is an area of shared jurisdiction between the federal and provincial or territorial governments, powers between the federal and provincial or territorial jurisdictions often overlap on environmental issues. To that end, several multi-level governance mechanisms ensure close collaboration in policy and regulatory development and implementation, from the Canadian Council of Ministers of the Environment and issue-specific councils and working groups, to equivalency and other types of agreements between federal environmental authorities and their provincial and territorial counterparts.

2.1.2 Canada's Nation-to-Nation, Inuit–Crown, and Government-to-Government relationship with Indigenous Peoples

The Canadian Constitution recognizes and affirms the Aboriginal and treaty rights of First Nations, Inuit, and Métis as distinct peoples with unique histories, languages, cultural practices, and spiritual beliefs. Aboriginal and treaty rights include but are not limited to Aboriginal land title; rights to occupy and use lands and resources, such as hunting and fishing rights; self-government rights; historic and modern treaty rights; and cultural and social rights. All of Canada's relationships with Indigenous Peoples are based on recognition of these rights and on the ongoing renewal of the nation-to-nation, Inuit–Crown, and government-to-government relationships between Canada and First Nations, Inuit, and Métis governments in the spirit of partnership and cooperation.

The Government of Canada recognizes that Indigenous Peoples' leadership is key to Canada achieving its climate objectives and is committed to working collaboratively with First Nations, Inuit, and Métis partners to advance distinctions-based, self-determined climate action. In July 2023, Canada reconfirmed this commitment in the *United Nations Declaration on the Rights of Indigenous Peoples Act* Action Plan, which includes a measure to advance an Indigenous Climate Leadership (ICL) Agenda with the goal of implementing a model of partnership for climate action between the federal government and Indigenous Peoples. The ICL Agenda seeks to empower and advance self-determined climate actions; leverage the transition to a net-zero economy to support overarching efforts towards self-determination; and support the inclusion of diverse Indigenous Knowledge Systems in national climate policy. Measure 46 states that "Canada will partner with First Nations, Inuit, and Métis to advance an ICL Agenda, including distinctions-based strategies, that vests the resources and authorities necessary for Indigenous Peoples to fully exercise their right to self-determination on climate. This includes ensuring that First Nations, Inuit, and Métis peoples have stable, long-term financing to implement their climate actions, make climate-related decisions with the Government of Canada, and that systemic barriers to Indigenous climate leadership are addressed."

2.1.3 Population profile

In 2023, Canada's population was 40.1 million, growing 2.9% from the previous year.[3] Every province from coast to coast experienced their fastest annual pace of growth since at least 2000 or 2001, and all three territories also saw positive population growth.[4] Canada continues to lead G7 countries for population growth and was among the top 20 fastest growing countries in the world.[5] International immigration is the main contributor and accounts for almost 98% of Canada's population growth from the previous year.[6]

Canada's population is not spread evenly across the country. The southern part of Canada is home to many urban centres, while the northern and rural regions of the country are more scarcely populated. In 2023, 74.4% of all Canadians lived in an urban centre, the largest of which are Vancouver, Toronto, and Montreal.[7] In 2021, 14.9% of people in Canada lived within 10 kilometres (km) of the coastline.[8] Of

these, over 3.2 million people resided on the Pacific coast and over 2.2 million were on the Atlantic coast.[9]

Canada has 41 metropolitan areas (where the population is greater than 100,000), many of which have large distances between them (e.g., approximately 450 km between Ottawa and Toronto, Ontario). In 2021, Canada's population density was estimated to be 4 people per square kilometre, compared with 36 people per square kilometre in the US.[10] Large distances between Canada's widespread metropolitan areas and a low population density contribute to high energy demand and GHG emissions related to the transportation of people and goods.

2.1.4 Geographical profile

Canada is a country of physical extremes and contrasts, spanning 41 degrees of latitude and 88 degrees of longitude. Its surface area is 9,984,670 km², with land accounting for 9,093,507 km² and freshwater accounting for 891,163 km².[11] The country extends 5,300 km east to west, the distance between Paris and New York, and 4,600 km north to south. It is the second largest country in the world and encompasses six time zones. Canada also has the longest coastline of any country, spanning 243,042 km along the Atlantic, Pacific and Arctic Oceans.[12]

Canada has more lake area than any other country, with lakes that are among some of the world's largest. The Great Lakes, which straddle the southern Canada–US boundary, contain 18% of the world's fresh lake water.[13] Large rivers also stretch across Canada, with many situated north of the 60th parallel. For example, the Mackenzie River is over 4,000 km long and is the country's largest river. Wetlands cover about 14% of the land area of Canada and approximately 60% of Canada's fresh water drains to the north.[14]

Canada has 367 million hectares (ha) of forest, or 9% of the world's forest and 25% of the worlds boreal forest.[15] Additional land cover in Canada includes grassland, shrubland, cropland, water, snow, ice, and urban and built-up land.[16] Wetlands and terrestrial and offshore Arctic permafrost are of particular concern as they store huge amounts of organic carbon and can be both natural sinks and sources of greenhouse gases. Emissions of methane from permafrost and from the abundant number of wetlands, lakes, and rivers located in boreal and arctic regions are expected to substantially increase this century due to rapid climate warming and associated permafrost thaw, changing moisture regimes, wildland fire frequency and severity, successional changes, and ecozone boundary shifts.

Canada is divided into fifteen terrestrial ecozones, with each representing a large and generalized area of land characterized by interactive and adjusting abiotic and biotic factors. These ecozones range from the Arctic Cordillera Ecozone, where the environment is dry and cold and is covered by vast polar ice fields and alpine glaciers, to the Pacific Maritime Ecozone, with ecosystems ranging from humid coastal rainforest to cool boreal and alpine conditions at higher elevations. In contrast, the Boreal Shield Ecozone, the largest of Canada's ecozones, presents a continuous stretch of trees, water bodies, and bedrock, and is characterized by long cold winters and short warm summers.

These geographical contrasts present different challenges when assessing climate resilience and mitigating climate change impacts. For instance, coastal erosion, reduction in ice cover, and thawing permafrost increase risks to critical infrastructure, health, and food security in Canada.

2.1.5 Economic profile

As of 2023, Canada was the world's 10th largest economy with a GDP of $2.1 trillion.[17] On a GDP per capita basis, Canada ranks 26th in the world.[18]

During and following the COVID-19 pandemic, GDP grew by 5.3% in 2021 and 3.8% in 2022. In 2023, the growth rate dropped to 1.1% amidst increased interest rates aimed at tamping down surging inflation. Overall, over the last 20 years, the economy has remained steady, despite contractions in 2009 and 2020.[19]

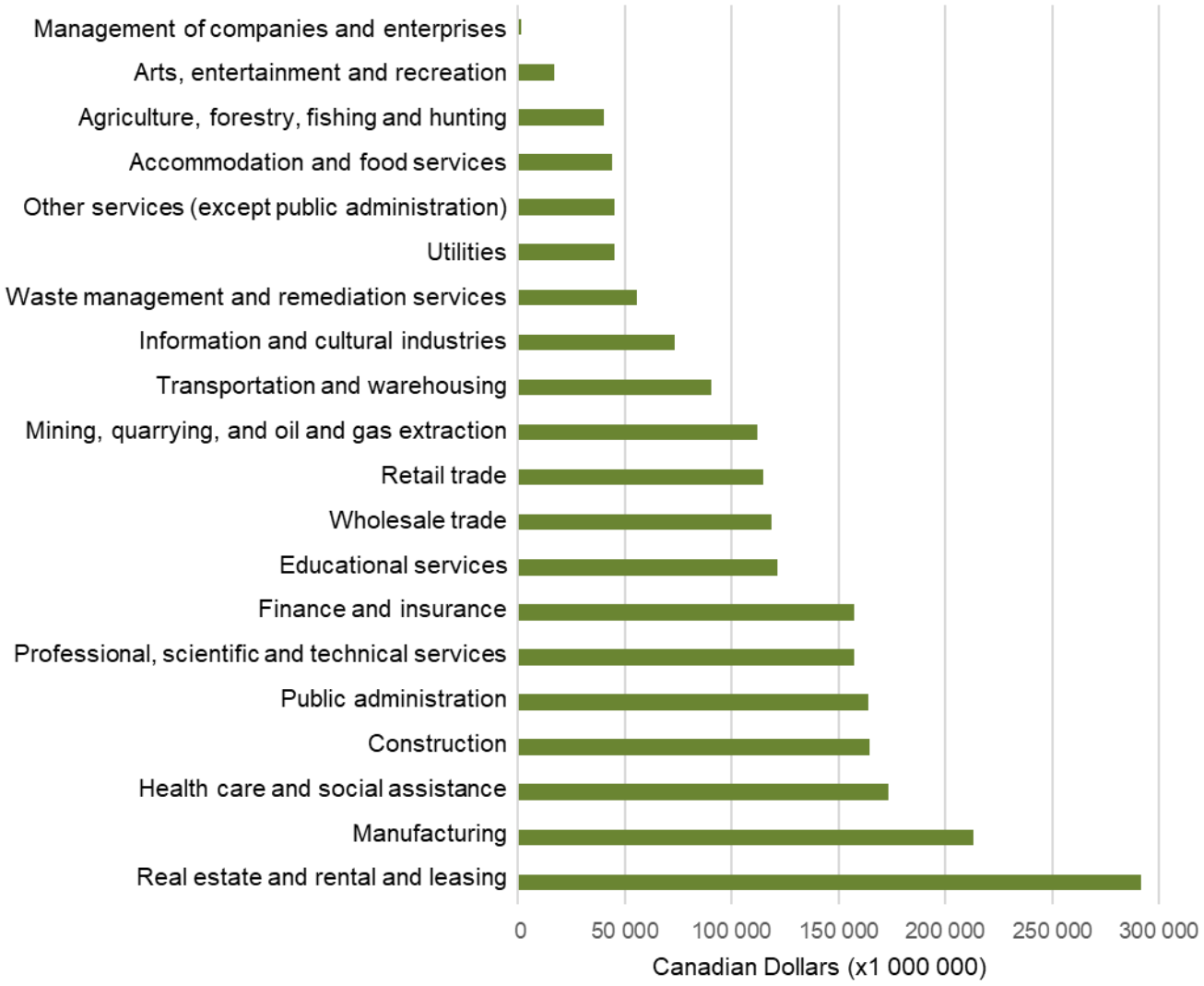
Canada's economy is largely driven by the services-producing sector, comprising 74% of GDP in 2023.[20] Leading industries in this sector include real estate, rental and leasing, health care and social assistance, and public administration. The goods-producing sector, comprising 26% of GDP in 2023, is led by manufacturing, construction, and mining, quarrying, and oil and gas extraction industries.[21]

While all countries face unique decarbonization challenges, Canada must navigate a unique socio-economic structure relative to other advanced economies, creating less favourable conditions for rapid emissions reductions. Due to its carbon-intensive industries, Canada is one of only two countries from the Organisation for Economic Cooperation and Development (OECD) that exports more GHGs than it imports, with up to 40% of domestic GHGs being driven by foreign demand (thrice as much as in the US). Canada's economy is more reliant on natural resources (19.2% of nominal GDP in 2022, including but not limited to fossil resources), with revenues more than 20 times the G7 average and 4 times the US. Canada is both a major energy producer and exporter, with overall Canadian energy exports in 2022 totalling $240.5 billion, representing 33% of total Canadian goods exports.

These factors exacerbate near-term transition costs and carbon leakage risks, all while exposing Canada's economy to greater vulnerabilities, such as declining demand and value for carbon-intensive commodities (carbon leakage refers to a process by which emissions reductions in Canada could be offset by an increase of emissions in other countries with lower environmental standards). Carbon leakage goes hand-in-hand with reduced competitiveness and capital flight, and compromises benefits for the climate. While economy-wide leakage is low, emission-intensive and trade-exposed sectors that are particularly vulnerable to carbon leakage account for a significant share of Canada's annual emissions, including cement, lime, chemical, iron, steel, aluminum, and industrial gas manufacturing, as well as oil and gas and pulp and paper. They also account for over 35% of Canada's exports, most of which goes to the US.

Figure 2-1 below presents Canada's GDP in 2023 based on the annual average by industry.

Figure 2-1: Gross domestic product at basic prices, by industry, 2023 annual average (x1,000,000)[22]



Many of Canada's goods are produced for export. In 2023, the value of total exports of goods and services was $728 billion.[23] As a resource-rich economy, Canada is a net exporter of agriculture, energy (electricity and oil and gas) and many resource-based commodities such as pulp and paper, mined metals, and aluminum. In 2023, Canada's highest exporting industries included energy products, motor vehicles and parts, crude oil and bitumen, and consumer goods.[24]

Canada's international trade is highly concentrated on its shared border with the US, with 77% of its exports and 62% of its imports devoted to its southern neighbour in 2023.[25] The European Union remains an important partner, with 6% of Canada's exports and 16% of Canada's imports.[26] Other notable trade partners include China, Japan, Mexico, South Korea, and India.

In the face of higher interest rates, Canada has avoided the recession that some had predicted. Inflation has fallen from its June 2022 peak of 8.1% to 2.8% in February 2024.[27] The labour market also remains strong. Over 1.1 million more Canadians are employed today than before the pandemic,

marking the fastest jobs recovery in the G7.[28] Real wages (wages adjusted for inflation) have gone up, meaning Canadians, on average, have more purchasing power.[29] Table 2-1 below presents Canada's employed population by source of employment from 2019 to 2023.

Table 2-1: Labour force characteristics by industry, 2019 to 2023 (x 1,000 persons)[30]

North American Industry Classification System (NAICS)	2019	2020	2021	2022	2023
Total, all industries	19,121.2	18,043.8	18,942.3	19,693.0	20,170.9
Goods-producing sector	3,984.8	3,796.8	3,921.1	4,072.1	4,132.1
Agriculture	294	279.7	258.5	257.3	256.4
Forestry and logging and support activities for forestry	46.8	50.0	48.2	46.0	37.1
Fishing, hunting, and trapping	17	18.9	18.6	16.5	15.1
Mining, quarrying, and oil and gas extraction	268.6	238.0	258.8	266.0	274.3
Utilities	134.3	133.0	137.7	148.3	154.9
Construction	1,473.9	1,407.7	1,451.5	1,552.9	1,582.5
Manufacturing	1,750.2	1,669.4	1,747.8	1,785.1	1,811.9
Services-producing sector	15,136.3	14,247.0	15,021.2	15,620.8	16,038.8
Wholesale and retail trade	2,937.8	2,761.3	2,888.4	2,984.7	2,971.7
Transportation and warehousing	1,030.9	942.7	985.5	981.4	1,024.8
Finance, insurance, real estate, rental, and leasing	1,239.2	1,240.8	1,325.9	1,367.7	1,387.5
Professional, scientific, and technical services	1,557.7	1,561.8	1,689.2	1,809.7	1,875.0
Business, building and other support services	763.5	686.8	680.4	693.6	691.6
Educational services	1,330.5	1,318.2	1,448.7	1,471.1	1,495.2
Health care and social assistance	2,476.9	2,402.5	2,519.6	2,603.7	2,666.7
Information, culture, and recreation	779.9	676.8	717.1	808.6	847.6
Accommodation and food services	1,219.8	945.7	967.7	1,049.6	1,128.5
Other services (except public administration)	790.7	704.4	717.4	714.7	767.0
Public administration	1,009.4	1,006.0	1,081.4	1,136.1	1,183.1

2.1.6 Climate profile

Canada has a wide range of climatic conditions: Canada's Pacific coast is relatively mild year-round, while the Prairie Provinces (in the central western portion of the country) have greater extremes (cold winters and warm summers). Those ranges are expected to intensify by 2030.

Average annual temperatures are expected to differ considerably from region to region throughout the country. By 2030, Toronto, Ontario, located in southern Canada, is expected to have an annual average daily temperature of about 10°C, in contrast to Resolute, Nunavut, in the Canadian Arctic, which can expect -13°C annual average daily temperatures. Halifax, Nova Scotia, on Canada's Atlantic

coast, will average about 9°C, while Vancouver, British Columbia, on the Pacific coast, will average about 12°C.[31]

In most regions in Canada, summer and winter temperatures dictate heating and cooling needs and energy use. For example, by 2030, Montréal, Québec, is expected to experience an approximate annual average of 474 cooling degree-days (number of degree days accumulated above 18°C in a selected time period) and approximately 3,767 heating degree-days (number of degree days accumulated below 18°C in the selected time period).[32]

Canada is also expecting considerable regional variation in precipitation. By 2030, Prince Rupert, on Canada's Pacific coast, is forecasted to receive approximately 2,562 millimetres (mm) a year. Conversely, Saskatoon in the Prairies will see as little as 340 mm annually. In the far north of Canada, precipitation totals are expected to be generally less than 300 mm a year; for example, by 2030, Resolute, Nunavut, is anticipated to see about 136 mm of annual precipitation.[33]

In addition to variable temperatures and precipitation, Canada also experiences extreme weather events including droughts, floods, high winds, tornadoes, snow and ice storms, and severe thunderstorms, which are expected to intensify and become more frequent as the climate continues to change. Canada also experiences slow-onset impacts from climate change, such as permafrost thaw and sea-level rise.

Canada's oceans are experiencing changes in physical and chemical oceanographic indicators, such as temperature, circulation patterns, sea ice volumes, and pH.[34] Oxygen levels are also decreasing in nearly all marine waters surrounding Canada, with the highest rates of decline in the Gulf of St. Lawrence, Hudson Bay, and the Gulf of Alaska.[35] Changes in ocean conditions are not uniform or of the same magnitude.[36] In the Atlantic Ocean, waters are warmer, more acidic, with weaker cold indeterminate layers and smaller sea ice volumes.[37]

More information on climate change adaptation and impacts on Canada is presented in Chapter 3: Climate Change Impacts and Adaptation.

2.1.7 Sector details

The following sections provide high-level information on the IPCC sectors prescribed in MPG 81: Energy; Transport; Industrial Processes and Product Use; Agriculture; Land Use, Land-Use Change and Forestry; and Waste Management. For the purposes of analyzing economic trends and policies, and in support of Canada's approach to climate mitigation, it is useful to consider emissions and mitigation policies and measures according to the economic sector from which they originate. Canada's approach to climate action is a mix of economy-wide, sector-specific and enabling measures. When sectors are referenced in Canada's climate plan, this is referring to economic sectors rather than IPCC sectors. In its national inventory reporting, Canada reports emissions by both IPCC and Canadian economic sectors. For Canada's emissions projections, Canada organizes projections primarily according to Canadian economic sectors, but also provides essential information by IPCC sectors. For mitigation policies and measures reporting, Canada has historically organized measures based on the impacted economic sector. For Canada's First Biennial Transparency Report, mitigation policies and measures are organized according to IPCC sectors. References to Canadian economic sectors remain interspersed throughout this report in recognition of the continued importance of economic sectors to Canada's reporting and policy development landscape. Definitions of Canadian economic and IPCC sectors and a crosswalk between the two sets of sectors can be found in Annex 1.

2.1.7.1 Energy

Canada has an abundant and diversified portfolio of energy resources. In 2023, the Energy sector accounted for 10.3% of Canada's GDP in current prices (nominal GDP), and directly employed about 285,600 people.[38] The IPCC Energy sector accounted for 53.8% of Canada's emissions in 2022, excluding emissions from the Transport sector.[39]

Globally, Canada is both a major energy producer and exporter, with overall Canadian energy exports in 2023 totalling $199.1 billion, representing 28% of total Canadian goods exports.[40] Oil and gas make up the majority of total exports, accounting for $177 billion in 2023.[41] Canada's energy exports mostly go to the US, except for coal and uranium.

Canada uses all forms of renewable energy sources for power generation. Hydroelectricity is the largest renewable energy source in Canada, accounting for 61.6% of Canada's electricity generation in 2022. Other renewable energy sources, such as biomass (1.4%), wind (5.7%), and solar (0.9%), contribute to increasing this share to 69.6%. When adding nuclear energy (12.9%), about 82.5% of Canada's electricity generation does not emit GHGs.[42] As of 2022, Canada ranks first among the top five electricity-generating countries for the percentage of total electricity generated from non-emitting sources.[43] Canada ranked sixth globally for renewable energy production in 2022.[44]

Energy: Canada's Position in the World

- third in hydroelectricity production;
- ninth in wind power capacity;
- second in uranium production and second in exports;
- sixth in nuclear energy production;
- fourth in crude oil production and third in exports;
- fifth in natural gas production and sixth in exports.[45]

Canada's provincial governments are the direct managers of most of Canada's natural resources and have responsibilities for energy resource management within their borders.

Oil and Gas

Petroleum contributed 7.7% to Canada's GDP in 2023 and directly employs about 181,100 people across the country.[46] Most production of crude oil and natural gas occurs in Western Canada, which is exported across Canada and to the US. Eastern Canada mainly imports crude oil and has some refining facilities. Midstream infrastructure, refineries, bulk storage, and distribution networks are located in every province and territory in Canada. The oil and gas industry is diverse, comprising a wide range of activities from exploration, drilling, and extraction, to processing, transportation, and refining of multiple resources, including light oil, heavy oil, oil sands, and natural gas.

Crude Oil

Canada has 9% of the world's proven reserves of crude oil, or approximately 163 billion barrels, and 97% of Canada's proven reserves are located in the oil sands.[47] Crude oil production in Canada has grown steadily over the past two decades, up from 1.7 million barrels per day in 1990,[48] to 4.9 million barrels per day in 2023.[49] In 2023, 65% of Canada's oil production came from the oil sands.[50] Crude oil

accounted for the largest proportion of primary energy production in Canada in 2023 covering 49.1% of the total 22,951 petajoules.[51]

In 2023, 78% of total Canadian production was exported to the US.[52] Canadian crude oil represented about 60% of all US crude oil imports and 23% of US refinery crude oil intake in 2023, making Canada its leading foreign supplier of crude oil.[53]

Capital investments in Canada's oil sands industry have reached $366 billion to date, including $12.4 billion in 2023.[54]

Natural Gas

Canada is part of a fully-integrated North American market where natural gas moves from supply basins to demand centres via an extensive pipeline network. As of 2024, Canada has 87 trillion cubic feet (Tcf) of proven natural gas reserves.[55]

In 2023, Canadian natural gas production averaged 18.5 billion cubic feet per day (Bcf/d) of marketable natural gas.[56] Unconventional gas production, including tight gas, coal bed methane, and shale gas, now accounts for 90% of Canadian production.[57] Natural gas accounted for the second-largest proportion of primary energy production in Canada in 2023, covering 33.2% of the total 22,951 petajoules.[58] In 2023, the US imported 8.1 Bcf/d of natural gas from Canada, resulting in 44% of Canadian production being exported to the US.[59] Canada imported 2.0 Bcf/d of natural gas from the US in 2023.

Coal

Canada ranks 18th in the world in proven coal reserves with about 11.4 billion tonnes. In 2023, Canada produced 47 Mt of coal, of which 83% (39 Mt) was exported, primarily to Asian markets such as Japan, China, and South Korea.[60] Out of all coal produced within Canada, 66% was metallurgical, used for steel manufacturing, and 34% was thermal, used for electricity generation. Between 2010 and 2022, the amount of Canadian coal used for electricity generation has decreased by 67%, from 43.7 Mt in 2010 to 14.6 Mt in 2022.[61] Canada is both an importer and an exporter of coal; however, Canada's coal imports have declined by more than 76% from 21 million tonnes in 2005 to 5 million tonnes in 2022.[62] In 2023, Canada imported about 6 Mt of coal, of which 76% came from the US.[63]

Electricity

In 2022, Canada produced 639 terawatt-hours of electricity, generated from a mix of sources.[64] As of 2022, 85% of Canada's electricity produced comes from non-GHG emitting sources, principally hydro (64%) and nuclear (14%).[65] In 2022, Canada had the fourth largest installed capacity of hydropower in the world. Between 2011 and 2022, wind and solar had the largest growth in renewable electricity generation, and in 2022 made up over 6% of total generation.[66] The share of electricity supply generated from coal in 2022 was 4%, or 24 terawatt-hours (TWh).[67] In 2023, Canada exported 45.9 TWh of electricity to the US and imported 19.2 TWh.[68]

Energy Consumption

Canada's economy is becoming less energy intensive. From 2000 to 2021, Canada's energy use per dollar of GDP declined 25% and per capita energy consumption decreased by 12%.[69] Canada's per capita consumption of oil products, natural gas, and electricity is higher than in most other industrialized countries, reflecting the energy use of industries such as mining, pulp and paper, and petroleum refining.[70] Other key factors include long distances between communities and a relatively cold climate.[71]

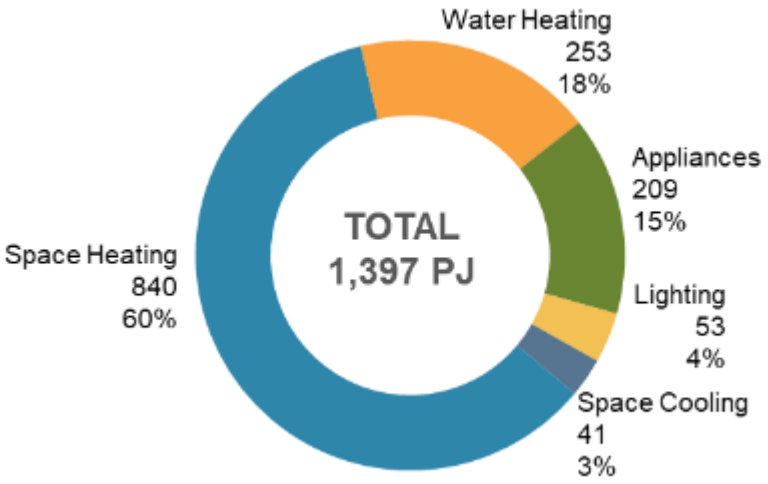
Buildings: Canada's third-largest emitting economic sector

Largely due to Canada's extreme temperature fluctuations, the Buildings economic sector is the third-largest emitting national economic sector, accounting for 13% of GHG emissions.[72]

Residential

Between 2000 and 2021, the number of households in Canada increased by 30.1% (3.5 million) and the population grew by 25% (7.5 million).[73] In addition to the rise in the number of households, the average living space and the penetration rate of appliances have also increased.[74] Despite these trends, residential energy use increased by only 1% from 2000 to 2021 as homeowners switched to cleaner energy sources and energy efficient technologies.[75] The main sources of residential energy use include natural gas, electricity, wood, heating oil, and propane.[76] As per Figure 2-2, due to Canada's relatively cold climate, space heating and water heating are the main residential energy uses.[77]

Figure 2-2 Residential Energy Use, by type (PJ), 2021



The amount of energy used by the residential sector to heat each square metre of living space decreased by 36.5% between 2000 and 2021, driven mainly by energy efficiency gains.[78] More Canadians shifted from oil to electricity as a source of home heating, with the proportion of space heating derived from electricity increasing from 21% in 2000 to 31.5% in 2021.[79] Over the same period, the use of oil for space heating decreased by 67%.[80]

The amount of energy used by the residential sector to cool each square metre of living space increased by 111% between 2000 and 2021. This increase in energy usage for space cooling is comparable to an increase seen in the cooling degree-day index.[81] Between 2000 and 2021, the cooling degree-day index has seen an increase of 102%, reflecting an increase in the number of days per month at temperatures at or above 18°C.[82]

The number of major household appliances operated in Canada between 2000 and 2021 increased by about 33.5%.[83] However, the total amount of energy that households used to power major appliances decreased by 17.4% due to significant energy efficiency improvements. Some of these improvements can be attributed to federal, provincial, and territorial government efforts to work with

industry and public stakeholders to implement energy guide rating systems (i.e., EnerGuide) and voluntary standards such as ENERGY STAR that help increase consumer awareness of major appliances' energy use and associated operating costs.[84]

Commercial and Institutional

In 2021, the commercial and institutional subsector of the Buildings sector was responsible for 13.6% of the total energy use in Canada.[85] In the commercial and institutional subsector, energy is used for space heating, cooling, lighting, and water heating, as well as for operating auxiliary equipment (such as computers and servers) and motors.[86] Space heating accounts for the largest share of energy use, around 56%, followed by auxiliary equipment at 15.4%.[87]

Energy efficiency efforts have reduced overall Buildings sector energy intensity in terms of energy consumed per unit of floor space by 4.6% between 2000 and 2021, while the total floor space has increased by 27.3%. Over the same period, total energy consumption rose by 21.3%.[88] Energy consumption growth can be explained by economic growth, an increase in computerization of the work environment, and an increase in the number of devices per employee.

2.1.7.2 Transport

Transportation is critical to the Canadian and global economy. As a trading nation, Canada relies on a Transport sector that is globally competitive. In 2023, the broader transportation industry contributed 4% to Canada's GDP.[89]

Most transport emissions in Canada are related to road transportation, which includes personal transportation (light-duty vehicles and trucks) and heavy-duty vehicles. The general growth trend in road transportation emissions is largely due to an increase in driving: more cars and trucks using more fuel and therefore generating greater emissions. Despite a reduction in kilometres driven per vehicle, the total vehicle fleet in 2022 had increased by 27% since 2005, most notably for trucks (both light- and heavy-duty), leading to more kilometres driven overall. From 2005 to 2019, emissions from Transport have generally increased. From 2019 to 2020, the start of the COVID-19 pandemic, Transport emissions were down as travel from aircraft and light-duty on-road vehicles decreased. By 2021, Transport emissions were below 2005 levels. From 2021 to 2022, as travel demand began to return to pre-pandemic level, Transport emissions increased by 7.8 Mt, bringing them 5.6 Mt above 2005 levels.

Road Transportation

Road transportation is the largest source of passenger and freight transportation emissions in Canada: in 2022, it accounted for 61% (120 Mt) of GHG emissions in the Transport sector.[90] Road transportation is also the most important in terms of the value of goods traded between Canada and the US.[91] Canada has more than 1.13 million km of two-lane equivalent roads, roughly 38,000 km of which make up the National Highway System.[92] Of the 26.3 million road motor vehicles registered in Canada, around 91.7% are vehicles weighing less than 4,535 kg (which mainly includes passenger automobiles, pickups, SUVs, and minivans), 5.1% are medium and heavy trucks weighing 4,500 kg or more, and 3.2% are other vehicles including buses, motorcycles, and mopeds.[93]

Between 1990 and 2022, the total number of vehicles in Canada increased by 50%.[94] The stock share of electric vehicles (EVs) increased from 0.1% of motor vehicles in 2016 (approximately 29,000 EVs) to 2.3% in 2023 (approximately 550,000 EVs) for light-duty vehicles and 0.19% (approximately 4,800 EVs)

for medium and heavy-duty vehicles.[95] Electric vehicles represented approximately 12% of total new registration of light-duty vehicles in 2023.[96] Between 2005 and 2022, Canada saw road transportation emissions decrease by 1.6% from 122 Mt to 120 Mt.[97]

On-road freight accounts for 32% of the Transportation sector's share of GDP.[98] In 2020, over 54% of Canadian exports to the US were transported by trucks, representing nearly $208 billion of goods, while 71.5% of imports from the US (nearly $189 billion) were similarly transported.[99] Between 1990 and 2022, GHG emissions from heavy-duty diesel vehicles increased by 136%; however, since peaking in 2011, emissions from these vehicles have followed a downward trend.[100]

Aviation

With 37,290 civil aircrafts,[101] Canada has the second largest civil aviation aircraft fleet in the world.[102] Its commercial sector ranges from international scheduled services to small, single aircraft charter companies and business aircraft operators.[103] In 2023, airports in Canada handled 1.5 million tonnes of cargo from domestic and foreign carriers, a 1.7% increase from 2022.[104] From 2022 to 2023, the number of passengers travelling by air was up 27%.[105] In 2022, aviation accounted for around 4% of GHG emissions in the Transport sector, which are consistent with 2005 levels.[106]

Rail

The North American rail industry is highly integrated and plays a key role in serving nearly every sector of the Canadian economy.[107] The primary freight firms in Canada serve as an important supply chain link for Canada's key trade corridors and gateways. The railways reported $17.1 billion in operating revenues in 2021, with about 90% of that from freight and the remainder from passenger rail services.[108] In 2022, railways accounted for 3.5% (6.8 Mt) of GHG emissions within the Transport sector.[109] Between 2005 and 2022, GHG emissions from railways increased 4% due to more rail transport.[110]

Marine

Canada's marine industry is comprised of domestic and international marine service vessel owners and operators calling at Canadian ports to provide both domestic and international shipping services.[111] Canadian ports and harbours serve as vital links and gateways that facilitate domestic and international economic activities.[112] Canada is home to more than 560 port facilities.[113] In addition, there are 949 small craft harbours, including 691 core fishing harbours that are deemed essential to the commercial fishing industry, and 258 non-core harbours where low fishing activities occur or where the use is primarily by recreational boaters.[114] These small craft harbours represent crucial infrastructure in many of Canada's coastal communities and are often Fisheries and Oceans Canada's key infrastructure "footprint" in many remote or Indigenous communities, where economic development opportunities are often limited. In 2022, the marine industry accounted for 2.5% of GHG emissions within the Transport sector.[115] Between 2005 and 2022, GHG emissions from the marine industry increased 23%.[116]

2.1.7.3 Industrial Processes and Product Use

The Industrial Processes and Product Use (IPPU) sector covers non-energy GHG emissions that result from manufacturing processes and use of products, such as limestone calcination in cement production and the use of HFCs and PFCs as replacement refrigerants for ozone-depleting substances (ODSs). Canada's IPPU sector is diverse, with operations engaged in the production of cement, lime, mineral, ammonia, nitric acid, petrochemical products, iron and steel, aluminium, and others.[117] The total value of exports from the cement, lime, aluminum and steel production components of this sector alone

represented $24.9 billion in 2023.[118] Emissions from the IPPU sector contributed 51.3 Mt to the 2022 national GHG inventory, compared with 55.4 Mt in 2005. IPPU emissions represented 7.3% of Canadian total net GHG emissions (excluding LULUCF) in 2022.[119]

2.1.7.4 Agriculture

For emissions accounting purposes under the IPCC, the Agriculture sector includes non-energy GHG emissions related to the production of crops and livestock. Emissions from the production of machinery and fertilizer are accounted for under the Industrial Processes and Product Use sector and emissions from electricity use are reported in the Energy sector. Emissions and sequestration from agricultural soils are reported under the LULUCF sector. As such, the IPCC Agriculture sector does not reflect the full impact of agriculture on net Canadian GHG emissions or the sector's important contribution to emissions removals. For the purposes of analyzing economic trends and policies, it is useful to allocate emissions to the economic sector from which they originate. Therefore, Canada also regularly reports on agriculture as a Canadian economic sector, adding emissions from the use of fuel in farm machinery and on-farm transportation to the Agriculture sector. Emissions and sequestration from agricultural soils are reported under the LULUCF sector in both the IPCC and economic sector approaches.

In 2023, Canada's primary Agriculture sector accounted for 1.4% of GDP, while being at the heart of a broader agriculture and agri-food system. The agriculture and agri-food system represents 6.8% of total GDP, employs approximately 2.3 million people residing in Canada (one in nine jobs), and places Canada as the eighth largest exporter of agri-food, fish, and seafood products.[120] Canada's agriculture and food exports, including raw agricultural materials, fish and seafood, and processed foods, reached $99.1 billion in 2023.[121] In 2023, fish and seafood exports were valued at $7.6 billion.[122]

The Agriculture sector contributed to 7.9% of Canada's total GHG emissions in 2022. Livestock emissions, mainly from enteric fermentation and manure management, accounted for 34.8 Mt CO_2 eq while agricultural soils and field burning accounted for 18.05 Mt CO_2 eq and liming, urea application and other carbon-containing fertilizers accounted for 2.9 Mt CO_2 eq.

2.1.7.5 Land Use, Land-Use Change and Forestry

The Land Use, Land-Use Change and Forestry (LULUCF) sector reports GHG fluxes between the atmosphere and Canada's managed lands, as well as fluxes associated with land-use changes and emissions from harvested wood products (HWP) derived from these lands. This includes emissions and removals associated with carbon stock changes; emissions due to controlled biomass burning; emissions from drained organic forest soils and wetland drainage and rewetting for peat extraction purposes; and emissions released following land conversion to cropland.

The estimated net GHG flux in the LULUCF sector, calculated as the sum of CO_2 and non-CO_2 emissions and CO_2 removals, amounted to net emissions of 49 Mt in 1990, 66 Mt in 2005 and 51 Mt in 2022. For the purposes of reporting on Canada's progress towards its 2030 emissions reduction target, the LULUCF sector is included with the national total net emissions through the addition of what is termed the LULUCF accounting contribution. For more on how the LULUCF accounting contribution is calculated, see Section 2.2.

The LULUCF sector includes agricultural land, wetlands, settlements, and managed forests.

Agricultural land includes both cropland and grassland for agricultural use categories. Cropland includes all land in annual crops, summer fallow and perennial crops (mostly forage, but also including berries, grapes, nursery crops, vegetables, and fruit trees and orchards). Grassland used for agriculture is defined as unimproved pasture or rangeland that is exclusively used for grazing domestic livestock.

Croplands in Canada have an important role to play in carbon sequestration. Croplands went from a net sink in 2021 to a net source in 2022 due to severe drought conditions in the Prairies in 2021. This is expected to be temporary, and net gains due to carbon input from crop residue into soils is expected to resume as crop production stabilizes.[123]

Wetlands are areas where permanent or recurrent saturated conditions allow the establishment of vegetation and the development of soils typical of these conditions, and that are not already included in the forest land, cropland, or grassland categories. Managed lands included in the wetlands category are those where human interventions have directly altered the water table, which are inclusive of peatlands drained for peat extraction and land flooded for hydroelectric reservoirs. The settlements category includes all built-up land: urban, rural residential, and industrial and recreational land; roads, rights-of-way and other transportation infrastructure; and land used for resource exploration, extraction, and distribution (mining, oil and gas).

Canada has over 180,000 farms, covering 62.2 million hectares or 6.2% of Canada's land area.[124] Wetlands cover about 14% of Canada's land mass.[125]

Canada has 411 million hectares of forest, other wooded land, and other land with tree cover.[126] Forest land accounts for 367 million hectares.[127] This estimate is larger than previous years due to improvements and updates to data sources and calculation methodology that increased the estimate of the area of the northern "unmanaged forest."[128] Sixty-two percent (62%) of this area is considered "managed forest" (forests managed for timber and non-timber resources, including parks, or subject to fire protection) for the purposes of the GHG inventory.[129] In 2022, the Forestry industry contributed $33.4 billion to nominal GDP, supported approximately 300 forest-reliant communities, and directly employed more than 212,660 Canadians, including over 11,000 Indigenous people.[130]

Most of Canada's forest land is publicly owned: 88.4% is under provincial or territorial jurisdiction; 4% is under federal or Indigenous jurisdiction; 6.7% is privately owned; and the remaining 0.1% is under municipal or other jurisdiction.[131] By law, all publicly-owned forests harvested in Canada must be regenerated; this includes both provincial and federal Crown land.[132] Federal, provincial, and territorial legislation and regulation ensures that legal and sustainable forest management practices are followed across the country, including in the boreal forest.[133] As of December 2023, Canada had 160 million hectares of forests certified as being sustainably managed under one or more of three globally recognized certification systems, accounting for 41% of the world's certified forest area.[134]

A small portion of Canada's forests are disturbed by harvesting and other human activities each year.[135] Harvest volumes, including fuelwood and firewood, peaked at a record level of 211 million cubic metres in 2004 and were estimated to be 143.1 million cubic metres in 2020.[136] Since 1990, less than half of 1% of Canada's forest lands have been deforested.[137] Canada's annual rate of deforestation in 2021 was less than 0.02%, remaining consistent with annual rates since 2019.[138] These changes are small compared to the area of disturbances caused by fire and insects.

Canada's vast forest ecosystems are exposed to significant disturbances such as wildfire, insects, disease, and weather-related events that affect forest health and structure.[139] Despite Canada's ongoing fire suppression efforts, the annual total area burned by wildfire in the forest has increased in recent years. In 2022, approximately 5,639 forest fires burned about 1.7 million hectares in total forest (managed and unmanaged forest).[140] While forest insects are part of forest ecosystem dynamics and an integrated pest management approach is in place, pest infestations (e.g., spruce budworm, forest tent caterpillar, mountain pine beetle, and jack pine budworm) severely damaged over 15.9 million hectares across Canada in 2021.[141] Insect damage can increase the risk of wildfire, and

drought can stress trees, making them more susceptible to disease and further attacks by insects.[142] It is expected that climate change (changes in temperature, precipitation, and season length) will further exacerbate the impacts and increase frequency of natural disturbances.[143]

2.1.7.6 Waste Management

The Waste Management sector includes GHG emissions from the treatment and disposal of liquid and solid wastes. In 2022, Canadians generated 26.6 million tonnes of municipal solid waste.[144] About 40% of this waste originated from residential sources and 60% from non-residential sources.[145] Of the total municipal solid waste generated, 37% was diverted through material recovery facilities or centralized organics processing operations (i.e., recycling and composting), and 63% was sent for disposal in landfills or incineration facilities.[146] Paper fibres made up the largest portion of all diverted materials at 36% (3.5 million tonnes), followed by organic materials at 31% (3.0 million tonnes).[147]

Between 2002 and 2020, the quantity of solid waste diverted through recycling and composting increased 49%.[148] The total amount of organic waste diverted to recycling or organics processing facilities doubled between 2002 and 2018.[149] At many large municipal solid waste landfill facilities, landfill gas is captured to be flared, utilized, or both.[150] Nationally, landfill methane emissions declined between the early 1990s and 2011 due to the installation of landfill methane recovery and combustion infrastructure at very large landfills.[151] This was largely motivated by regulatory and permitting requirements in some provinces, landfill gas utilization incentives, and the sale of emission credits.[152] While emissions from municipal solid waste landfills increased by 10% between 1990 and 2022, as a result of a growing population, this increase in emissions has been offset by the increase in the capture of landfill gas at landfills.[153] From 2005 to 2022, emissions from municipal solid waste landfills decreased by 4%.[154] In 2022, 42% of landfill gas was recovered through landfill gas capture technology, compared to 23% in 1990.[155] Currently, just over half of recovered landfill methane in Canada is utilized as a renewable energy source.[156] The quantity of methane generated at an individual landfill and the economic viability of these projects are major limiting factors.[157]

2.1.8 How Canada's national circumstances affect greenhouse gas emissions and removals over time

This section addresses paragraph 60 of the MPGs.

In Canada, about 81% of emissions come from energy.[158] Canadians use more energy because of our extreme temperatures, vast landscape, and dispersed population. The challenges of transitioning to a lower-carbon energy system are numerous, but they also present opportunities for Canada to be a global leader by supporting innovative technologies in the Energy sector, including promoting our growing renewables and cleantech industries.

As mentioned in Sections 2.1.3 and 2.1.4, large distances between Canada's widespread metropolitan areas and a low population density contribute to high energy demand (and GHG emissions) related to the transportation of people and goods. When observing long-term emission trends, large-scale events can have a significant impact on a portion of the time-series analyzed and should be considered. For example, the years 2020 and 2021 were marked by the COVID-19 pandemic. This coincides with an abrupt decrease of 66 Mt (-8.7%) in total GHG emissions between 2019 and 2020, nearly half of which can be attributed to reductions in Transport emissions.[159]

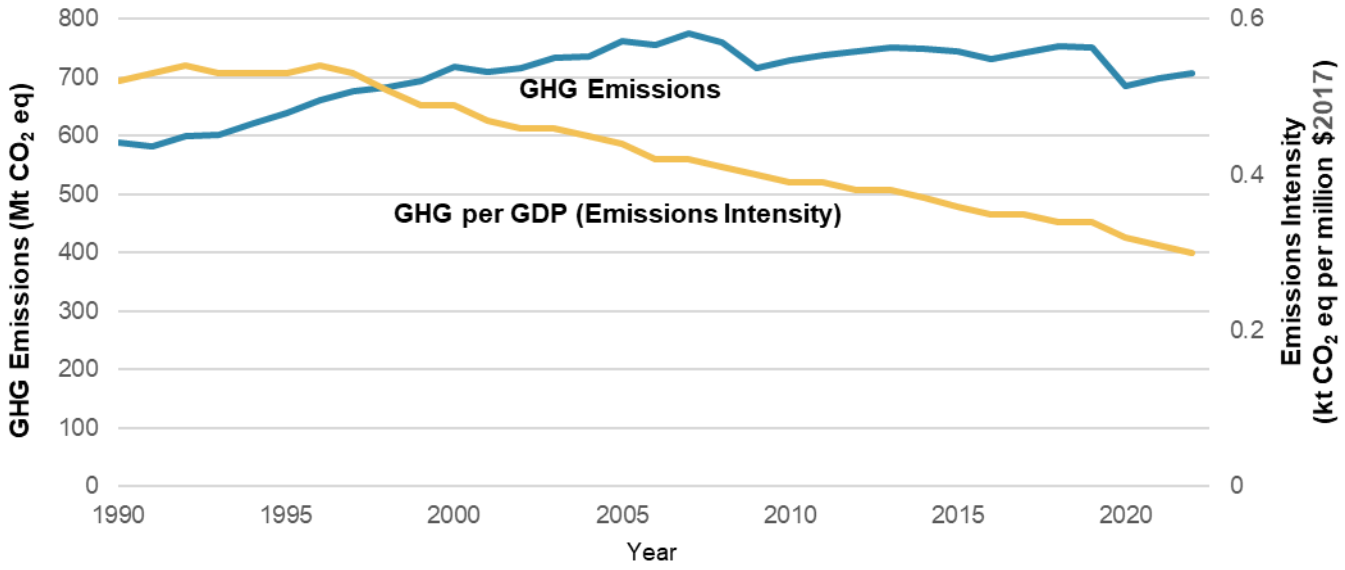
Although Canda's extreme climate contributes to making Canada a heavy energy user, particularly to heat and cool buildings (both residential and commercial), energy efficiency and energy sources have improved in recent years. In 2022, 85% of Canada's total electricity was produced from non-GHG

emitting sources, with hydroelectricity comprising most of this production, followed by nuclear.[160] The share of renewable power from sources other than hydro has been increasing steadily since 1990 while the supply generated from coal has decreased substantially over the same period.

Canada has notable regional differences. As alluded to in previous sections, emissions vary significantly by region because of local factors such as population, energy sources, and economic structure. All else being equal, economies based on resource extraction will tend to have higher emissions levels than service-based economies. Likewise, regions that rely on fossil fuels for electricity generation emit higher amounts of GHGs than those that rely more on low-emitting energy sources, such as hydroelectricity.

Between 1990 and 2022, Canada's economy grew more rapidly than its GHG emissions. As a result, the emissions intensity for the entire economy (GHG per GDP) has continued to decline, by 42% since 1990 and by 30% since 2005 (see Figure 2-3). While the COVID-19 pandemic undoubtedly impacted recent emissions, the sustained decline in emissions intensity over time can be attributed to factors such as fuel switching, increases in efficiency, and the modernization of industrial processes.

Figure 2-3: Indexed trend in GHG emissions intensity (excluding LULUCF) (1990 to 2022)[161]



2.1.9 Institutional arrangements for tracking progress made in implementing and achieving Canada's NDC

The following section addresses paragraph 61 of the MPGs.

While the Minister of Environment and Climate Change is responsible for domestic and international climate change policies, the environment is a shared jurisdiction in Canada and a range of federal, provincial, and territorial ministries work together to address this issue. Responsibility for relevant federal policies and measures is shared across the portfolios of 13 federal organizations.

The *Canadian Net-Zero Emissions Accountability Act* (the Act) received Royal Assent on June 29, 2021. In addition to formalizing Canada's net-zero by 2050 target, the Act requires Canada to set rolling five-year emissions reduction targets aligning with the NDC cycle. The Act holds the Government of Canada to account by requiring the Minister of Environment and Climate Change to report to

Parliament with respect to each national emissions target. These reports must include emissions reduction plans to achieve the targets, interim progress reports to update on the ongoing implementation and effectiveness of reduction plans, and final assessment reports to indicate whether a target has been met and to assess the effectiveness of the associated plan.

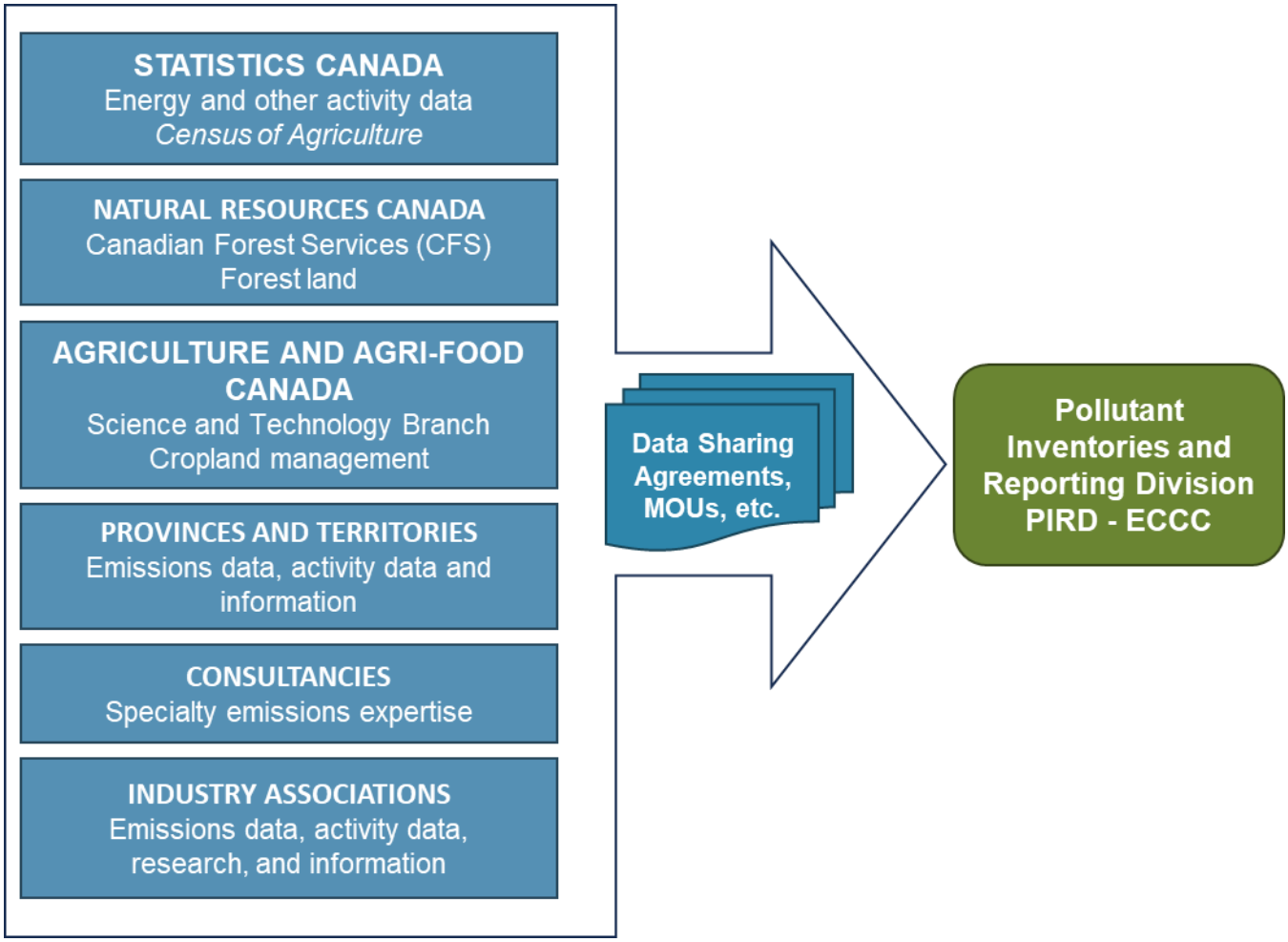
Given the many different federal departments with varying responsibilities with respect to climate change, a Deputy Ministers' committee was established to oversee the implementation of climate change-related action across government, facilitating coordination and promoting coherence across different departments. The progress of federal actions to address climate change is tracked, as well, to inform senior management governance committees, ministers, and the Prime Minister.

As Canada is still considering the potential of Article 6 towards achieving its NDC, Canada has not yet determined how it will track any internationally transferred mitigation outcomes.

2.1.9.1 National inventory arrangements

Environment and Climate Change Canada (ECCC), as the federal department responsible for preparing and submitting the national inventory to the UNFCCC, has established and manages all aspects of the arrangements supporting the GHG inventory. GHG sources and sinks originate from a wide range of economic sectors and activities. Leveraging the best available technical and scientific expertise and information, ECCC has defined the various roles and responsibilities for the preparation of the inventory, both internally and externally, and is involved in many agreements, formal and informal, with data providers and expert contributors. These include partnerships with other federal government departments, namely Statistics Canada, Natural Resources Canada (NRCan) and Agriculture and Agri-Food Canada (AAFC); arrangements with industry associations, consultants, and universities; and collaborative bilateral agreements with provincial and territorial governments. Figure 2-4 identifies the various partners in and contributors to Canada's national inventory and their contribution to its development.

Figure 2-4: Partners and contributors to National Inventory Arrangements



More details on Canada's national inventory arrangements can be found in Section 1.2.1 of Canada's *National Inventory Report 1990–2022: Greenhouse Gas Sources and Sinks in Canada*. There have been no changes to the national inventory arrangements since the submission of *Canada's Eighth National Communication and Fifth Biennial Report* in 2022.

2.1.9.2 National emissions projections arrangements

Environment and Climate Change Canada is the federal department responsible for preparing Canada's updated GHG emissions projections annually, reflecting the latest historical data and updated future economic and energy market assumptions. As such, projections fluctuate over time.

Canada's GHG and air pollutant emissions projections are derived using the Energy, Emissions and Economy Model for Canada (E3MC), which combines a detailed bottom-up simulation model with a top-down macroeconomic model. E3MC is internationally peer reviewed and incorporates external data. Projections are developed in line with generally recognized practices and according to guidelines adopted by the United Nations Framework Convention on Climate Change (UNFCCC).

ECCC works with many partners to develop the annual emissions projections, including other federal departments such as Natural Resources Canada, Agriculture and Agri-Food Canada, Transport

Canada, Statistics Canada, Finance Canada, and the Canada Energy Regulator, as well as provinces and territories.

More details on how emissions projections are developed can be found in Section 2.6 of this report.

2.1.10 Legal, institutional, administrative, and procedural arrangements for domestic implementation, monitoring, reporting, archiving of information and stakeholder engagement related to the implementation and achievement of Canada's NDC

This section addresses paragraph 62 of the MPGs.

The Government of Canada is committed to taking action to reduce emissions, protect the environment, spur clean technologies and innovation, and help Canadians and communities adapt to the impacts of climate change. In March and April 2021, the Government of Canada held a public engagement process to seek Canadians' views on enhancing Canada's NDC and how Canada can continue to increase its action on climate change, with 1,134 respondents participating in the process. Of those participating, 95% of the respondents supported Canada in enhancing its NDC. Respondents also suggested that Canada take additional climate action such as pursuing renewable energy, supporting climate-smart agriculture and conserving, expanding, and enhancing natural areas. The engagement's results cannot be projected on to the Canadian population at large since participation was a self-selection approach with inherent limits to its representativeness.

The Government of Canada also engages with stakeholders through multiple and diverse engagement processes, including advisory processes referenced in the list of policies and measures. An example of one such engagement process is how the Government of Canada has engaged directly with industry via the Multi-Stakeholder Committee on GHG Regulatory Measures and Programs and through bilateral meetings with industry. The Government of Canada established the Multi-Stakeholder Committee to serve as a forum for industry and non-governmental organization stakeholders to identify issues of interest or concern and share views on the interactions (synergistic and overlapping) among climate change programs and regulations, as well as other cumulative GHG emissions and socioeconomic impacts.

Climate action is a shared endeavor across the federal government along with provincial and territorial governments, Indigenous governments, communities, and peoples, as well as the private sector, civil society, and individuals. Federal climate action has been reported as a horizontal initiative since 2016-17 through the Clean Growth and Climate Change horizontal initiative, which tracked the climate investments linked to the Pan-Canadian Framework for Clean Growth and Climate Change. To ensure that horizontal reporting reflects the current scope and scale of activities, the horizontal initiative, Climate Change Mitigation, replaced the Clean Growth and Climate Change horizontal initiative, which published a last report on fiscal year 2022-23 activities. The Deputy Minister Committee on Climate Plan Implementation (DMCPI) provides oversight of this horizontal initiative. All departments reporting in this initiative are members of the DMCPI, co-chaired by the Deputy Minister of ECCC and the Deputy Minister of NRCan. The mandate of the DMCPI is to provide strategic oversight of, and direction on, the development and implementation of federal policies, programs, regulations, and services related to clean growth and climate change. The DMCPI is supported by the Assistant Deputy Minister Committee on Climate Plan Implementation, serving as the Steering Committee, and the Director General Committee on Climate Plan Implementation, serving as a Working Group, for multi-level and escalating oversight of implementation of the climate plan.

In 2021, the Government of Canada enacted the *Canadian Net-Zero Emissions Accountability Act*, establishing legal requirements for current and future governments to plan, report, and course correct on the path to net-zero emissions by or before 2050. In June 2024, the *Canadian Sustainable Jobs Act* was passed into law, to foster the creation of sustainable jobs, support industries and communities in every region across Canada, and help the workforce gain the necessary skills, training, and tools to fill these new job opportunities.

2.1.10.1 Canadian Net-Zero Emissions Accountability Act

The *Canadian Net-Zero Emissions Accountability Act* (CNZEAA) commits Canada to: achieving its 2030 Nationally Determined Contribution of 40% to 45% below 2005 levels under the Paris Agreement; and, setting national targets (referred to as milestone years in the Act) for the reduction of greenhouse gas emissions every five years, from 2030 to 2045, with the objective of attaining net-zero emissions by 2050. The Act provides a durable framework for accountability and transparency to deliver on this commitment, establishing a transparent process to plan, assess, and adjust the federal government's efforts to achieve Canada's national targets, which are based on the best scientific information available.

The Act holds the Government of Canada to account by requiring the Minister of Environment and Climate Change to report to Parliament with respect to each target.

For each target, the Act requires:

- an emissions reduction plan outlining the measures and strategies the Government of Canada will take to achieve the target;
- a progress report to update on the ongoing implementation of the emissions reduction plan; and,
- an assessment report to indicate whether a target has been met and to assess the effectiveness of the measures and strategies described in the associated emissions reduction plan.

Each emissions reduction plan must contain:

- the greenhouse gas emissions target for the year to which the plan relates;
- a summary of Canada's most recent greenhouse gas emissions inventory (National Inventory Report) and information relevant to the plan that Canada submitted under its international climate change commitments;
- a description of the key emissions reduction measures the Government of Canada intends to take to achieve the target;
- a description of how Canada's international commitments on climate change are taken into account in the plan;
- a description of any relevant sectoral strategies;
- a description of emissions reduction strategies for federal government operations;
- a projected timetable for implementation;
- greenhouse gas emissions projections resulting from the measures and strategies; and,
- a summary of key cooperative measures or agreements with provinces, territories, and other governments in Canada.

Each emissions reduction plan must also explain how the measures and strategies outlined in the plan will contribute to Canada achieving net-zero emissions by 2050. When developing an emissions reduction target and plan, the Minister of Environment and Climate Change must provide the provinces

and territories, Indigenous Peoples, the Net-Zero Advisory Body, and interested persons with the opportunity to make submissions. The Act also requires the Minister to take into account Indigenous Knowledge, best available science, and international commitments when setting a target.

In the event of a missed target, the Minister of Environment and Climate Change must include in the assessment report for that target the reasons why Canada failed to meet the target and describe the actions the Government will take or is taking to address the failure.

In addition to the accountability provided by setting targets and planning in an open, consultative process, the Act includes specific measures for third parties to hold the Government to account:

- The Act establishes a Net-Zero Advisory Body in legislation, to provide independent advice on targets and emissions reductions plans, including measures and sectoral strategies that the Government of Canada could implement.
- The Act requires that the Commissioner of the Environment and Sustainable Development examine and report on the Government's implementation of climate change mitigation measures at least once every five years. This measure will ensure rigorous oversight of the Government's progress toward implementation.
- The Act requires the Minister of Finance, in cooperation with the Minister of Environment and Climate Change, to publish an annual report outlining key measures that federal departments and Crown corporations have taken to manage the financial risks and opportunities related to climate change.

A comprehensive review of the Act is required every five years after its coming into force.

Public participation

Under the Act, the Minister is required to provide opportunities for the public (including provincial and territorial governments and Indigenous Peoples) to make submissions when the government is setting its emissions target or emissions reduction plans under the Act. Furthermore, the emissions reduction plans and any amendments, progress reports, and assessment reports will all be tabled in Parliament and made available to the public.

For the 2030 ERP, over 30,000 Canadians (young people, workers, Indigenous Peoples, business owners, and more) participated in the engagement process. Their key message to the Government of Canada was that climate action must go hand in hand with keeping life affordable for Canadians and creating good jobs.

Collaboration with Indigenous Peoples

Pursuant to the Act, the Minister must also take into account Indigenous Knowledge when setting a GHG emissions reduction target. The Government of Canada recognizes there is no universally accepted definition of Indigenous Knowledge in Canada or globally, and the Act itself defines Indigenous Knowledge very broadly, stating that it "means the Indigenous knowledge of the Indigenous peoples of Canada." The Government of Canada has been working with First Nations, Inuit, and Métis partners to set out a framework and a process to engage on requirements under the Act and to meaningfully involve Indigenous Peoples in setting emissions reduction targets. As stated in Canada's 2030 Emissions Reduction Plan, the Government of Canada "supports the *United Nations Declaration on the Rights of Indigenous Peoples* (UN Declaration) and acknowledges that Indigenous Knowledge systems and ways of doing must be a cornerstone of Canadian climate policy. While more work needs to be done to enable Indigenous climate leadership to be fully integrated into Canada's climate action,

Canada has an ongoing commitment to improve the reflection of the UN Declaration in all of its policy and programming and to work with Indigenous partners to better support their climate priorities."

Since the publication of the 2030 Emissions Reduction Plan in March 2022, Canada has passed into law the *United Nations Declaration on the Rights of Indigenous Peoples Act* (UNDA) and has developed an Action Plan that includes various measures linked to Canada's decision-making on climate change and environmental policy more broadly. One such measure is a commitment to jointly advance an Indigenous Climate Leadership Agenda with First Nations, Inuit and Métis partners that supports their self-determined climate priorities and action plans. This measure is part of the long-term commitment made by ECCC to advance reconciliation with Indigenous Peoples through a renewed nation-to-nation, Inuit–Crown, and government-to-government relationship based on recognition of rights, respect, cooperation, and partnership as the foundation for transformative change.

2.1.10.2 Canadian Sustainable Jobs Act

The Government of Canada is committed to ensuring that Canadian workers and industries seize the economic opportunities associated with reducing emissions, with support for the creation of sustainable jobs across regions and sectors. On June 20, 2024, the *Canadian Sustainable Jobs Act* was passed into law. This legislation will foster the creation of sustainable jobs, support industries and communities in every region across Canada, and help the workforce gain the necessary skills, training, and tools to fill these new job opportunities. The Act puts workers and communities at the centre of federal policy and decision-making by establishing a framework for accountability, a governance structure, and engagement mechanisms to guide effective federal action on this important issue.

A "sustainable job" means any job that is compatible with Canada's pathway to achieving a net-zero emissions and climate-resilient future and that reflects the concept of decent work, namely work that can support the worker and their family over time and that includes elements such as fair income, job security, social protection, and social dialogue.

The Act supports the Government in advancing the key measures under Canada's Interim Sustainable Jobs Plan released in February 2023 and outlines ongoing action to foster the creations of sustainable jobs to support low-carbon economic growth.

The *Canadian Sustainable Jobs Act*:

- requires the development of Sustainable Jobs Action Plans, starting in 2025, to deliver concrete measures to advance these goals, while ensuring an inclusive approach is followed, in line with sustainable jobs principles outlined in the Act;
- establishes Canada's Sustainable Jobs Secretariat to ensure effective collaboration and policy coherence across federal entities;
- establishes the Sustainable Jobs Partnership Council as a tripartite structure that provides advice to Government and brings workers, employers, and government, including Indigenous organizations, together to collaboratively address issues;
- works in tandem with the *Canadian Net-Zero Emissions Accountability Act* to ensure accountability and consideration of the labour implications of emissions targets and broader climate action including by designating a lead Minister that has overall accountability for the file while recognizing that many federal departments must collaborate together to achieve the purpose of the Act; and,

- identifies sustainable jobs principles that will underpin the federal government's work in this regard, including a focus on equity, diversity, and inclusion and a respect for regional differences.

The Sustainable Jobs approach and legislation are the product of a comprehensive consultation process that took place over 2021-22; the government engaged with provinces and territories, Indigenous groups, workers, key labour and industry partners, stakeholders, and the Canadian public. Key considerations also included recommendations of the Task Force on Just Transition for Canadian Coal Power Workers and Communities, as well as a report by the Commissioner of Environment and Sustainable Development.

2.2 Canada's Nationally Determined Contribution

This section addresses paragraph 64 of the MPGs.

With its enhanced Nationally Determined Contribution submitted in 2021, Canada has committed to reducing economy-wide GHG emissions by at least 40% to 45% below 2005 emissions by the single-year target of 2030. The base year emissions are the national total emissions for 2005, excluding the LULUCF sector emissions. The NDC implementation time frame is January 1, 2021, to December 31, 2030.[162] Based on Canada's accounting of its 2005 emissions in the 2024 National Inventory Report (NIR) to the UNFCCC, this is equivalent to a target of 418.5 Mt to 456.6 Mt. Canada continually looks for ways to improve its methodologies to account for historical emissions. Adopting future methodological improvements may affect the calculation of historical emissions, including 2005 emissions. This could indirectly affect the megatonnes of emissions reductions required for Canada to achieve its 2030 target. Canada will continue to pursue best accounting for its 2005 emissions and publish this in its NIRs annually.

The target covers all IPCC sectors and all major GHGs not covered by the Montreal Protocol:

- IPCC sectors: Agriculture; Energy; Industrial Processes and Product Use; LULUCF (forest land, cropland, grassland, wetlands, settlements, harvested wood products, and other lands); and Waste;
- Gases: Carbon dioxide (CO_2); methane (CH_4); nitrous oxide (N_2O); perfluorocarbons (PFCs); hydrofluorocarbons (HFCs); sulphur hexafluoride (SF_6); and nitrogen trifluoride (NF_3).

For the purpose of Canada's NDC, Canada's 2030 emissions will be its national total emissions (excluding LULUCF) plus the LULUCF accounting contribution. The LULUCF accounting contribution addresses LULUCF emissions in the base year through the accounting approach, calculating the difference between emissions in the reporting year to emissions in the base year. More information on Canada's LULUCF reporting and accounting approach is provided in Section 2.3.1.

Canada prioritizes action to reduce emissions at home but also recognizes that internationally transferred mitigation outcomes (ITMOs) could complement domestic efforts and contribute to sustainable development abroad. Efforts are ongoing to develop a federal policy on ITMOs that would determine whether and how Canada might engage in Article 6 of the Paris Agreement. Canada continues to be a strong advocate for robust Article 6 guidance to ensure environmental integrity, transparency, and the avoidance of double-counting. As of December 2024, Canada does not have any agreements in place to use ITMOs under Article 6 towards NDCs under Article 4 of the Paris Agreement.

Canada recognizes the importance of adaptation and economic diversification measures to achieve climate objectives, and the interconnectedness between nature, resilience and adaptation, and climate mitigation. Canada's NDC is an economy-wide emissions reduction target and, as such, does not consist of adaptation actions and/or economic diversification plans resulting in mitigation co-benefits. All mitigation co-benefits of Canada's national adaptation actions and economic diversification plans are reflected in Canada's national inventory and thus covered by its economy-wide emissions reduction target.

Under Canada's domestic climate accountability legislation, Canada was required to set a 2035 GHG emissions reduction target by December 1, 2024. In December 2024 Canada announced its 2035 target of 45% to 50% below 2005 levels, and plans to submit its 2035 NDC in early 2025, in accordance with timelines reflected in the adoption of the Paris Agreement.

Table 2-2: Updated description of Canada's Nationally Determined Contribution

Information	Description
Target and description	At least a 40% to 45% reduction in GHG emissions compared to 2005 levels. Canada's NDC is an economy-wide target that includes all categories of anthropogenic emissions or removals. The target covers all of Canada's economic sectors and all major GHGs not covered by the Montreal Protocol.
Target type	Economy-wide absolute emission reduction
Target year	Single-year target in 2030
Base year	2005
Base year value	As per the 2024 NIR, the national total GHG emissions (excluding LULUCF) in 2005 was 761 Mt CO_2 eq. The reference indicator will be quantified based on national total GHG emissions in 2005 reported in Canada's 2032 NIR.
Implementation period	From 1 January 2021 to 31 December 2030
Sectors	Agriculture, energy, industrial processes and product use, LULUCF, and waste.
Gases	Carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3).
LULUCF categories and pools	For the LULUCF sector, emissions and removals from the following reporting categories are included: forest land, cropland, grassland, wetlands, settlements, harvested wood products, and other lands.
Intention to use cooperative approaches	Efforts are ongoing to develop a federal policy on internationally transferred mitigation outcomes (ITMOs) that would determine whether and how Canada might engage in Article 6 of the Paris Agreement. Canada continues to be a strong advocate for robust Article 6 guidance to ensure environmental integrity, transparency, and the avoidance of double-counting. As of December 2024, Canada does not have any agreements in place to use ITMOs under Article 6

Information	Description
	towards NDCs under Article 4 of the Paris Agreement. Any use of ITMOs will be included in Canada's final accounting.
Any updates or clarifications of previously reported information, as applicable	Canada will continue to publish a GHG inventory annually in accordance with decision 1/CP.21, paragraph 31. Canada will use accounting guidance adopted by the CMA, and the reporting guidance for GHG inventories contained in 18/CMA.1. The national total GHG emissions in 2005 may be updated and recalculated due to continuous methodological improvements. Final accounting towards Canada's 2030 target, including the reference level for 2005, will take place by 2032 after publication of Canada's national inventory data for 2030.

2.3 Tracking progress made in implementing and achieving Canada's NDC

The following sections address paragraphs 65 through 79 of the MPGs.

Given the many different federal departments with varying responsibilities with respect to climate change, a Deputy Ministers' committee was established to oversee the implementation of climate change-related action across government, facilitating coordination and promoting coherence across different departments. The progress of federal actions to address climate change is tracked, as well, to inform senior management governance committees, ministers, and the Prime Minister. For more on this, see Section 2.1.10.

2.3.1 Indicator to track progress

In accordance with the Paris Agreement, Canada uses total national GHG emissions (excluding LULUCF) plus the LULUCF accounting contribution to track progress towards the implementation and achievement of its NDC. This indicator was specified in Canada's most recent NDC submission (2021).[163]

The reference indicator is quantified based on the national total emissions for 2005 excluding LULUCF, as reported in Canada's NIR. For Canada's NDC reporting, Canada's 2030 emissions, and emissions in the years leading up to 2030, will be its national total emissions (excluding LULUCF) plus the LULUCF accounting contribution. The LULUCF accounting contribution builds on the data presented in the NIR and accounts for LULUCF emissions in the base year through the accounting approach, which calculates the difference between emissions in the reporting year and the base year. For all LULUCF sub-sectors except the managed forest and associated harvested wood products, Canada's accounting uses a net-net approach, calculated as the difference between net emissions in the reporting year and net emissions in 2005. For managed forest and associated harvested wood products, Canada uses a reference level approach. This approach is internationally agreed upon and a scientifically credible way to focus on changes in human management over time. For more on LULUCF accounting, see below.

Land Use, Land-Use Change, and Forestry Reporting and Accounting

Compared to other sectors, LULUCF is unique in that both human activities and natural events and processes (e.g., wildfire, insect infestations) affect its GHG emissions and removals. LULUCF is also the only sector in the national GHG inventory that can include both emissions and removals of CO_2. For the LULUCF sector, emissions of GHGs from sources and removals by sinks are estimated and reported for five categories of managed lands (forest land, cropland, grassland, wetlands, and settlements) and for the harvested wood products (HWP) category, which is closely linked to forest land and forest conversion. The net emissions for each category are calculated as the sum of CO_2 and non-CO_2 emissions to the atmosphere and CO_2 removals from the atmosphere.

To focus reporting on human impacts, emissions and removals from forests recovering from natural disturbances beyond the control of human intervention are tracked separately. Nonetheless, natural disturbances can result in substantial emissions and subsequent removals of GHGs in managed forests and in the other sub-sectors within LULUCF.

The annual National Inventory Report (NIR) reports national totals with and without emissions and removals from the LULUCF sector. “National total emissions (excluding LULUCF)” is comprised of emissions from the Agriculture, Energy, Industrial Processes and Product Use, and Waste sectors. For the purposes of reporting on Canada’s progress towards its 2030 emissions reduction target, LULUCF emissions are included with the national total emissions through the addition of what is called the “LULUCF accounting contribution”.

The LULUCF accounting contribution builds on the LULUCF sector data presented in the NIR. For all LULUCF sub-sectors except the managed forest and associated HWP, Canada’s accounting approach compares net emissions in the reporting year with net emissions in 2005 (often referred to as a “net-net” approach) to determine the accounting contribution. Given the unique characteristics of Canada’s managed forest, which is significantly impacted by the effects of past management and natural disturbances (i.e., the age-class structure legacy effect), Canada uses the reference level (RL) approach for its managed forests (also referred to as the Forest Land remaining Forest Land (FLFL)) and the HWP obtained from it. This approach first involves defining the RL, which is a projection of emissions and removals from the managed forests and associated HWP that reflects a continuation of recent forest management policies and practices, while actual or projected emissions are based on historical activity data (or projected activity data, when historical data are not yet available). Accounting then involves calculating the difference between emissions in the reporting year and the pre-defined RL value for that year. For any given year, the difference between the two (i.e., the accounting contribution) reflects the impact of new or recent management activities on emissions relative to the impact of the management assumed in the RL. In this way, the RL approach focuses accounting on the impacts of recent human activities, in line with the principles of accounting agreed under the UNFCCC.

Canada’s RL scenario is recalculated annually to ensure consistency with the historical data used in Canada’s latest available NIR. Given the additional analysis required to calculate the LULUCF accounting contribution as well as the established timelines for receiving input on forests from provincial governments, historical emissions associated with Canada’s LULUCF accounting contribution are reported alongside Canada’s emissions projections in the fall of each year.

In 2023-24, Canada conducted a review of its GHG accounting approach for the LULUCF sector, with specific focus on FLFL and associated HWP accounting. As part of this process, Natural

Resources Canada and Environment and Climate Change Canada sought input from experts and stakeholders to inform Canada's decision on its LULUCF accounting approach. Based on internal analysis and feedback received from stakeholders and experts, the Government of Canada made the decision to maintain the current approach that applies reference level accounting to FLFL and the associated HWP and net-net accounting to all other land categories, while continuing to monitor developments related to LULUCF accounting.

Additional details on the indicator selected to track progress and definitions for understanding Canada's NDC, following guidance under the Paris Agreement, can be found in CTF Tables 1 and 2, which have been submitted electronically together with this BTR and included in Annex 2.

2.3.2 Recalculations

Canada reports its GHG inventory yearly through the publishing and submission of the NIR to the UNFCCC, in accordance with reporting guidelines on annual inventories, Decision 24/CP.19. Canada's most recent NIR was released in May 2024 and is summarized in Section 2.5 of this report. Canada reports its historical LULUCF accounting contribution annually alongside emissions projections. The most recent historical LULUCF accounting contributions are included in this report and are summarized in Section 2.3.3.

As reported in our NDC submission in 2021, the national total GHG emissions in 2005 may be updated and recalculated due to continuous methodological improvements. Continuous improvement is a good inventory practice. Environment and Climate Change Canada (ECCC) consults and works with key federal, provincial, and territorial partners, along with industry stakeholders, research centres, and consultants, on an ongoing basis, to improve the quality of the underlying variables and scientific information used to compile the national inventory. As new information and data become available and more accurate methods are developed, previous estimates are updated to provide a consistent and comparable trend in emissions and removals.

Recalculations occur annually for various reasons, such as:

- correction of errors detected by quality control procedures;
- incorporation of updates to activity data, including changes in data sources;
- reallocation of activities to different categories (this only affects subtotals);
- refinements of methodologies and emission factors (EF);
- inclusion of categories previously not estimated (which improves inventory completeness); and,
- recommendations from the UNFCCC reviews, or implementation of modalities, procedures, and guidelines for the Enhanced Transparency Framework for action and support referred to in Article 13 of the Paris Agreement.

The base year (2005) emission level in Canada's 2021 NIR, as reported in Canada's NDC, was 739 Mt CO_2 eq.

In the 2024 NIR, previously reported estimates for 1990 to 2021 were recalculated using updated data and methodologies as well as the updated Global Warming Potential, resulting in an increase in emissions estimates between 3.1% and 4.5% for every year (between 19 Mt and 31 Mt). When isolating the impact of the recalculations only, estimates increased between 1.6% and 3% (between

11.6 Mt and 19 Mt) for all years. There is a net upward recalculation of 29 Mt for the 2005 base year, meaning that the base year, as of the 2024 NIR, is 761 Mt CO_2 eq.

For more detailed information on recalculations, please refer to Chapter 8 of Canada's 2024 NIR.

2.3.3 Accounting approach

A summary of Canada's accounting approach and assumptions are included in this section. For detailed information about Canada's emissions accounting, please refer to the 2024 NIR. An overview of Canada's LULUCF accounting contribution approach is included in Section 2.3.1. Additional information on LULUCF accounting is included in Annex 4. Details on methodologies and accounting approaches consistent with the accounting guidance under the Paris Agreement can also be found in CTF Table 3 ("Methodologies and accounting approaches"), which was submitted electronically together with this BTR and included in Annex 2.

In general, estimating GHG emissions from fuel combustion activities uses a top-down method, following the Tier 3 and Tier 2 sectoral approach from the *2006 IPCC Guidelines for National Greenhouse Gas Inventories.*[164] To calculate the emissions for each source category, the quantity of fuel at the national, provincial, and territorial levels is multiplied by the corresponding fuel-specific emission factor.

The stationary combustion and transport models primarily use relational databases to process the national-, provincial- and territorial-activity data and emission factors used to estimate GHG emissions. Statistics Canada presents the national energy balance in physical units using data reported by the producing and consuming sectors. For this reason, the physical units were judged the most accurate for generating emissions estimates. Country-specific emission factors, as applied, are in physical units to minimize the number of additional conversion factors and to limit the uncertainty associated with estimates. The uncertainty of estimates is further reduced by applying available higher-resolution emission factors at the provincial and territorial level rather than the national level. Non-CO_2 emission factors address any existing combustion technology differences.

The LULUCF accounting contribution builds on the LULUCF sector data presented in the NIR. For all LULUCF sub-sectors except the managed forest and associated harvested wood products, Canada's accounting approach compares net emissions in the reporting year with net emissions in 2005 ("net-net" approach) to determine the accounting contribution. Canada uses the reference level (RL) approach for its managed forest (also referred to as the Forest Land remaining Forest Land (FLFL)) and the HWP obtained from it. This approach first involves defining the RL, which is a projection of emissions and removals from managed forests and associated HWP that reflects a continuation of historical forest management policies and practices, while historical or projected emissions are based on recent or projected activity data (when historical data are not yet available). For any given year, the difference between the two (i.e., the accounting contribution) reflects the impact of new or recent management activities on emissions relative to the impact of the management assumed in the RL. In this way, the RL approach focuses accounting on the impacts of recent human activities, including changes to harvest rates from industrial logging, in line with the principles of accounting agreed under the UNFCCC. Canada's RL scenario is recalculated annually to ensure consistency with the historical data used in Canada's latest available NIR.

While the underlying data and methodology for calculating emissions is updated yearly to stay consistent with best practices and continual improvement, most of the methods used for Canada's 2024

NIR and 2024 LULUCF accounting contribution are similar to those used when Canada submitted its NDC in 2021. The indicator was chosen and included in the submission of Canada's NDC.

2.3.4 Progress towards Canada's NDC

In 2022, Canada's total national GHG emissions excluding LULUCF were 708 Mt or 7.1% below 2005 levels. This was an increase from 2021, for which emissions were 698 Mt or 8.3% below 2005 levels. With the LULUCF accounting contribution, Canada's emissions were 5.5% below 2005 levels, compared to 12.1% in 2021. This represents an increase of 50 Mt in 2022 from 2021.

While the LULUCF accounting contribution is typically a net credit (sink) for Canada, the accounting contribution was a net debit (source) in 2022. This was mainly due to a significant one-year change in LULUCF, owing to a significant drop in carbon input from crop production in 2021 due to the drought in the Canadian prairies, which in turn led to a large increase in cropland emissions. This is not expected to be a trend that continues and the LULUCF accounting contribution is expected to return to being a net credit in future years.

Despite the increase in emissions in 2022 relative to 2021, emissions did remain below pre-pandemic (2019) emissions levels by 6.7 Mt.

Figure 2-5: Historical LULUCF accounting contribution, relative to the 2005 base year (2005=0) (Mt CO_2 eq)

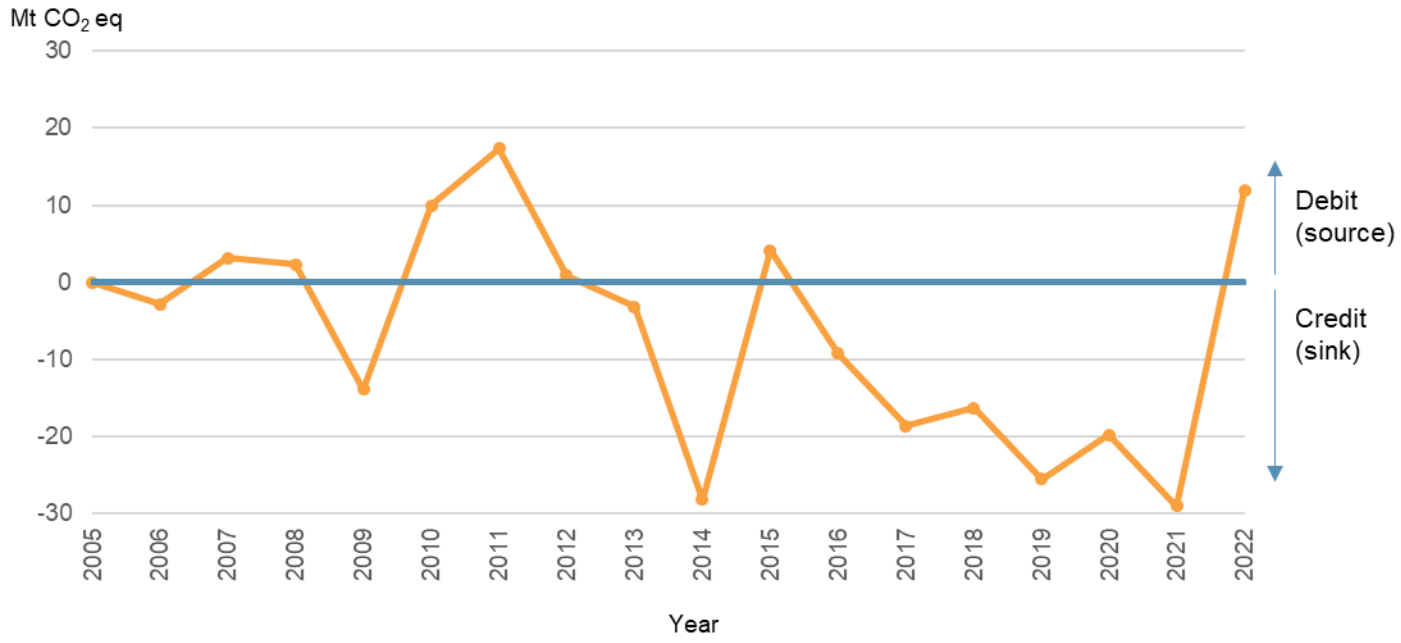


Table 2-3: Structured summary: progress towards implementing and achieving Canada's NDC

Indicator	Unit	Base year value	Values in the implementation period			Target level	Target year	Progress made towards the NDC
			2021	2022	2030			
Total GHG emissions (excluding LULUCF) plus the LULUCF accounting contribution	kt CO_2 eq	761,000	669,000	720,000	NA	At least 40% to 45% below 2005 levels	2030	The most recent level of the indicator is 5.5% below the base year level.

Note: NA: Not applicable

2.4 Mitigation policies and measures related to implementing and achieving Canada's NDC

The following section addresses paragraphs 80 through 90 of the MPGs.

This section provides a narrative overview of Canada's key mitigation policies and measures by IPCC sector, with an emphasis on measures that were recently adopted and have significant impact on sectoral GHG emissions.[165] Within this section, cross-cutting measures are provided first, and then measures are organized by IPCC sector; each section begins with key federal policies and measures, followed by provincial and territorial measures. As explained in Section 2.1.7, when sectors are referenced in Canada's climate plans, this is referring to economic sectors rather than IPCC sectors. For Canada's First Biennial Transparency Report, mitigation policies and measures are organized according to IPCC sectors. References to Canadian economic sectors remain interspersed throughout this report in recognition of the importance of economic sectors to Canada's reporting and policy development landscape.

In addition to measures that directly reduce emissions, this section provides information on key supporting and enabling measures, such as clean technology policies, investment programs, and efforts to green government operations, to provide a comprehensive overview of Canada's climate actions. Enabling measures support Canada's efforts to reduce GHG emissions through technology development and deployment, innovative financing, and by building the skills required for a low-carbon economy and to support workers. Enabling measures are not expected to generate emissions reductions directly but will support emissions reductions in indirect ways and are recognized as important to achieving Canada's climate mitigation objectives; or will generate emissions reductions that will be accounted for in one or more economic sectors (e.g., clean technologies that support emissions reductions in agriculture, heavy industry, electricity, etc.).

For a full accounting of Canada's mitigation policies and measures, see Annex 3. The annex provides comprehensive tabular information on key policies and measures planned or already implemented by federal, provincial, and territorial governments, as required by the Modalities, Procedures, and Guidelines of the Paris Agreement's Enhanced Transparency Framework.

2.4.1 Cross-cutting policies and measures

Federal, provincial, and territorial governments are implementing significant cross-cutting GHG mitigation measures that will reduce emissions across the economy. For example, carbon pricing, clean

fuels, and reducing methane emissions will enable Canada to reduce emissions in the most flexible and cost-effective way. They will also provide policy certainty to businesses and Canadians, allowing everyone to make more informed decisions as Canada's economy decarbonizes.

Putting a Price on Carbon Pollution continues to be a fundamental measure in Canada's approach to climate action, with the minimum price set at $80 per tonne of CO_2 eq in 2024 and rising by $15 per year to $170 in 2030. The carbon price is estimated to be responsible for about a third of projected emissions reductions in 2030. The federal carbon pollution pricing system has two parts: a regulatory charge on fossil fuels like gasoline and natural gas (the "fuel charge"), and a performance-based emissions trading system for industries, known as the Output-Based Pricing System (OBPS).

Canada's approach is flexible. The federal government sets minimum national stringency standards (the "benchmark") that all systems must meet to ensure they are comparable and effective in reducing GHG emissions. If a province or territory decides not to price carbon pollution or proposes a system that does not meet these standards, the federal system is applied. The federal fuel charge applies in Alberta, Saskatchewan, Manitoba, Ontario, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador, Yukon, and Nunavut. The federal OBPS is in place in Manitoba, Prince Edward Island, Yukon, and Nunavut. Carbon pricing systems in British Columbia, Alberta, and Québec as well as the federal OPBS, include the use of regulatory-grade offset credits as a compliance option. Notably, the first inter-jurisdictional offset trading within Canada has been enabled within the federal OBPS, as eligible provincial offset credits may be remitted as "recognized units" for compensating excess emissions.

The Government of Canada has been returning the majority of fuel charge proceeds collected in each of the provinces where the federal fuel charge applies to support households residing in these provinces through the quarterly Canada Carbon Rebate. This includes a 20% supplement to the base rebate amount for residents of rural areas and small communities. The Government of Canada is also providing additional targeted support to Indigenous governments, farmers, and small and medium-sized businesses by allocating a portion of the fuel charge proceeds to these groups.

Using funds collected under the federal OBPS, the Government of Canada has introduced the Decarbonization Incentive Program and the Future Electricity Fund. The Decarbonization Incentive Program will support the deployment of clean technology projects to further reduce GHG emissions by incentivizing long-term decarbonization of Canada's industrial sectors. The Future Electricity Fund will support the production and delivery of clean electricity as well as its efficient use.

Canada is leading the charge on sending the price signals needed to transform the economy. Following Prime Minister Justin Trudeau's challenge to triple the global coverage of carbon pricing to 60% by 2030 at COP26, Canada and Chile officially launched the Global Carbon Pricing Challenge at COP27. The Challenge now has 12 country Partners, and three countries have joined as Friends of the Challenge.

Canada's Greenhouse Gas Offset Credit System encourages municipalities, Indigenous communities, foresters, farmers, and other project developers to undertake innovative projects that reduce GHGs compared to business-as-usual practices. Proponents of offset projects can generate federal offset credits if they register and implement projects meeting requirements in the *Canadian Greenhouse Gas Offset Credit System Regulations* and an applicable federal offset protocol. Federal offset credits can be sold and used for compliance by facilities covered in the federal Output-Based Pricing System or sold and used by others who are looking to meet voluntary climate targets or commitments.

The *Canadian Greenhouse Gas Offset Credit System Regulations*, published in June 2022, established Canada's GHG Offset Credit System. Federal offset protocols set out the requirements for project implementation and methods for quantifying GHG emissions reductions and removals for particular offset project types. Published federal offset protocols include:

- *Reducing Greenhouse Gas Emissions from Refrigeration Systems:* creates an incentive for owners of refrigeration and air conditioning systems and other project developers to retrofit pre-existing systems or install new systems to use eligible low GWP refrigerants.
- *Landfill Methane Recovery and Destruction:* creates an incentive for landfill owners, municipalities, and other project developers to implement projects that actively recover and destroy landfill gas in an eligible destruction device, such as a flare or device for energy generation.
- *Improved Forest Management on Private Land*: creates an incentive for forestland owners and project proponents to carry out forest management activities that go beyond their business-as-usual management practices to increase the carbon stored within managed forests.

The Government of Canada is continuing to develop offset protocols for additional project types, including: Reducing Enteric Methane Emissions from Beef Cattle, Direct Air Carbon Dioxide Capture and Sequestration, Avoidance of Manure Methane Emissions through Anaerobic Digestion and Other Treatments, Enhanced Soil Organic Carbon, and Improved Forest Management on Public Land. Development of a protocol on Bioenergy Carbon Dioxide Capture and Sequestration is under consideration.

The Government of Canada is exploring measures that help guarantee the future price of carbon pollution to enhance long-term certainty. In 2023, the Government of Canada established the Canada Growth Fund, a $15 billion arm's length public investment vehicle that will help attract private capital to build Canada's clean economy by using investment instruments that absorb certain risks to encourage private investment in low-carbon projects, technologies, businesses, and supply chains. The first investment by the Canada Growth Fund was announced in October 2023. One of the investment tools the Canada Growth Fund will provide to support clean growth projects is carbon contracts for difference.

In 2017, the Government of Canada established the Canada Infrastructure Bank (CIB). An arm's length federal Crown corporation, the CIB is an impact investor delivering outcomes such as sustainable economic growth, GHG reductions, and connected communities for Canadians through infrastructure investments. The Bank has a combined long-term investment target of $25 billion across three priority sectors supporting climate action: clean power, green infrastructure, and public transit. The CIB also has a long-term target to invest in projects that result in an estimated annual emissions reduction of 15 Mt CO_2 eq. Examples of CIB areas of investment include zero-emission vehicle charging and zero-emission buses, building retrofits, energy generation and transmission, district energy, biofuels, and battery storage.

The Government of Canada is investing in climate mitigation through strategic policies and measures. Launched in June 2017 with up to $2 billion in federal funding, the Low Carbon Economy Fund (LCEF) was an important part of the Pan-Canadian Framework on Clean Growth and Climate Change. The LCEF supports projects that help reduce Canada's greenhouse gas emissions, generate clean growth, build resilient communities, and create good jobs for Canadians. These projects are critical as Canada continues to build a sustainable net-zero emissions economy by 2050. The LCEF supports projects through four different streams:

- the **Low Carbon Economy Leadership Fund,** which supports provinces and territories to help them deliver on commitments to reduce GHG emissions;
- the **Low Carbon Economy Challenge Fund,** which supports the use of proven, low-carbon technologies by a variety of organizations to reduce GHG emissions;
- the **Indigenous Leadership Fund,** which supports clean energy and energy efficiency projects led by First Nations, Inuit, and Métis governments, communities, and organizations; and,
- the **Implementation Readiness Fund,** which supports activities and investments that increase the readiness of GHG emissions reductions projects.

Spotlight on success: Canada's Low Carbon Economy Fund

The LCEF leverages further climate actions from provinces, territories, municipalities, universities, colleges, schools, hospitals, businesses, not-for-profit organizations, and Indigenous communities and organizations by providing funding for decarbonization initiatives and programs. LCEF is investing in a number of projects, including:

- Up to $3.3 million to Northwest Territories for energy upgrades to one ferry and one Marine Services tugboat in its fleet. Upgrades will include repowering vessels with more efficient engines and hydrodynamic upgrades.
- Up to $61 million to British Columbians, up to $23.8 million to New Brunswickers, up to $60.5 million to Nova Scotians, and up to $17.3 million to Newfoundlanders and Labradorians for provincial programming that supports lower-income homeowners' move from fossil fuel-based home heating to more affordable low-emitting technologies, like electric heat pumps and electric furnaces.
- Up to $1.5 million to Ontrea Inc. to decarbonize the Pacific Centre buildings in downtown Vancouver by upgrading the existing steam heating and cooling systems and improving the heat transfer efficiency of the facility's space heating system.
- Up to $6.3 million from LCEF and up to $2.1 million from the Indigenous Community Infrastructure Fund to install a solar photo voltaic system in the Peavine Métis Community located in Alberta, generating a portion of the community's energy demands via solar energy.
- Up to $1.0 million to the Children's Hospital of Eastern Ontario to install two heat pumps, reducing energy consumption at the hospital's main campus in Ottawa and optimize the HVAC systems to enhance heat recovery.
- Up to $910,000 from the Governments of Canada and British Columbia to the District of Kitimat to help develop a new compost facility to process food, yard, and wood waste.
- Up to $600,000 for the Kwadacha and Heiltsuk Nations (British Columbia) to help create and expand their organic processing capacity.

On June 20, 2024, the *Canadian Sustainable Jobs Act* was passed into law. This legislation will foster the creation of sustainable jobs, support industries and communities in every region across Canada, and help the workforce gain the necessary skills, training, and tools to fill these new job opportunities. The Government offers a broad suite of programming to support jobseekers and workers of all ages and from a variety of socio-economic backgrounds, as well as employers, unions, and training providers. Many of these programs, created in consultation with stakeholders, are already helping to advance sustainable jobs such as the Sustainable Jobs Training Fund (SJTF), which is investing over $99 million to help workers upgrade their skills and gain new skills for jobs in the low-carbon economy. Canada's provincial and territorial governments also make a significant contribution to sustainable jobs, including by providing training and education to workers across the country.

Canada's economic prosperity, both now and in the future, depends on a skilled labour force that aligns with the demands of the labour market. It also requires a strong social safety net that supports Canadians as they navigate job transitions. The Government of Canada offers a suite of skills training programs to build talent for the low-carbon economy, grow the Indigenous workforce, and increase participation of equity-deserving groups. Working with provinces, territories, unions, and industry associations, the Government supports Canadians to identify and access training, upskilling, and reskilling initiatives in key sectors.

Spotlight on success: Sustainable jobs programming

Sectoral Workforce Solutions Program (SWSP): This contributions program helps key sectors of the economy implement solutions to address their current and emerging workforce needs. It funds projects that can leverage a wide range of activities such as developing labour market information, training curricula, and tools, and implementing initiatives that support employers and workers.

Sustainable Jobs Training Fund: This new program aims to support a series of training projects that will help workers upgrade or gain new skills for jobs in the low-carbon economy. The fund focuses on low-carbon energy and carbon management, green buildings and retrofits, as well as electric vehicle maintenance and charging infrastructure.

NRCan's Science and Technology Internship Program (STIP) — Green Jobs: This program supports the transition to a net-zero future by helping employers in the natural resources sector create quality, green and sustainable jobs (up to 12 months) for young people (15 to 30 years old). As part of the Youth Employment and Skills Strategy (YESS), a horizontal initiative led by Employment and Social Development Canada that includes 11 other participating departments and agencies, NRCan's STIP — Green Jobs provides young people with on-the-job work experience and the skills needed to transition into a full-time career while supporting employers by de-risking the hiring of new and diverse talent.

Sustainable Jobs Stream of the Union Training and Innovation Program: This new funding stream aims to support a series of projects that will develop and deliver green training for journeypersons and apprentices in Red Seal trades in areas that are key to reducing Canada's emissions.

Labour Market Development Agreements (LMDAs) and Workforce Development Agreements (WDAs): The Government of Canada's largest investment in training and employment is the funding it provides to provinces and territories through bilateral labour market agreements. Canada invests nearly $3 billion annually via these agreements, which allow Canadians to access the skills training and labour market supports they need to take advantage of economic opportunities. Each year, approximately one million individuals and employers are supported under these agreements. Specifically:

- **LMDAs** provide skills development and training support to individuals who have recently lost a job or who have a connection to the EI program. Programming assists individuals to prepare for, obtain, and maintain employment. LMDAs are funded by the Employment Insurance (EI) contributions of employers and workers.
- **WDAs**, which are funded from general Government revenues, complement the LMDAs by focusing on underrepresented groups, including persons with disabilities, Indigenous Peoples, youth, older workers, and newcomers to Canada. In addition, WDAs can benefit employers by facilitating training for current or prospective employees, to enable employers to meet job demands or improve the overall skill set of their workforce.

Community Workforce Development Program (CWDP): Provides project-based funding to support workforce planning and skills training that facilitates worker transitions from declining to growth areas to meet local economic development needs. In 2022, the Government of Canada announced funding for new supplemental supports to existing federal and provincial or territorial programming, which is being delivered through the CWDP. Funding will help communities and workers affected by mass layoffs where additional support is needed to transition workers to new jobs.

Indigenous Skills and Employment Training Program (ISET): Distinctions-based program that funds skills development and job training for First Nations, Inuit, Métis, and urban/non-affiliated Indigenous Peoples. Autonomy to determine priorities and design programming that meets Indigenous Peoples' needs, which may include initiatives related to responding to labour market disruptions and net-zero transition.

Skills and Partnership Fund (SPF): Project-based fund that supports partnerships between Indigenous organizations and industry employers. Provides skills training for Indigenous Peoples in priority sectors, which include industries that support more efficient use and alternative sources of energy and resource. The call for proposals in 2022 identified the green economy as one of five priority sectors, alongside information and communications technology, infrastructure, blue economy, and Indigenous public sector.

Labour Market Information and Job Bank: Produces and disseminates labour market information products to facilitate exploration/understanding of the Canadian labour market, including work in sustainable jobs. The Job Bank platform (website and mobile app) provides an inventory of job opportunities across Canada and includes a "green jobs" search feature.

The Government of Canada is committed to innovation-backed economic development, which is being implemented through an array of federal programs and services, with support for clean technology across the innovation spectrum. Prominent federal measures, such as the Canada Growth Fund, the Strategic Innovation Fund – Net Zero Accelerator, the Energy Innovation Program and the Low Carbon Economy Fund, are propelling clean technology research, development and demonstration (RD&D) in emerging innovations and de-risking investment in clean technology deployment to guide decarbonization across industries. Underlying regulations are also providing clear signals across the innovation continuum. Beyond this, the Government continues to undertake numerous enabling actions to encourage clean technology development and adoption, including the activities of the Clean Growth Hub, Clean Technology Data Strategy, and Clean Technology and Climate Innovation Strategy.

The Net-Zero Challenge, launched by the Government of Canada in August 2022, encourages businesses to develop and implement credible and effective plans to transition their facilities and operations to net-zero emissions by 2050. It is open to all businesses with operations in Canada. The goals of the program are to reduce GHG emissions from industrial and other sectors, normalize net-zero planning so that it becomes a default business practice, and build momentum through guidance and collaboration. As of mid-2024, there are over 200 participating companies from across a wide range of industries, including transportation, construction, energy, manufacturing, engineering, education, and technology. These include, for example, ArcelorMittal Dofasco, BASF Canada, 3M Canada, Carleton University, Microsoft Canada, Canada Post, the Cement Association of Canada, CBC/Radio-Canada, General Motors of Canada Company, Shell Canada, Loblaw Companies Limited, and the international airports of Greater Toronto, Vancouver, Montreal, Ottawa, and Edmonton. In

addition, the *Standard on the Disclosure of Greenhouse Gas Emissions and the Setting of Reduction Targets* under the *Policy on Green Procurement* ensures that suppliers of Government of Canada procurement processes over $25 million adopt a science-based target to reduce greenhouse gas emissions in line with the Paris Agreement, as part of participation in the Net-Zero Challenge or an equivalent initiative or standard.

The Government of Canada's Clean Economy Investment Tax Credits (ITCs), representing $93 billion in federal incentives by 2034-35, will play an essential role in attracting investment, supporting Canadian innovation, creating jobs, and driving Canada's economy toward net-zero by 2050. The first four Clean Economy ITCs, passed into law in June 2024, include the Clean Technology ITC, the Carbon Capture, Utilization and Storage (CCUS) ITC, the Clean Technology Manufacturing ITC, and the Clean Hydrogen ITC.

The Government of Canada has committed to transition its operations to net-zero emissions and increase climate resilience, while also reducing environmental impacts beyond carbon, including on waste, water, and biodiversity. Led by the Centre for Greening Government of the Treasury Board of Canada Secretariat, the Government of Canada will ensure that Canada's government operations are net-zero, resilient, and green. The Centre for Greening Government works closely with technical departments, such as NRCan, ECCC, NRC, and PSPC, to provide expert advice and guidance to support departments in implementing the Greening Government Strategy. Consistent with the Greening Government Strategy, all departments must develop a net-zero emissions climate-resilient real property portfolio plan to create a pathway to the complete decarbonization of departmental real property holdings. This includes assessing real property to ensure future needs are met and divest surplus assets, optimize the management and energy efficiency of buildings retained, and fuel switch to low-carbon sources of energy.

Lastly, the Government of Canada is currently modernizing and expanding its National Safety and Security Fleet (NSSF) operations to protect Canadian interests at home and abroad. By 2024, NSSF departments (including the Canadian Coast Guard) will develop Operational Fleet Decarbonization Plans that outline how they will reduce their emissions from operations in line with the net-zero by 2050 target and contribute to the following interim objectives:

- By 2030, at least 20% of the total volume of annual domestic fuel purchases for NSSF air and marine operations will be low-carbon fuels.
- By 2030, the RCMP's NSSF light-duty fleet will be comprised of 50% ZEVs, increasing to 100% ZEVs by 2035.
- By 2040, the average net-emission intensity of all NSSF operations will be reduced by at least 50% on the path to net-zero emissions by 2050.

This will be achieved by measures such as low-carbon fuels, low- and zero-emission vehicles, and permanent carbon dioxide removal.

2.4.1.1 Provincial and territorial cross-cutting measures

Provinces and territories are developing and implementing their own suite of cross-cutting measures, including carbon pricing, mitigation targets and strategies, and a wide range of investment vehicles to contribute to the overall reduction of emissions and transitioning Canada's economy to net-zero. British Columbia, Québec and Northwest Territories have their own carbon pricing systems, while Alberta, Saskatchewan, Ontario, New Brunswick, Nova Scotia, and Newfoundland and Labrador have their own industrial output-based pricing systems in place alongside the federal fuel charge.

The following section provides only a glimpse of some of the cross-cutting measures provinces and territories are implementing. A more fulsome accounting can be found in Annex 3. More provincial and territorial measures are captured within the other sector subsections that follow.

British Columbia

BC has legislated emissions reduction targets of 40% below 2007 levels by 2030, 60% by 2040, and 80% by 2050, in addition to an interim emissions reduction target of 16% below 2007 levels by 2025. To help meet provincial targets, BC also established 2030 emissions reduction targets for four sectors (all with 2007 baseline):

- Transportation: 27% to 32%;
- Heavy industry: 38% to 43%;
- Oil and gas: 33% to 38%; and,
- Buildings and communities: 59% to 64%.

The CleanBC Plan and subsequent CleanBC Roadmap to 2030 (the Roadmap) outline actions to reduce GHG emissions and provide an effective blueprint to build BC's economy. The Roadmap includes a range of accelerated and expanded actions across eight pathways: low-carbon energy; transportation; buildings; communities; industry, including oil and gas; forest bioeconomy; agriculture, aquaculture, and fisheries; and negative emissions technologies. The Roadmap will strengthen action in areas already showing positive results, as well as those at the earlier stages of transition.

Ontario

Ontario's Emissions Performance Standards (EPS) program regulates GHGs from large industrial facilities. The program is an alternative to the federal output-based pricing system and helps Ontario achieve GHG emissions reductions. In December 2022, Ontario amended the EPS program to meet the federal benchmark and extend the program through the 2023 to 2030 period. On June 27, 2024, Ontario's Ministry of Environment, Conservation and Parks rolled out the Emissions Performance Program which reinvests compliance payments collected through the EPS regulation to reduce GHGs at eligible industrial facilities. This also helps facilities stay competitive while supporting economic growth.

Québec

Québec's five-year climate action plan has made it possible to achieve 67% of the province's GHG reduction target set for 2030, thanks to the implementation of new measures that have now reached maturity. This latest progress is mainly due to the:

- optimization underway of the Cap-and-Trade System for GHG emission allowances;
- introduction of program incentives to encourage the implementation of energy management systems in industry;
- future framework for the use of fossil fuels in buildings; and,
- future mandatory reporting of thermal discharges above a certain threshold.

Over the next few years, the Québec government plans to implement several initiatives that would further reduce GHG emissions in Québec. These include measures to optimize and decarbonize heavy transportation, the implementation of decarbonization plans for cement plants, and a reform of regulatory requirements surrounding the capture and recovery of methane at landfill sites. Taken

together, and according to the best available projections, the measures under review could achieve between 73% and 77% of the 2030 target.

New Brunswick

Since 2003, the New Brunswick Innovation Foundation has invested more than $175 million into startup businesses and applied research to develop a pipeline of clean technology innovation to the province. These foundation investments have attracted $852 million of additional investments. In addition, Net-Zero Atlantic delivers an Emerging Concepts and Technologies Research program to support NB-based projects that bring critical emerging technologies and concepts from the laboratory to the market. In 2024-25, $450,000 of funding is allocated for the program.

New Brunswick has developed Statements of Public Interest Regulations. Climate Change is one of the five statements to recognize and work to reduce the current and future impacts of climate change in communities. It is a public interest and priority to engage in processes of climate change mitigation and climate change adaptation.

New Brunswick has legislated a 2030 GHG reduction target of 10.7 Mt, equal to at least 46% below 2005 emissions levels, and to net-zero emissions by 2050. The 2022 Climate Change Action Plan is built around three pillars and 30 actions to ensure the province remains on track to meet the 2030 target and puts its Net Zero plan in place to meet its 2050 target.

New Brunswick introduced its Output-Based Pricing System (OBPS) on January 1, 2021, targeting facilities that emit 50,000 t CO_2 eq or more annually. Facilities emitting between 10,000 t CO_2 eq and 50,000 t CO_2 eq can also opt into the system. To maintain business competitiveness and prevent carbon leakage, the NB OBPS established an OBPS Industry Fund that redistributes proceeds from fund credit transactions to participants, with the funds directed toward supporting GHG emissions reduction projects.

Nova Scotia

Nova Scotia is addressing the urgent need to mitigate climate change through bold legislative action and strategic initiatives. The *Environmental Goals and Climate Change Reduction Act* (2021) sets the framework for the province's climate goals, legislating ambitious targets such as achieving 80% renewable energy by 2030, reducing GHG emissions by 53% below 2005 levels by 2030, phasing out coal-fired electricity by 2030, and achieving net-zero emissions by 2050.

Nova Scotia's Climate Change Action Plan, titled *Our Climate, Our Future: Nova Scotia's Climate Change Plan for Clean Growth* (2022), provides a comprehensive strategy for achieving these targets. This plan emphasizes not only reducing emissions but also creating new jobs in a clean economy, fostering resilient communities, and improving the well-being of all Nova Scotians. It focuses on leveraging the province's clean energy potential to support a sustainable and inclusive economic future.

Nova Scotia continues to make significant progress toward the goals set out in the *Environmental Goals and Climate Change Reduction Act* (2021) and the Climate Change Action Plan. As of 2022, the province achieved a 35% reduction in greenhouse gas emissions compared to 2005, emitting 14.77 Mt CO_2 eq. As of 2023, the renewable energy share in electricity has increased 42.5%, advancing closer to the goal of 80% by 2030. The adoption of electric vehicles has grown, with 1,300 new registrations in 2023, bringing the total to 4,500. Additionally, since 2023, seven more communities now have active transportation plans, totaling 36 across the province.

A part of the Climate Change Action Plan is the Output-based Pricing System (OBPS), established through amendments to Nova Scotia's *Environment Act* in January 2023, which replaces the previous cap-and-trade system for carbon pricing. This system reduces emissions while minimizing rate impacts for Nova Scotians and ensuring businesses remain competitive. The system includes emissions reduction targets, also referred to as facility performance standards. This system applies to electricity generators and large industrial emitters with facilities that release 50,000 t CO_2 eq or more in GHG annually, including carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride. Under the OBPS, facilities must comply with emissions standards set forth in the regulation or face a compliance obligation for any emissions that exceed these limits. The goal is to have large industrial emitters reduce their emissions by switching to clean energy sources and making their operations more energy efficient. In 2024, 15 facilities were registered: they must meet performance standards which limit the amount of GHG emissions per unit of electricity generated or product manufactured.

Prince Edward Island

Prince Edward Island's 2040 Net Zero Framework aims to achieve the goals and targets required to become Canada's first net-zero province. The framework focuses on six pillars: transforming the way islanders move; transitioning to cleaner and more efficient buildings; shaping agriculture for PEI's transition to net-zero; removing carbon through forestry, technology, and emerging opportunities; creating a clean industry and waste advantage; and inspiring transformational change through leadership and engagement. Each pillar is supported by specific goals and priorities, as well as sector-based targets for 2030 and 2040.

Newfoundland and Labrador

Newfoundland and Labrador's Output-Based Performance Standard requires absolute GHG emissions reductions from offshore oil and gas facilities regardless of production levels. For example, a facility's emissions must decline in absolute terms on a year-over-year basis (i.e., a declining provincial cap at a facility level), regardless of changes in production over the same period.

Announced in June 2023, Newfoundland and Labrador's Green Transition Fund will provide $100 million over 10 years to support projects for businesses, organizations, post-secondary institutions, and industry associations, as well as other collaborative efforts, to assist with the province's transition to a green economy. Contributions may be used to support continued, expanded, or new operations in the province that have a special focus on raising awareness, conducting commercial research and development, developing new markets, and other initiatives supporting the green economy.

2.4.2 Energy

The Energy sector in Canada is largely made up of Canada's buildings economic sector, electricity generation and transmission, and oil and gas production. Since policies and measures are generally developed to address economic sector-specific challenges and opportunities, the descriptions of measures will refer to their relevant economic sectors.

2.4.2.1 Buildings

Transitioning Canada's building stock to net-zero over the long term will create opportunities for more local jobs in small- and medium-sized businesses installing energy efficient equipment and insulation, work for the construction industry and trades, and increased demand for energy auditors. This will also

improve affordability through energy efficiency and accelerate private investments. The following section highlights some of the initiatives that will reduce emissions within the Buildings sector.

The Canada Green Buildings Strategy introduces Canada's pathway towards a decarbonized and resilient Buildings sector, including next steps for greener, more energy efficient, and affordable homes and buildings. Budget 2024 announced $903.5 million to implement the Canada Green Buildings Strategy. The Strategy sets out measures to accelerate retrofits of existing buildings in Canada, encourage constructing new green and resilient electric-powered buildings using low-carbon construction materials, transform how we heat buildings and the water we use, and enhance resilience of buildings to climate change. The Canada Green Buildings Strategy includes several major aspects:

- delivering the Canada Greener Homes Affordability Program (CGHAP) with $800 million in funding to help low- to median-income Canadians, including tenants, upgrade the energy efficiency of their homes (such as by installing a heat pump) to save money on their energy bills, with no cost to recipients;
- developing a regulatory framework to phase out the installation of expensive and polluting oil heating systems in new construction, as early as 2028 (this phase-out would include necessary exclusions for regions with insufficient access to the electricity grid and where standby back up heating fuel is required);
- modernizing the *Energy Efficiency Act* to update the suite of legislative tools needed to account for the realities of today's online retail environment for energy-using products and equipment; and,
- continue developing a national approach to home labelling that builds on the existing EnerGuide rating system for homes by working closely with provinces, territories, municipalities, Indigenous communities, and other housing sector stakeholders to develop a suite of common labelling standards, tools, and guidelines to support home labelling initiatives across Canada.

With around 70% of Canada's 2050 building stock already standing in 2024, retrofitting is a key strategy for reducing emissions in the Buildings sector. Natural Resources Canada's Deep Retrofit Accelerator Initiative is investing $200 million to support capacity-building activities related to the development and implementation of deep retrofit projects in commercial, institutional, and mid- or high-rise multi-unit residential buildings. In addition, through its Building Retrofits Initiative (BRI), the Canada Infrastructure Bank (CIB) has a long-term target to deploy $2 billion to $3 billion in building retrofits investments across a range of asset classes including commercial, multi-unit residential, institutional, and industrial retrofits which contribute to climate action through enabling GHG reduction measures. As of September 2024, the CIB estimates that its investments in retrofit projects to-date will result in a reduction of over 3.8 Mt CO_2 eq annually. The CIB's participation in this sector seeks to incentivize building owners and retrofitting service providers to go deeper in the scoping of their projects to address a greater proportion of the emissions.

The Canada Greener Homes Initiative, which includes both grant and loan programs, helps homeowners make their homes more energy efficient, helps grow domestic green buildings supply chains, and fights climate change. The Canada Greener Homes Grant program provided grants of up to $5,000 to help homeowners make energy efficient retrofits to their homes, as supported by EnerGuide evaluations. More than $1.4 billion in grants have already been issued, with thousands of applications still being processed. The Canada Greener Homes Loan program continues to offer interest-free loans of up to $40,000 to support energy-efficient retrofits, while grants of up to $15,000 are available to assist low- to medium-income homeowners in switching from home heating oil to heat pump systems through the initiative's Oil to Heat Pump Affordability Program.

The Government launched the Green and Inclusive Community Buildings Program in 2020 to help tackle emissions from community buildings across Canada, including community centres, sport facilities, and cultural spaces. This program originally committed $1.5 billion in federal funding over five years to projects that improve energy efficiency through retrofits, repairs or upgrades and new builds, 10% of which was reserved for projects benefiting Indigenous communities. Budget 2024 provided a $500 million top up and extended the program until March 2029.

2.4.2.2 Electricity

Canada continues to reduce GHG emissions from electricity generation and transmission. Working towards the decarbonization of the electricity grid and a net-zero emissions economy by 2050 will expand non-emitting energy across Canada, connect regions to clean power, and foster a cleaner, more reliable, and affordable electricity supply. It will also enable economy-wide electrification and help reduce emissions from other sectors, such as industry, buildings, and transportation. Some provinces and territories already have nearly completely non-emitting electricity systems, including British Columbia, Manitoba, Québec, and Newfoundland and Labrador. All provinces in Canada are continuing to take actions to increase the use of non-emitting energy through policies, initiatives, and measures such as renewable energy targets, legislated renewable portfolio standards, competitive procurement processes, net metering arrangements, equipment rebates, and tax credits.

The Government of Canada is taking concrete steps to support the decarbonization of the Energy sector. Canada released a vision document, *Powering Canada Forward*, in 2023 which outlines the Government of Canada's vision for decarbonizing Canada's grids and preparing the conditions for a net-zero emissions economy by 2050, keeping electricity systems reliable, and ensuring household energy costs are affordable. The vision document laid the groundwork for *Powering Canada's Future, Canada's first Clean Electricity Strategy*, and positions clean, reliable, and affordable electricity as the backbone of a competitive, net-zero emissions Canadian economy in the 21st century. The strategy has been informed, in part, by the Canada Electricity Advisory Council, an independent expert advisory body established with a one-year mandate (2023 to 2024) to provide advice to the Minister of Energy and Natural Resources to accelerate investment and promote sustainable, affordable, and reliable electricity systems.

The *Clean Electricity Regulations* (CER) represent part of a suite of federal measures to help drive progress towards a net-zero electricity grid while maintaining system reliability and electricity affordability for customers. Under the *Canadian Environmental Protection Act, 1999*, the CER sets an annual emissions limit for fossil fuel-fired electricity generating units over 25 MW. The CER were regulationswerefinalized in December 2024.

Phasing out conventional coal-fired electricity generation is a high priority for Canada. Coal only accounted for 4% of Canada's electricity generation supply, but 52% of electricity-related GHG emissions in 2022. The Government of Canada has passed regulations to accelerate the phase out of conventional coal-fired power plants by 2030. The federal regulatory performance standards for new natural gas units and converted coal-to-gas units complement the coal regulations and impose attainable performance standards on new natural gas generators.

To meet the rising demand for non-emitting electricity, the Government of Canada has invested in several programs to deliver more clean and reliable power. These include the Emerging Renewable Power Program (ERPP), which supports new renewable power projects to expand Canada's portfolio of commercially viable resources, and the Smart Renewables and Electrification Pathways Program (SREPs), which funds clean electricity infrastructure projects, including wind, solar, batteries, grid

modernization, and other technologies necessary for maintaining a reliable, affordable, and decarbonized electricity system. As noted above, the Government of Canada is returning proceeds collected under the federal OBPS to affected jurisdictions in support of large-scale clean energy projects through the Future Electricity Fund.

The Government of Canada is also supporting nuclear technologies within electricity systems, as part of the evolving domestic and geopolitical landscape and widespread recognition of the importance of nuclear energy in achieving our net-zero emissions goals. In December 2020, the Government of Canada launched the Small Modular Reactor (SMR) Action Plan, which provided a platform for industry stakeholders and partners to articulate their intended next steps to support the design, development, and deployment of SMRs as a potential tool to reduce emissions both domestically and abroad. As a measure emerging from the Action Plan, and in view of advancing this work, the SMR Leadership Table was established with members from utilities, provinces and territories, Indigenous Peoples and communities, industry, innovators, laboratories, and academia. In 2024, responding to the priorities and feedback of members, the SMR Leadership Table pivoted to become the Nuclear Energy Leadership Table with a broader mandate, including not just SMRs but also large-scale builds, and the broader nuclear energy sector. Workforce, supply chain, and the inclusion of Indigenous communities and partners, as well as fuel security, have factored among the forum's priorities over the last 12 months.

Over 200 remote communities in Canada depend on diesel for electricity and heat. Many of these are Indigenous communities located in remote or isolated areas from coast to coast to coast. The Government of Canada is currently supporting more than 400 renewable energy and capacity-building projects across Canada through over $500 million in federal funding under the Clean Energy for Rural and Remote Communities (CERRC) program, the Indigenous Off-Diesel Initiative (IODI), and the Northern Responsible Energy Approach for Community Heat and Electricity (Northern REACHE) program. Starting in 2022, the Government of Canada has also implemented *Wah-ila-toos: Clean Energy Initiatives in Indigenous, rural and remote communities*, a single-window approach for Indigenous, remote, and rural community applicants to access multiple federal funding programs to support their clean energy priorities.

Spotlight on success: Clean Energy — Strategic Partnerships Initiative

The Strategic Partnerships Initiative (SPI) is a horizontal federal program which works to increase and support Indigenous participation in large, complex, multi-year economic development opportunities that span across a variety of sectors in Canada.

Budget 2021 committed $36 million over three years to build capacity for local, economically-sustainable, clean energy projects in First Nation, Inuit, and Métis communities. Budget 2024 renewed the SPI's clean energy funding of $36 million over three additional years. This funding will support existing initiatives, as well as develop a new regional Indigenous clean energy initiative in Ontario.

- This funding has enabled six regional clean energy initiatives in the Atlantic, Québec, Manitoba, Saskatchewan, Alberta, and British Columbia regions, and supported a partnership with the national Indigenous Clean Energy social enterprise (ICE).
- To date, these regional initiatives have benefited 112 communities, developed 50 partnerships, created 2,148 jobs, and provided 111 training opportunities.
- SPI is never the sole funder of an initiative, as it is designed to leverage sources of investment and support. In 2023-24, for every $1 in SPI Clean Energy (SPI-CE) funding, an additional $6 was leveraged to advance Indigenous participation in clean energy-related economic development opportunities.
- SPI-CE has supported initial development activities within communities to promote economic development, advancing projects such as solar farms, wind projects, biomass generation, and hydrogen. Two example projects from the British Columbia Indigenous Clean Energy Initiative (BCICEI) include:
    - Tla-o-qui-aht First Nation's Winchie Creek Hydro, a 4.1 MW project that supports electrical engineering design; and
    - Tsilhqot'in National Government Solar Farm, which is a 1.25 MW solar photovoltaic farm near Hanceville, BC that is estimated to create $175,000 in annual revenue.
- This investment plays a role in the advancement of Canada's Strengthened Climate Plan, Indigenous Climate Leadership Agenda, and Canada's net-zero economy targets.

Building regional interties allows distribution or redistribution of abundant non-emitting power to regions with more emissions-intensive grids. The Government of Canada has been working with provinces and territories, as well as the Canada Infrastructure Bank, to make progress on regional interties. An Electricity Predevelopment Program is supporting predevelopment activities associated with clean electricity infrastructure projects of national significance, such as grid interties and small modular reactors.

Budget 2023 identified the CIB as "the government's primary financing tool for supporting clean electricity generation, transmission, and storage projects," and increased the CIB's long-term investment target in the clean power priority area to $10 billion. As of September 2024, the CIB has invested over $4.1 billion in 16 clean power projects across the country, towards a total value of $8.4 billion in new infrastructure.

Budget 2024 continued to deliver on the $93 billion suite of major economic investment tax credits (ITC), including announcing implementation and delivery details for the Clean Electricity ITC, to drive clean growth, secure the future of Canadian businesses in Canada, and create good jobs for generations to come.

2.4.2.3 Oil and Gas

On the path to net-zero emissions by 2050, the world is moving to reduce emissions generated by the production and consumption of fossil fuels and is increasingly using low-carbon energy sources to power and fuel transportation, homes, and industry.

As a major economic contributor to Canada and its largest source of greenhouse gas emissions, the Oil and Gas economic sector has a critical role to play in meeting the country's climate objectives. Canada is committed to the goal of lowering emissions from the Oil and Gas sector at a pace and scale needed to achieve net-zero emissions by 2050 to make a meaningful contribution toward Canada's 2030 emissions reduction target.

The proposed *Oil and Gas Sector Greenhouse Gas Emissions Cap Regulations* would establish a national cap-and-trade system that would apply to upstream oil and gas activities including onshore and offshore oil and gas production; oil sands production and upgrading; natural gas production and processing; and the production of LNG. The proposed Regulations have been developed under the *Canadian Environmental Protection Act, 1999* (CEPA). Since 1988, CEPA has been used to address a wide range of environmental issues, including air pollution, chemicals, plastics, and GHG emissions.

- The cap-and-trade system will freely allocate emissions allowances to operators covered by the system. At the end of each year, each operator will need to remit to the government one allowance for each tonne of carbon pollution it has emitted. Over time, the government will give out fewer allowances, corresponding to the declining emissions cap.
- Operators will face an ongoing incentive to reduce their emissions. If an operator does not have enough allowances to cover their emissions, they will be able to buy allowances from other operators that have invested in pollution reduction. Operators can also contribute to a decarbonization program or use GHG offset credits to cover a small portion of their emissions (up to 10% for the decarbonization program and up to 20% for offsets, for a maximum of 20% for both options). The decarbonization program would fund projects that support the reduction of emissions from the sector. The total of all allowances and the overall 20% limit on compliance flexibility creates a legal upper bound on emissions from the sector.
- The oil and gas GHG pollution cap will limit emissions, not production, and will encourage industry to reinvest into projects that lower pollution while providing flexibility to respond to changes in the global market.
- To make sure the oil and gas GHG pollution cap accounts for current activity levels, the proposed Regulations would use data reported by operators for 2026 to set the first oil and gas GHG pollution cap level. The oil and gas GHG pollution cap for the first compliance period, 2030 to 2032, would be set at 27% below emissions reported for 2026, which is estimated to be equivalent to 35% below 2019 emissions.
- Using 2026 for reported data means the oil and gas GHG pollution cap would be based on real-world conditions. The final oil and gas GHG pollution cap level would be published before the end of 2027.
- The proposed Regulations allocate allowances to covered operators using specified distribution rates, defined in allowances per unit of production, for each type of covered activity. Allowances will be distributed before the start of each year (starting in 2029 for 2030, the first compliance

year). To ensure that allowances are distributed to the level of the emissions cap for each year, the allowances distributed would be pro-rated across all facilities receiving them.

The system would be phased in for the first four years (2026 to 2029). During that period, operators would be required to register and report their emissions and production. Large emitters will start reporting in 2027 for their 2026 emissions and production levels. Reporting for small operators would start in 2029 for their 2028 levels. Operators would need to submit verified annual reports to Environment and Climate Change Canada for their facilities for every calendar year. Reports would be due on June 1 of the following year. The reports would be used to identify which operators will be subject to the pollution cap and have remittance obligations.

The proposed cap will put the sector on a pathway to carbon neutrality by 2050, while enabling it to continue to respond to global demand. The GHG oil and gas pollution cap adds to a suite of policy measures, which are designed to shift the oil and gas industry increasingly toward cleaner production through the use of carbon management systems and other technologies, including to reduce methane emissions and to switch to cleaner fuels. Those include other successful regulatory measures, such as federal, provincial, and territorial carbon pricing systems for industry, including Alberta's Technology Innovation and Emissions Reduction (TIER) system, the federal Output-Based Pricing System, federal and provincial methane regulations, and the *Clean Fuel Regulations*.

Carbon capture is also going to play an increasingly important role in reducing emissions from oil and gas production, and Canada is well placed to cement its position as a global leader in this critical technology. According to both the Intergovernmental Panel on Climate Change (IPCC) and the International Energy Agency (IEA), there is no credible path to carbon neutrality without carbon management technologies, such as carbon capture and storage, and their deployment must be rapid and immense, scaling up by nearly 200 times by 2050.

The shift toward a low-carbon economy has created a rush of capital toward carbon management technologies worldwide. In the United States, there are many new carbon capture projects being deployed, with 150 currently under review at the US Environmental Protection Agency. Canada has already established itself as a first mover and leader in the global carbon management industry, with some of the world's first large-scale projects; favourable geology; cutting-edge innovators and start-ups; early investments in research, development, and demonstration; deep technical expertise; a robust policy and regulatory environment at the federal and provincial levels; and active international collaboration. The Government of Canada has launched a suite of policies with a mix of financial supports and regulatory measures to better position Canada's economy for success.

Approximately one-sixth of the world's active large-scale carbon management projects, which use a range of approaches to capture carbon dioxide from point sources or directly from the atmosphere to be reused or durably stored, can be found in Canada, with a growing number in the construction, design, and development phase across multiple industries and regions.

The continued development and deployment of carbon management technologies to help achieve Canada's climate objectives will form the basis of a world-leading, multi-billion-dollar carbon management industry in Canada that supports inclusive, high-value employment, significant export opportunities and a more sustainable economy. Point-source carbon capture is a leading option for deep emissions reductions from the upstream Oil and Gas sector. Given the long lifespan of many existing heavy industrial facilities and the value of these industries to the Canadian economy, public–private collaboration is critical to advance strategic, economical, and regionally-appropriate decarbonization pathways.

The Oil and Gas sector is Canada's largest source of methane emissions, responsible for approximately half of total methane emissions in Canada.[166] Current federal regulations are in place to reduce oil and gas methane emissions by 40% to 45% below 2012 levels by 2025, with provincial regulations also driving this outcome. Alongside Canda's endorsement of the Global Methane Pledge in 2021, Canada strengthened its oil and gas methane target to at least a 75% reduction below 2012 levels by 2030. In December 2023, Canada proposed amendments to strengthen the existing oil and gas methane regulations by increasing the stringency of the requirements and expanding the scope of application to virtually every facility that handles natural gas in oil and gas production and transmission. The proposed regulations are expected to be finalized in winter 2024-25, with implementation of the requirements to be phased in between 2027 and 2030. These regulations are part of the implementation of *Further and Faster: Canada's Methane Strategy,* published in 2022.

Spotlight on success: The Emissions Reduction Fund

The Emissions Reduction Fund was introduced in 2020 to support capital investments, clean technology deployment, and research, development, and demonstration (RD&D) to reduce methane and other GHG emissions from onshore and offshore oil and gas operations. The program's funding ended in fiscal year 2022-23, with all projects completed by March 31, 2024. The fund had three streams: onshore deployment, offshore deployments, and offshore RD&D.

The Onshore Deployment Program was a $675 million investment supporting the deployment of clean technologies and infrastructure to reduce or eliminate methane emissions from upstream and midstream oil and gas operations. As of March 31, 2024, the program provided $170 million to support 91 projects in Western Canada. Total anticipated GHG emissions reduction is 4 Mt CO_2 eq in the first 12 months after project completion dates.

The Offshore Deployment Program was a $42 million investment supporting the deployment of technologies to reduce direct and indirect GHG emissions stemming from offshore oil and gas operations.

The Offshore RD&D Program was a $33 million investment supporting RD&D projects that advanced solutions to decarbonize Newfoundland and Labrador's offshore oil and gas industry. It was delivered by NRCan in collaboration with Energy Research & Innovation Newfoundland & Labrador. The 18 funded RD&D projects were successfully completed by March 2023.

The Government of Canada has delivered on its G20 commitment to phase out inefficient fossil fuel subsidies in 2023 through the application of an Assessment Framework to existing tax measures and non-tax measures and by releasing the Inefficient Fossil Fuel Subsidies Guidelines. The Assessment Framework is the tool that determines whether a tax or non-tax measure constitutes an inefficient fossil fuel subsidy. Fossil fuel subsidies are considered inefficient unless they meet one or more of six criteria. The Guidelines, which have been in effect since their release, direct federal departments and agencies to align all future government supports with the Assessment Framework. The Guidelines can be updated at any point to ensure alignment with government commitments and technological developments. Canada has also committed to developing a plan to phase out public financing of the fossil fuel sector.

2.4.2.4 Provincial and territorial energy measures

Canada's provinces and territories are doing an immense amount of work to decarbonize, modernize, and support clean growth in the Energy sector.

British Columbia

British Columbia's *Building Green Code* has been working to improve energy efficiency in the Buildings sector, including for large residential, industrial, and commercial buildings, houses, and small buildings, as well as in public sector buildings, including a LEED Gold requirement and research on low-carbon building material options. British Columbia introduced the *Energy Step Code* in 2017 to improve the BC Building Code in phases so that all new construction is net-zero energy ready by 2032, and a Net-Zero Energy Ready Building Design Incentive. In 2023, British Columbia introduced the *Zero Carbon Step Code*, which will phase in requirements so that all new construction is zero carbon by 2030.

British Columbia's Energy Objectives under the province's *Clean Energy Act* were updated in 2024 to reflect the target of 100% clean or renewable electricity generation by 2030 and ensure that the infrastructure to transmit that electricity is built. Objectives were added to ensure that BC Hydro's rates are reasonably predictable and consistent from year to year, and that increases do not exceed cumulative inflation during the period starting in 2017. In June 2024, the Province released *Powering Our Future: BC's Clean Energy Strategy,* outlining actions to accelerate the shift to clean energy and create new opportunities for people and communities throughout BC. BC Hydro has a Clean Electricity Standard, announced a call for 3,000 GWh/year of new clean renewable energy production, and released an updated 10-year capital plan which includes approximately $36 billion in community and regional infrastructure investments.

In March 2023, British Columbia announced a new Energy Action Framework to ensure that Oil and Gas sector projects fit within the province's climate commitments and create new opportunities for people in clean energy and technology. Under the framework, British Columbia will require all new proposed LNG projects in or entering BC's environmental assessment process to pass an emissions test with a credible plan to be net-zero by 2030 and is planning a regulatory cap on emissions from the Oil and Gas sector. In addition, British Columbia will be developing and implementing a Climate-Aligned Energy Framework, with an overall goal of maximizing production of clean energy for use at home and for export. *Powering Our Future: BC's Clean Energy Strategy* (2024) outlines actions to accelerate the shift to clean energy, including BC Hydro's updated plans to build out the electricity grid with almost $36 billion in community and regional infrastructure investments across the province.

In 2018, British Columbia introduced *Methane Reduction Regulations* through amendments to the province's *Drilling and Production Regulation*. The policy aims to reduce methane emissions from upstream oil and gas operations in order to meet or exceed federal and provincial methane emissions reduction targets. Amendments to the *Drilling and Production Regulation* in 2024 put British Columbia on track to achieve the 2030 reduction target and align with the near-elimination target.

British Columbia is pursuing carbon capture and storage opportunities with industry and has a robust Regulatory Framework for Carbon Capture and Storage in place. Work is ongoing to improve and clarify regulatory guidance, fiscal supports, and communications, to provide certainty to industry, increase Indigenous capacity to participate in the sector, and further encourage all types of carbon capture and storage projects to proceed. British Columbia is also developing a Carbon Capture and Sequestration Offset Protocol, a draft of which was released for consultation in fall 2023, and a 'What We Heard' report released in June 2024. Publication is anticipated in 2025.

In partnership with Canada, British Columbia has established the BC Centre for Innovation and Clean Energy (CICE), which operates as an independent, not-for-profit corporation dedicated to scaling BC's most impactful decarbonization solutions

from Canada to the world. The CICE is funded by British Columbia, the Government of Canada, and Shell. The CICE provides early-stage funding to accelerate commercialization and leads non-dilutive investment in clean energy innovation areas where the lack of traditional revenue metrics is a common barrier. Working closely with industry, investors, government, academia, and Indigenous rights-holders to de-risk the adoption of clean energy innovation, CICE is advancing the world toward a net-zero economy that draws on BC's advantages, attracts investments, and creates high-paying green jobs. As of August 2023, CICE has funded $12.8 million in BC-based clean energy projects totaling $58.3 million.

Alberta

Albert's *Geothermal Resource Development Act* has established a clear and responsible path forward for geothermal projects. Encouraging geothermal development, which has one of the lowest impacts of any renewable energy source, will help further Alberta's commitment to responsible energy production. Researchers have identified more than 6,100 MW of thermal power capacity and more than 1,150 MW of technically recoverable electrical power capacity potential across several municipal districts in western Alberta.

Alberta was the first regional government in North America to commit to a methane emissions reduction target for the Oil and Gas sector. Alberta's Methane Emission Reduction Regulation targets a 45% reduction of methane levels from oil and gas operations by 2025. In its 2023 Emissions Reduction and Energy Development Plan, Alberta signaled intent to consult interested parties to explore options to achieve a 75% to 80% reduction in methane emissions from the conventional Oil and Gas sector by 2030. In addition, CCUS is central to Alberta's efforts to reduce emissions. To enable more CCUS projects and help meet the growing demand for carbon storage, Alberta is issuing carbon sequestration exploration agreements through a competitive process. Proposals for 25 CCUS hubs approved in 2022 are moving to the evaluation stage. These hubs could facilitate decarbonization plans for the oil sands and for industries that include power, clean hydrogen, petrochemicals, upgrading and refining, cement, steel, fertilizer, biodiesel production, and gas processing.

Saskatchewan

Saskatchewan has been a leader in adopting the most recent edition of the National Building Code to improve energy efficiency standards for houses, as well as small and large buildings. SaskEnergy and SaskPower offer several programs to support energy efficient retrofits in homes and commercial buildings, encourage homes to be built to a higher efficiency level than the minimum building code, and facilitate energy efficiency upgrades in Indigenous communities.

Saskatchewan's 2024 Provincial Budget announced a $140 million Clean Electricity Transition Grant to SaskPower to support the province's transition to an affordable and reliable clean electricity grid. The 2024 Budget also allocated $242.1 million (including forecasted invested income) to a Small Modular Reactor Investment Fund to support the future development of Saskatchewan's first small modular nuclear reactor.

Saskatchewan's Methane Action Plan (2019) includes regulations to reduce GHG emissions from venting and flaring in Saskatchewan's upstream Oil and Gas sector by 4.5 Mt per year by 2025. In addition, Saskatchewan's *Oil and Gas Emissions Management Regulations* (OGEMR) have succeeded in reducing methane emissions from the upstream Oil and Gas sector by 67%, or 7.3 Mt CO_2 eq, from 2015 levels.

Ontario

In March 2023, Ontario launched a voluntary Clean Energy Credit (CEC) registry that provides businesses with a tool to meet their environmental and sustainability goals and demonstrate that their electricity has been sourced from clean resources. Net proceeds from the sale of CECs from Ontario Power Generation and the Independent Electricity System Operator will be directed to the Future Clean Electricity Fund (FCEF), once established, which will help keep costs down for ratepayers by supporting the future development of new clean energy projects in Ontario.

New Brunswick

In November 2022, the Government of New Brunswick and NB Power announced a total investment of $70 million to launch the Enhanced Energy Savings Program. The program helps lower- and middle-income homeowners transition away from electric baseboards and home heating oil by offering free heat pumps and upgraded insultation.

In December 2023, the Government of New Brunswick released its strategy for transitioning the province to clean energy: *Powering our Economy and the World with Clean Energy – Our Path Forward to 2035*. This 12-year energy roadmap will support strategies for how the energy landscape will transition in New Brunswick and how energy reliability, sustainability, and affordability goals will be achieved. The energy roadmap sets a clear path to build new non-emitting electricity resources, integrating 1400 MW of new wind, 200 MW of grid-scale solar, 300 MW of behind-the-meter solar, and 600 MW of new nuclear over the next 12 years.

Nova Scotia

The Nova Scotia's *2030 Clean Power Plan* lays out the path to phase out coal and achieve 80% renewable electricity by 2030. Key to this transition is increasing wind energy generation to meet at least 50% of the province's electricity needs and integrating large-scale solar projects. The plan also focuses on strengthening grid resiliency and reliability, with strategic investments in innovative battery storage (300 MW), fast-acting generators (300 MW), and a new 345kV reliability line to New Brunswick (500 MW+). Additional measures include retaining 450 MW from oil/gas plants for emergencies and implementing load management solutions to reduce peak demand by 150 MW. Together, these actions aim to cut electricity-related GHG emissions by 90% while ensuring a stable, reliable energy supply.

Nova Scotia's *Electricity Act* enables residents to generate their own renewable energy, such as through solar panels, and manage their energy consumption more effectively. This ensures the right to net metering, allowing homeowners to offset their electricity costs, including bringing the energy portion of their bill to zero if sufficient renewable power is generated. Recent amendments to the Act in 2022 and 2023 introduced significant updates to support renewable energy development, including the creation of a Hydrogen Innovation Program. This new program allows hydrogen facilities to connect to the electrical grid for hydrogen production and processing. The Minister of Natural Resources and Renewables will oversee the program, establishing specific requirements and conditions for hydrogen facilities, as well as approving applications from operators who meet the necessary standards. This initiative aims to facilitate the growth of hydrogen energy in the province. The amendments also empower the Minister to direct public utilities to enter into sales agreements for energy produced by specific generation facilities. This ensures that the output from these facilities is sold to designated customers, providing greater control over energy distribution and supporting the province's renewable energy goals. Additionally, these changes grant the Governor in Council the ability to approve energy-storage projects owned by public utilities, provided they benefit ratepayers. These projects will be

subject to specific terms and conditions, such as project size and location. These updates represent a critical step forward in Nova Scotia's commitment to fostering a cleaner, more sustainable energy future. As established in the Act, in 2023, the Nova Scotia government introduced the Green Choice Program, facilitating the purchase of 100% renewable electricity for government operations. Additionally, in 2024, the Community Solar Program was launched to support community groups and businesses in setting up solar projects.

Under the *Electricity Act*, Nova Scotia's Rate Base Procurement (RBP) program aims to secure 1,100 MWh of low-cost renewable electricity, supporting climate goals and promoting investment and job creation in the province. In 2023, the program selected four renewable projects totalling 306 MW or 1,165 GWh annually equivalent to around 11% of Nova Scotia's electricity consumption. The RBP projects, expected to be operational by 2025, are anticipated to save ratepayers $100 million annually and reduce GHG emissions by over one million tonnes per year. Notably, the projects are majority-owned by Mi'kmaq communities, integrating diversity, equity, and community benefits. Each project will operate under a 25-year Power Purchase Agreement with Nova Scotia Power and will comply with all regulatory, permitting, and environmental requirements.

Nova Scotia created a Clean Fuels Fund to support industries and businesses in adopting low-carbon and renewable fuels such as green hydrogen, renewable natural gas, biofuels, and sustainable biomass. Through the new Clean Fuels Fund, the Department of Natural Resources and Renewables invested $3 million in seven ready-to-launch clean fuels projects. The awarded projects will receive up to 75% of project costs, up to a maximum of $1 million to do the work needed to transition to cleaner fuels for heating, transportation, and industrial processes.

In 2022, Nova Scotia invested $140 million in two programs to help low- and middle-income Nova Scotians move away from home heating oil faster. Low-income households can now apply to the Home Warming program for free heat pumps and any electrical panel upgrades needed to install them. Households that have already received energy efficiency upgrades through this program can apply again for this new support. All Nova Scotians can receive support for a variety of energy efficiency upgrades through the Home Energy Assessment program. It is the first step to accessing rebates or loans through the Canada Greener Homes Initiative. The new funding will provide extra support for middle-income households to get rebates when they install energy efficient heating systems and other upgrades that reduce their reliance on heating oil. When combined with federal investments from the Low Carbon Economy Fund and the Canada Greener Homes Initiative, these provincial programs will help about 13,500 low-income households and about 30,000 middle-income households reduce their greenhouse gas emissions and energy bills.

Nova Scotia's Offshore Wind Roadmap, released in 2023, establishes the framework for building wind farms in ocean waters. It will help the province achieve the goal of issuing leases for five gigawatts of offshore wind energy by 2030. Nova Scotia is actively collaborating with federal partners and the future regulator, the Canada-Nova Scotia Offshore Petroleum Board, to develop comprehensive legislative and regulatory frameworks. These frameworks will guide licensing and calls for bids in Nova Scotia's offshore wind sector. Additionally, the Department of Natural Resources and Renewables is engaging with stakeholders and rights holders to ensure the development process includes multiple voices and perspectives.

In December 2023, Nova Scotia released the *Green Hydrogen Action Plan*. It has seven goals and 23 actions to develop a green hydrogen sector in Nova Scotia, including actions focused on safety,

developing a skilled workforce for industry, research and innovation, and opportunities for public engagement.

Newfoundland and Labrador

In collaboration with Natural Resources Canada and Environment and Climate Change Canada, Newfoundland and Labrador announced approximately $130 million towards the implementation of a new fuel switching and energy efficiency incentive program until March 2027. The new Oil to Electric Incentive Program will provide incentives to oil-fueled homeowners with rebate amounts of up to $22,000. This will help transition approximately 10,000 homes (25% of provincial oil-heated homes).

Prince Edward Island

Prince Edward Island has developed a suite of free programs focusing on electrification and efficiency for income-qualified island residents to address climate action and energy poverty. These programs include free heat pumps, free insulation, and free electric hot water heaters. Since the programs' inception in 2021, over 7,000 free heat pumps have been installed with a further 7,000 predicted by the end of the 2023-24 fiscal year.

Yukon Territory

In its climate strategy, *Our Clean Future*, Yukon committed to setting a minimum regulatory requirement for the Yukon Energy Corporation (YEC) to generate an average of at least 93% of electricity from renewable sources on the main grid, with an ideal of reaching 97%. YEC's ten-year renewable electricity plan proposes key projects and partnerships needed by 2030 to address the policies and actions contained in *Our Clean Future*. Among these is sourcing renewable electricity from the Haeckel Hill wind project, which was completed in the spring of 2024 and consists of four one-megawatt wind turbines. This is enough to power 650 Yukon homes. The project is owned and operated by Eagle Hill Energy Limited Partnership, a wholly owned subsidiary of the Chu Niikwan Limited partnership, the business arm of the Kwanlin Dün First Nation. The federal government has provided approximately $26 million for the wind project: close to $10 million through Clean Energy for Rural and Remote Communities, approximately $13 million through the Arctic Energy Fund, and close to $5 million through the Canadian Northern Economic Development Agency. The Yukon Development Corporation provided $485,000. The Eagle Hill Energy Limited Partnership contributed over $2 million.

Northwest Territories

With up to $30 million committed by the federal government under the Investing in Canada Infrastructure Program, the Government of the Northwest Territories has built a 3.5-megawatt wind turbine associated with a battery storage system in Inuvik. A key initiative under the *2030 Energy Strategy*, the Inuvik Wind Project is expected to reduce diesel consumption in Northwest Territories' largest off-grid community by approximately 30% or 3 million litres of diesel per year. Commissioned in November 2023, it will help stabilize the cost of electricity in the community, while reducing GHG emissions by 6,000 t CO_2 eq every year.

Nunavut

Nunavut is administering two renewable energy support programs, the Renewable Energy Homeowners Grant Program and the Renewable Energy Cabin Grant Program, to assist owners to install renewable energy systems at their homes or cabins. Nunavut is also partnering with Qulliq

Energy Corporation and Nunavut Housing Corporation to deliver an energy conservation awareness campaign.

2.4.3 Transport

It is necessary to decarbonize the Transport sector in Canada to meet national climate objectives, through actions such as increasing the share of ZEVs on the road,[167] investing in transitory and long-term clean fuels for all transportation modes (including established fuels for small ground transportation, sustainable aviation fuel for air travel, and biofuels for the marine and rail sectors), and enabling active and public transportation.

Action can and is being taken by individual consumers, private companies, municipalities, provinces and territories, and the federal government. For example, consumers can replace their gas and diesel-fueled cars and trucks with zero-emission vehicles (ZEVs). Freight companies, municipalities, transit agencies, and school districts can modernize their fleets with zero-emission trucks and buses for certain routes and duty cycles. Municipalities and provinces can design efficient public transit infrastructure and take an approach to planning that supports low-emissions transportation solutions, such as locating high-density housing near transit hubs. Some examples of how emissions reductions can be achieved in this sector include: addressing ZEV affordability; addressing the availability and reliability of charging and refuelling stations; transitioning to clean fuels; and promoting the uptake of zero-emissions technologies by supporting research, trials, and deployments.

The Government of Canada finalized Canada's Electric Vehicle Availability Standard (regulated targets for zero-emission vehicles) in December 2023. The Regulations establish annually increasing targets, that require 100% of new light-duty vehicles (LDVs) offered for sale in Canada to be ZEVs by 2035, with interim targets of at least 20% by 2026 and at least 60% by 2030. The Regulations, part of the commitments made under the 2030 Emissions Reduction Plan, make progress toward meeting Canada's 2030 target, and lay the groundwork for net-zero emissions by 2050. Canada is also continuing to implement GHG performance standards for model years 2017 to 2026. In the 2030 Emissions Reduction Plan, Canada committed to amendments to ensure post-2026 regulations are aligned with US regulations.

Canada has also committed to launch an integrated strategy to reduce emissions from medium- and heavy-duty vehicles (MHDVs) with the aim of reaching 35% of total MHDV sales being ZEVs by 2030. In addition, the 2030 Emissions Reduction Plan committed the Government to align post-2025 HDV emissions regulations with the most stringent standards in North America; to develop a regulation to require 100% of MHDV sales to be ZEVs by 2040 for a subset of vehicle types, based on feasibility, with interim 2030 regulated sales requirements that would vary for different vehicle categories based on feasibility; and to explore interim targets for the mid-2020s.

In March 2024, the United States government announced regulations that will reduce GHGs from the LDV and MHDV sectors while advancing the deployment of ZEVs. Canada is committed to continuing to align regulations with the latest most stringent US Environmental Protection Agency air pollutant and GHG regulations for LDVs and MHDVs. ECCC is undertaking analysis on the impact of these US measures on the Canadian market and is currently working on amending current on-road regulations for air pollutants and GHGs. Once finalized, it is expected that Canada's regulations will result in significant sales of ZEVs for MHDVs, and the Government will also continue to explore whether there is merit in additional measures as part of the integrated strategy.

Several initiatives complement these regulatory measures by helping to address barriers. For example, Budget 2024 announced $607.9 million for purchase incentives of up to $5,000 for eligible light-duty zero-emission vehicles through the Incentives for Zero-Emission Vehicles (iZEV) Program, which will be funded until March 2025, or until funding has been exhausted. This brings the total investments to $2.9 billion. From the launch of the program in 2019 to September 2023, Canadians have purchased or leased over 500,000 eligible ZEVs. Similarly, the four-year, $547.5 million Incentives for Medium- and Heavy-Duty Zero-Emission Vehicle Program (iMHZEV) was launched in July 2022 and is providing incentives of up to $200,000 for new eligible medium- and heavy-duty ZEVs. iMHZEV has processed over 4,000 incentive requests.

Infrastructure programs supporting deployment, demonstrations, and codes and standards have provided over $690 million since 2016 for EV charging and alternative fuel infrastructure. Investments have supported the deployment of public charging and refueling stations across Canada, the demonstration of innovative solutions for EV charging and hydrogen refueling technologies, and the development of codes and standards.

The Zero-Emission Vehicle Infrastructure Program (ZEVIP) is a $630 million investment to support EV charger deployment in communities and along highways. To date, the ZEVIP has approved over 40,000 chargers for funding, with approximately 18,000 open to their intended users. However, more is needed to reach Canada's new and ambitious ZEV sales targets. If all projects are successful, this investment should deploy 84,500 EV chargers, of which 5,000 would be supported by the Canada Infrastructure Bank's Charging and Hydrogen Refueling Infrastructure Initiative (CHRI). The CHRI seeks to invest $1 billion to $1.5 billion on large-scale ZEV charging and refueling that is revenue generating and in the public interest.

Canada's freight industry represents the sector with the fastest growing emissions profile. This is why the 2030 Emissions Reduction Plan committed to improve freight movement, fuel efficiency, and transitioning the freight trucking fleet to ZEVs over time. The Zero Emission Trucking Program (ZETP) was allocated $75.8 million over five years, starting in 2022-23, to accelerate the safe deployment of medium- and heavy-duty zero-emission vehicles on Canadian roads through research, deployments, and capital investments to augment Canada's HDV research capabilities. In addition, Canada has committed $162 million over five years, starting in 2022-23, to update and expand the Green Freight Program, to help freight companies to assess their energy usage and adopt fuel efficient retrofits and clean fuel technologies, reducing their emissions and saving them fuel costs. Lastly, Transport Canada's Clean Marine and the Green Shipping Corridor Programs are funding demonstrations of low-carbon fuel and zero-emission propulsion technologies to support marine decarbonization.

Concerning the aviation sector, Canada has in place and is implementing its Aviation Climate Action Plan (2022 to 2030), which set an ambitious net-zero by 2050 vision for Canada, as well as an aspirational 10% goal for sustainable aviation fuel use by 2030. A key deliverable under the Aviation Climate Action Plan is the development of a Sustainable Aviation Fuels Blueprint for Canada. The initiative will outline how Canada can help secure sufficient availability and access to sustainable aviation fuel to meet its aspirational 2030 goal and be on a path to net-zero by 2050.

With respect to the marine sector, the Government of Canada launched the $165 million Green Shipping Corridor Program in December 2023 to support the creation of green shipping corridors and help to decarbonize the shipping sector by fostering adoption of clean fuels and technologies. Several major projects have been announced that will enable deployment of clean technologies at port, including shore power electrification, which will in turn help to reduce vessel emissions.

A sustainable transportation system is a key component to achieving Canada's climate change target of net-zero emissions by 2050. Through investments in expanding and maintaining public transit and active transportation infrastructure, including zero-emission buses, Canada can reduce greenhouse emissions, mitigate air pollution, and encourage Canadians to choose more sustainable transportation options.

Since 2015, over $30 billion has been allocated to public transit through Housing, Infrastructure and Communities Canada's (HICC) programs. In February 2021, the Government of Canada announced the Permanent Public Transit Program (PPTP), providing significant funding under the Zero Emission Transit Fund (ZETF), the Active Transportation Fund (ATF) and the Rural Transit Solutions Fund (RTSF), representing over $2 billion in funding. In July 2024, the Government of Canada announced the Canada Public Transit Fund (CPTF), a continuation of the PPTP. Starting in 2026-27, the CPTF will, in addition to the three funds listed above, contribute an average of $3 billion per year, and aims to provide stable and predictable funding to address active transportation and long-term public transit goals.

The CPTF includes three components: Metro-Region Agreements, Baseline Funding, and Targeted Funding. Targeted funding includes (but is not limited to) intakes such as active transportation, rural transit solutions and zero-emission transit. Metro-Region Agreements and Baseline Funding will provide larger metropolitan regions, municipalities, and transit agencies with stable, predictable funding for capital investments year over year.

These transit investments build on the $20.1 billion in transit funding provided through the Investing in Canada Infrastructure Programs, the $3.4 billion provided through the Public Transit Infrastructure Fund, transit's eligibility under the $2.4 billion annual Canada Community-Building Fund, and financing available through the Canada Infrastructure Bank. These investments support a cleaner environment, healthy lifestyles, and improved mobility of Canadians by investing in public transit solutions in communities and building new and expanded networks of pathways, bike lanes, trails, and pedestrian bridges. Investments in public transit are part of the development of complete, inclusive, and transit-oriented communities.

The Canada Infrastructure Bank's Zero-Emission Buses (ZEBs) Initiative seeks to address market gaps in electrifying public transit and is supporting the purchase of over 6,000 ZEBs that are forecasted to reduce emissions by an estimated total of more than 188,000 t CO_2 eq annually. In line with efforts to maximize the impact of federal contributions to zero-emission transit, the CIB works closely with HICC in accordance with an MOU to ensure alignment between HICC's Zero Emission Transit Fund and the ZEBs initiative.

Lastly, the Government of Canada has introduced accelerated depreciation for tax purposes of business investments in on-road and non-road ZEVs, as well as certain recharging and refuelling equipment.

2.4.3.1 Provincial and territorial transportation measures

Provinces and territories are making efforts to mitigate emissions in the Transport sector, including through the regulation of clean fuels and zero-emission vehicles. This section provides a brief overview of a few provincial and territorial efforts, and a full accounting of all their measures can be found in Annex 3.

British Columbia

As part of the CleanBC Roadmap to 2030, British Columbia committed to increasing the 2030 carbon-intensity reduction target for diesel and gasoline fuel pools from 20% to 30% under its Low Carbon Fuel Standard (LCFS). Effective January 1, 2024, the *Low Carbon Fuels Act* replaced the *Greenhouse Gas Reduction (Renewable and Low Carbon Fuel Requirements) Act*. The *Low Carbon Fuels Act* and its regulations are together known as British Columbia's Low Carbon Fuel Standard (LCFS). The LCFS is among the largest contributors to the CleanBC emissions reduction goals.

Manitoba

Manitoba's Efficient Trucking Program (ETP) was launched in 2019 and supports clean technology adoption in the transportation sector by providing incentives for specific technologies and devices to improve fuel efficiency and reduce GHG emissions. Hundreds of trucks and trailers have received retrofits for fuel-saving and emissions reductions, cost-shared by Manitoba and Canada. Launched initially as a three-year program, Manitoba and Canada extended the program for 2023-24 by contributing an additional $6.6 million ($3.3 million each) towards rebate funds. Based on the extension, estimated cumulative emissions reductions over the period spanning 2020 to 2030 are 134 kt CO_2 eq. As of March 31, 2024, there were: 509 successful applications; 5,833 units (3,341 trucks and 2,492 trailers) receiving fuel savings device installations; and over 19 million litres of diesel fuel or 756,944 gigajoules (GJ) saved, with an estimated 49 million litres or 2 million GJ saved by 2030. Manitoba is also working closely with transportation stakeholders and will be advancing developments to assist in a green transition.

The Manitoba Electric Vehicle Rebate Program provides rebates of $4,000 on the purchase of a new eligible electric vehicle, $1,000 to $4,000 on leasing an eligible electric vehicle, and $2,500 on the purchase of pre-owned eligible electric vehicles. Purchasers of eligible EVs, including those who purchased them between August 1, 2023, and July 1, 2024, can apply online for the rebate through a streamlined process on the Manitoba Public Insurance website.

Ontario

Ontario's Cleaner Transportation Fuels Regulation requires that fuel suppliers blend 10% of renewable content in gasoline from 2020 to 2024. The renewable content requirement increases to 11% in 2025, 13% in 2028, and 15% in 2030 and onward.

Ontario is investing in electric vehicles in order to support a vibrant clean technology sector. Investments in innovation include: $772 million in support to Stellantis and General Motors to retool Ontario assembly plants and build production lines for EVs; supporting a $15 billion investment by Honda for an EV supply chain, including an EV production plant; $1 billion to support battery cell manufacturing plants by Volkswagen/PowerCo and LGES/Stellantis; as part of Honda's investment, a battery manufacturing plant will be established with capacity of 36 GWh and 60,000 tonnes of cathode active material (CAM) and precursor cathode active material (pCAM); and, supporting Asahi Kasei's $1.6 billion investment for a battery separator plant.

Phase 2 of Ontario's Driving Prosperity Plan includes committing $56.4 million to the Ontario Vehicle Innovation Network (OVIN) over four years. A new OVIN Northern Regional Technology Development Site (RTDS) will connect Ontario's manufacturing might with its mining and mineral might, and provide support for Ontario businesses to help build next generation vehicles.

Québec

Sales of zero-emission vehicles (ZEVs) as a proportion of sales of light vehicles continues to rise in Québec, reaching 22.1% in the first quarter of 2024. To support this trend, the Québec government will invest $1.5 billion to facilitate the purchase and deployment of light electric vehicles. In particular, the 2024–2029 Implementation Plan aims to improve accessibility to charging for electric vehicles, with investments that will accelerate the pace of deployment of these essential infrastructures for the two million electric vehicles expected on Québec roads in 2030. The government will also invest $686 million to support the deployment of public and private charging stations for light vehicles over the next few years.

A new charging program will be launched later this year, bringing together financial assistance from the following programs:

- Roulez Vert for home, multi-unit, and workplace charging stations; and,
- Transportez Vert for fast charging stations.

In addition, the program will include support for businesses, as well as new financial assistance aimed mainly at:

- the tourism sector;
- businesses wishing to carry out large-scale electrification projects; and,
- owners and managers of multi-unit buildings who wish to upgrade the electrical infrastructure in existing buildings.

New Brunswick

New Brunswick is committed to supporting the decarbonization of the Transportation sector. In 2021, New Brunswick introduced the Plug-In NB Electric Vehicle Rebate Program, offering rebates of up to $5,000 for the purchase of a new electric vehicle, up to $2,500 for a used electric vehicle, and up to $750 for the purchase of a Level 2 charger. Since 2022, the province has invested $6 million to fund the installation of 30 fast chargers and 17 Level 2 chargers across New Brunswick. To address freight-related emissions, the province has implemented an incentive program for fuel-saving measures such as aerodynamic measures and will complete a Freight Strategy by the end of 2024, followed by setting a ZEV emission target in 2025.

Nova Scotia

ZEVs contribute to cleaner air, quieter neighborhoods, and reduced GHG emissions. Nova Scotia's *Environmental Goals and Climate Change Reduction Act (2021)* aims for 30% of all new light-duty vehicle sales to be ZEVs by 2030. In 2023, ZEV sales rose to 4.4%, up from 3% in 2022 and 1.6% in 2021, with over 4,500 electric vehicles now on the road. The Department of Natural Resources and Renewables is studying the impact of a ZEV mandate and investing in programs to help Nova Scotians transition to ZEVs, leveraging federal incentives.

Nova Scotia is enhancing transportation efficiency through environmentally friendly options like buses, ferries, active transportation (walking, biking, scooters), and community-based services to reduce congestion and GHG emissions. The *Environmental Goals and Climate Change Reduction Act (2021)* aims to complete Core Active Transportation Networks in 65% of communities by 2030. The province is developing a Provincial Active Transportation Strategy, with input from communities, First Nations, and

equity-deserving groups. Efforts include paving roads for cyclists and expanding the Blue Route bicycle network, with 503 kilometers currently open and additional development underway.

Prince Edward Island

Prince Edward Island is actively supporting the decarbonization of its Transportation sector. Introduced in 2021, the Universal Electric Vehicle Incentive provides rebates of up to $5,000 to Islanders who purchase new or used battery electric vehicles or up to $2,500 for plug-in hybrid vehicles, as well as $750 towards the purchase and installation of a Level 2 charger or towards charging costs. The 2023-24 Capital Budget also included $3.5 million to install 16 new fast charging stations across the Island. Lastly, as of late 2023, 25% of the Island's school bus fleet was electric.

Northwest Territories

In the Northwest Territories, the Arctic Energy Alliance's Electric Vehicle Incentive Program provides $5,000 rebates for the purchase of an electric vehicle and up to $500 for a Level 2 charger for residents living in a community powered by hydroelectricity. The Government of the Northwest Territories is also developing a corridor of Level 3 charging stations for residents to travel between communities powered by hydroelectricity, as well as the route to and from Alberta. The corridor consists of seven fast chargers in six communities located in the southern part of the Northwest Territories. Anticipated to be operational by December 2024, the electric vehicle charging corridor represents a $3.8 million investment made possible by combining territorial funding ($1.9 million) and federal funding ($1.5 million from the Low Carbon Economy Leadership Fund and $360,000 from the Zero Emission Vehicle Infrastructure Program).

2.4.4 Industrial Processes and Product Use sector

Activities captured under Canada's Industrial Processes and Product Use sector play an essential role in Canada's economy by supporting regional jobs, building prosperous communities across Canada, and producing important inputs for global supply chains. In the 2023 Progress Report on the 2030 Emissions Reduction Plan, the federal government committed to explore opportunities to advance industrial decarbonization, including the potential to articulate a coordinated approach to accelerating the industry's adoption of clean technologies and fuels.

Challenges to decarbonizing heavy industrial processes and facilities include energy intensive processes, emissions inherent in producing industrial goods, the high cost and long lifespan of equipment, hard-to-abate emissions associated with chemical processes, and trade exposure. To maintain its competitiveness, Canadian industry needs to decarbonize operations by sourcing clean electricity, using low-carbon fuels like hydrogen or biofuels, and integrating new zero-emissions technologies like small modular reactors and capturing carbon at the source.

Although carbon pollution pricing sends signals to decarbonize, and regulations in some sectors will advance emissions reductions, additional public and private investments are required. These investments will help to accelerate the development and adoption of the new technologies, clean fuels, and innovative processes needed to transition to a net-zero emissions economy. Alternatives to all these products, particularly plastics, are also available and could have lower emissions pathways. These pathways need to be part of any cost-benefit analysis when considering investments to reach net-zero.

Given the multiple linkages between this sector and others, the majority of policies and measures that fall under the Industrial Processes and Product Use category have been captured under the Cross-

cutting (Section 2.4.1) or Energy (Section 2.4.2) sections. A few measures have been featured here, but more details can be found in Annex 3.

The Strategic Innovation Fund – Net Zero Accelerator (SIF-NZA) is investing in projects to support Canada's largest industrial GHG emitting sectors reduce emissions, help position them to be successful in the net-zero global economy of 2050, and assist in establishing Canada as a clean technology leader capitalizing on new growth opportunities, including a domestic battery ecosystem. Since its launch in 2020, the initiative has executed a number of contribution agreements in a wide array of sectors including fuel cell technologies, battery development, nuclear, steel, and electric vehicles. The Government of Canada worked with the Cement Association of Canada to develop the Standard on Embodied Carbon in Construction and the data required to disclose and reduce the embodied carbon of ready-mixed concrete supplied to major federal government construction projects. The standard took effect on December 31, 2022, with all Government of Canada procurements that take effect after that date required to apply to the standard. Canada's Critical Minerals Strategy was launched in December 2022 and a Critical Minerals Centre of Excellence established.

The Green Industrial Facilities and Manufacturing Program (GIFMP) is a $194 million initiative that provides cost-shared financial assistance to support the implementation of energy efficiency and energy management solutions in Canadian industrial and manufacturing facilities. The program aims to maximize energy performance, reduce GHG emissions, and increase the competitiveness of Canada's industrial sector. Eligible activities and expenditures supported include: training and hiring energy managers; conducting energy assessments; implementing energy management systems; and, investing in energy efficiency-focused capital retrofits that are non-emitting and that demonstrate significant reductions in energy use and GHG emissions. The program also aims to provide a Federal Energy Efficiency Lens, offering technical and advisory services to embed energy management across Government of Canada industrial sector investments.

GIFMP has two tracks: the first (Energy Efficiency Solutions Track) provides funding to provinces, territories, utilities, indigenous organizations and other non-profits to deliver targeted energy efficiency programming that align with Government of Canada objectives; the second (Industrial Facility Track) supports industrial and manufacturing facilities directly, with special consideration for Indigenous-owned facilities. Through two rounds of calls for proposals in 2023 and 2024, demand for GIFMP has been exceptionally high, with proponents requesting a combined total of more than $1 billion in funding, far exceeding Budget 2022 allocations. Emission savings from approved projects are expected to exceed program targets.

2.4.4.1 Provincial and territorial heavy industry measures

Similar to federal measures, the majority of provincial and territorial policies and measures that fall under the Industrial Processes and Product Use category have been captured under the Cross-cutting (Section 2.4.1) or Energy (Section 2.4.2) sections. More examples can be found in Annex 3.

Ontario

Ontario's major integrated steel operations are transitioning to lower-emitting steel. For example, Algoma Steel is transitioning its operations to electric arc furnaces in Sault Ste. Marie. This process is expected to reduce Algoma's GHG emissions by more than 70%. ArcelorMittal Dofasco is transitioning to direct-reduced iron steelmaking, is set to reduce carbon emissions by 60%, and is laying the groundwork for net-zero. The company announced an annual biocarbon purchase agreement with CHAR Technologies to purchase biocarbon made of woody biomass as a partial replacement for fossil coal in its steelmaking process.

Québec

Decarbonization of Québec's Industrial Processes and Product Use sector mainly involves pursuing energy transition initiatives such as the GHG Challenge program, the development of bio-energies, and other energy conversion projects prioritizing efficient electrification, energy efficiency, and power management. For businesses subject to the Cap-and-Trade System for GHG Emission Allowances, financial assistance is available to analyze the technical and economic potential of decarbonization initiatives and undertake projects to reduce GHG emissions. To date, 49 of the 54 eligible large emitters have confirmed their interest in this initiative.

Furthermore, a significant proportion (52.6% in 2021) of the industrial sector's GHG emissions comes from industrial processes and product use. The Government of Québec will therefore devote $100 million to support research and testing of breakthrough technologies to reduce these emissions, as well as carbon capture, utilization, and storage. Projects are underway with cement plants, which are responsible for 12.4% of GHG emissions in Québec's Industrial sector. At the request of the Québec government, the province's four cement plants submitted a plan in May 2024 to reduce their GHG emissions. These plans are currently being analyzed.

2.4.5 Agriculture

For emissions accounting purposes under the IPCC, the Agriculture sector includes non-energy GHG emissions related to the production of crops and livestock. Emissions from the production of machinery and fertilizer are accounted for under the Industrial Processes and Product Use sector and emissions from electricity use are reported in the Energy sector. Emissions and sequestration from agricultural soils are reported under the LULUCF sector. As such, the IPCC Agriculture sector does not reflect the full impact of agriculture on net Canadian GHG emissions or the sector's important contribution to emissions removals. For the purposes of analyzing economic trends and policies, it is useful to allocate emissions to the economic sector from which they originate. Therefore, Canada also regularly reports on agriculture as a Canadian economic sector, adding emissions from the use of fuel in farm machinery and on-farm transportation to the agriculture sector. Emissions and sequestration from agricultural soils are reported under the LULUCF sector in both the IPCC and economic sector approaches.

Federal, provincial, and territorial governments work closely to promote emissions reductions in the sector, while also supporting the competitiveness of Canadian farms and their contribution to domestic and global food security. A key challenge for the sector will be the development and widespread adoption of transformative technologies, including precision agriculture, anaerobic digesters, and biotechnology that supports agricultural resilience against disease and extreme weather events. The Government of Canada has committed to explore various approaches to help promote the sustainability of the Agriculture sector, increase clean technology use in Canada, and address barriers of adoption and/or extension and knowledge transfer of emissions-reducing technologies and practices on farms.

For example, Agriculture and Agri-Food Canada's Agricultural Climate Solutions is a multi-stream program that will help to develop and implement farming practices to tackle climate change. By developing, evaluating, adopting, and surveying agricultural technologies and practices, it focuses on sequestering carbon, reducing greenhouse gas emissions, and delivering environmental benefits.

The $704.1 million Agricultural Climate Solutions – On-Farm Climate Action Fund supports farmers in the adoption of beneficial management practices that store carbon and reduce GHG emissions in three areas: nitrogen management, cover cropping, and rotational grazing.

The $185 million Agricultural Climate Solutions – Living Labs program accelerates the co-development, testing, adoption, dissemination, and monitoring of beneficial management practices that sequester carbon and/or reduce greenhouse gas emissions.

The Sustainable Canadian Agricultural Partnership is a $3.5 billion, five-year agreement (beginning April 2023) between federal, provincial, and territorial governments to strengthen the competitiveness, innovation, and resiliency of the agriculture, agri-food, and agri-based products industries. The agreement includes $1 billion in federal programs and activities and $2.5 billion in cost-shared programs and activities funded by federal, provincial, and territorial governments. The Partnership also introduced the Resilient Agricultural Landscape Program, a $250 million cost-shared program to help producers conserve and enhance the resiliency of agricultural landscapes.

As part of Sustainable agriculture and agri-food innovation for a net-zero economy, the NSERC-SSHRC Sustainable Agriculture Research Initiative is a joint effort between the Natural Sciences and Engineering Research Council (NSERC) and the Social Sciences and Humanities Research Council (SSHRC), in collaboration with Agriculture and Agri-Food Canada (AAFC), to support collaborative research to initiate or accelerate the development of solutions that will be required for a sustainable, resilient, and profitable agriculture sector in a net-zero economy. This initiative supports multidisciplinary, collaborative networks of researchers, mobilizing expertise, technologies, and research in the social sciences, natural sciences, and engineering, and in areas that broaden the traditional network of agriculture research partners. This funding is provided to post-secondary researchers in support of both fundamental and applied research to accelerate transformative alternative practices, technologies, and their adoptions, as well as to build reliable and consistent measurement tools and performance metrics.

A Sustainable Agriculture Strategy is being developed to help set a shared direction for collective action to improve environmental performance in the sector over the long-term, supporting farmers' livelihoods and the long-term business vitality of the sector, with climate change mitigation as one of the key themes. The Strategy will build on past and current successes, recognizing action already taken by producers to meet environmental objectives, while increasing production and supporting Canada's role as a global food provider.

The $429.4 million Agricultural Clean Technology Program aims to create an enabling environment for the development and adoption of clean technology in three priority areas: green energy and energy efficiency, precision agriculture, and bioeconomy. The Adoption Stream supports the purchase of commercially available clean technologies that reduce greenhouse gas emissions, while the Research and Innovation Stream supports pre-market innovation to develop transformative clean technologies and expand current technologies.

The $12 million Agricultural Methane Reduction Challenge aims to advance innovative, scalable, and economically viable practices, processes, and technologies that will contribute to the net reduction of enteric methane emissions from the cattle industry.

2.4.5.1 Provincial and territorial agriculture measures

Provinces and territories are working closely with farmers and the broader agriculture and agri-food industry to reduce emissions, improve efficiency, and strengthen Canada's agricultural competitiveness through programs like the cost-shared Resilient Agricultural Landscape Program. This section contains examples of agricultural measures being implemented by provinces and territories; more details are available in Annex 3.

British Columbia

British Columbia's Agricultural Clean Technology and Adaptation Initiatives will continue to support the transition to technologies and practices that reduce both net GHG emissions and operating costs for producers. Supports include encouraging electrification of agricultural equipment, improving efficiency in manure and nutrient management, improving energy efficiency in greenhouses, and promoting the sustainable use of agricultural land. In 2022, the B.C. Centre for Agritech Innovation was launched to accelerate research and development of new agri-technologies, supported by $6.5 million from BC and $10 million from Pacific Economic Development Canada. British Columbia's Climate Preparedness and Adaptation Strategy includes several measures to help the agricultural sector adapt. These include the Extreme Weather Preparedness for Agriculture program and the Agricultural Water Infrastructure program, as well as enhancing the existing Agricultural Weather Monitoring Network.

British Columbia's Nutrient Management Program helps farmers efficiently meet their production objectives and protect the environment through nutrient management plans (NMPs). This program includes: expanding trials to develop and demonstrate nutrient management best practices to the agriculture industry; increasing funding to the sector to implement beneficial management practices that promote better nutrient management and further reductions in GHG emissions; and nutrient management planning to help producers improve nutrient applications and meet environmental regulations under the Agricultural Environmental Management Code of Practice which is being phased in through to 2029.

Saskatchewan

The historic adoption of sustainable farming practices and increased yields by Saskatchewan's farmers has changed the emissions and removals in agricultural soils. From 2017 to 2021, the estimated net flux of CO_2 exchanged between agricultural soils and the atmosphere resulted in average net removals of 15.75 Mt of carbon, offsetting 95.7% of emissions produced by the agricultural sector.[168]

New Brunswick

New Brunswick is finalizing its Agriculture Climate Change Strategy to support low-carbon, resilient, and economically sustainable agriculture sectors. As well, as part of the Resilient Agricultural Landscape Program, funding is being used to reward farmers who set aside lands and reduce tillage. The measure will also reward farmers who protect ponds, wetlands, and pollinator habitats.

Nova Scotia

Nova Scotia's Advancing Clean Technology Program helps farmers and food processors improve their operations through the adoption of clean technologies and improved energy efficiency to increase value-added agricultural production, extend growing seasons, and improve costs of production. Programs under the Sustainable Canadian Agricultural Partnership will also directly support environmental sustainability. Nova Scotia's Environmental Stewardship and Climate Change Program will help the agriculture sector reduce greenhouse gas emissions and adapt to climate change, and the Resilient Agricultural Landscape Program will accelerate the adoption of on-farm land use and management practices that maximize benefits for the environment and society.

2.4.6 Waste Management

The Waste sector encompasses disposal (landfill or incineration) and diversion (recycling and composting) of discarded products and packaging that have reached their end-of-life. Statistics Canada collects disposal and diversion data from companies and municipalities providing solid waste

management services in Canada.[169] Reducing all waste in the first place, and greater diversion can also contribute to reducing GHG emissions. Examples of such efforts include extending a product's life through reuse, repair, remanufacture, or refurbishment, enabling better recycling, and driving demand for recycled materials.

The biodegradable waste disposed in Canadian landfills is the source of landfill methane emissions. Federal, provincial, territorial, and municipal governments, Indigenous communities and organizations, and the private sector have been working to cut GHG emissions from the Waste sector, particularly by addressing landfill methane emissions and increasing waste diversion. However, the approach across Canada is uneven and emissions have not decreased for over a decade. To decarbonize this sector further, landfills across Canada need to capture more of the methane they generate and seize the opportunity to convert methane into clean energy. Actions to reduce generation and increase diversion of biodegradable waste are also needed to achieve longer-term emissions reductions. The following initiatives, among others, will help achieve these objectives.

The Government of Canada is developing policies to reduce methane emissions from landfills. Canada published an offset protocol for "Landfill Methane Recovery and Destruction" under Canada's GHG offset system in June 2022. Draft regulations to reduce landfill methane emissions were published in June 2024.

Over half of Canada's annual food supply is reportedly wasted or lost from farm to plate through production, processing, distribution, retail, food service and at home. To build a more sustainable future, it is critical to tackle food waste. In 2020, the Government of Canada launched the Food Waste Reduction Challenge, a $20 million initiative over five years to incentivize developing and deploying innovative new solutions to reduce food waste across the supply chain. In 2024, the Honourable Lawrence MacAulay, Minister of Agriculture and Agri-Food, announced the grand prize winners for both streams of the Food Waste Reduction Challenge. Within the Business Models Stream, LOOP Mission and Still Good each received a grand prize of up to $1.5 million to grow and scale their leading-edge food waste solutions. The grand prize winners of the Novel Technologies Streams were Clean Works Inc. and Genecis Bioindustries Inc., who each received up to $1 million to help accelerate the advancement of their proprietary solutions and support their prospective deployment in the Canadian market. By encouraging more solutions to food waste, we can increase food availability, save Canadians and businesses money, and strengthen our food systems, while also reducing greenhouse gas emissions. The Government will continue to support innovation in this area, to ensure that more of the high-quality products produced by our farmers and food processors reach Canadians.

Spotlight on success: Food Waste Reduction Challenge Grand Prize Winners

LOOP Mission is a Montreal-based circular economy company that creates products from food that would otherwise go to waste, like cold-pressed juice. The company leveraged its expertise to create LOOP Synergies, a line of ingredients made from rejected food that would otherwise be wasted, that food processors can easily integrate into diverse food products. With support from the Challenge, LOOP Mission will scale its LOOP Synergies line, enabling more food processors to join the movement to reduce food waste in Canada.

Based in Montreal, **Still Good** develops business solutions for companies to transform nutrient-rich by-products, that would otherwise go to waste, to new food products through a holistic approach called eco-valuation. For example, Still Good developed technology to turn spent brewers' grain from local microbreweries into flour which is high in protein, fibre, and essential minerals. With support from the Challenge, Still Good will scale its business model to create eco-valuation or upcycling hubs across Canada. This will allow food processors to build on and replicate this solution to reduce food waste.

In 2018, the federal, provincial, and territorial governments endorsed two aspirational waste reduction goals to decrease waste by 30% by 2030 and 50% by 2040. They also approved the Canada-wide Strategy on Zero Plastic Waste and associated Action Plan (Phase 1 adopted in 2019 and Phase 2 in 2020), recognizing that most of Canada's plastic waste is disposed of in landfills. Federal, provincial, and territorial governments are working to implement this Strategy and Action Plan individually and collaboratively through the Canadian Council of Ministers of the Environment.

For its part, the Government of Canada is undertaking a range of complementary measures across the lifecycle of plastics. It is identifying sources of plastic leakage into the environment, performing foundational work to model the embodied and lifecycle GHG emissions of resins and plastics, and using science to inform actions and measure progress over time. The federal government is also greening its own operations and procurement and investing in innovations and targeted solutions for a systematic shift towards a circular economy.

Reducing the amount of plastic waste and pollution and retaining plastics in the economy will be an important demonstration of the multiple benefits of a circular economy approach, including reduced GHG emissions from a reduction in the demand by reducing unsustainable plastic consumption and creation of new virgin plastics, improved recycling of plastics and the greater use of reusable, repairable, refurbishable, and recycled plastics.

2.4.6.1 Provincial and territorial waste measures

Waste management falls under the jurisdiction of provinces and territories, while the collection, diversion, and disposal of waste are typically managed by municipal authorities or private firms. A number of provinces, territories, and municipalities are active in the Waste sector, particularly to manage related issues such as landfill capacity.

British Columbia

British Columbia's Landfill Gas Management Regulation requires landfill sites that have over 100,000 tonnes of waste in place or receive more than 10,000 tonnes of municipal solid waste in any

year after 2008 to conduct landfill gas assessments. The province will continue to pursue efforts to reduce and make better use of waste.

In December 2023, British Columbia's Single-Use and Plastic Waste Prevention Regulation came into force. Under this initiative, single-use plastic bags, cutlery, hard-to-recycle plastic food service packaging, and all oxo-degradable plastic packaging are banned. A total of $40 million in funding is provided through the CleanBC Plastics Action Fund to support innovative, BC-based projects that increase reuse, reduce the use of plastic, and make better use of recycled plastic. The Clean Coast Clean Waters funding program has invested $49.83 million into shoreline clean-up and derelict vessel removal. Since 2020, 215 derelict vessels and 2,100 tonnes of marine debris have been collected from 6,400 kilometres of shoreline.

Manitoba

In 2022-23, Manitoba invested $8.7 million to continue supporting recycling, composting, and waste diversion initiatives across the province through the Waste Reduction and Recycling Support program. This program helps divert more than 188,250 tonnes of waste from Manitoba landfills annually.

New Brunswick

New Brunswick's Climate Change Action Plan commitment to support the development of strategic anaerobic digestor projects is providing financial support for feasibility studies to accelerate the development of farm-based anaerobic digestor projects, with the goal of reducing GHG emissions, reducing waste, and creating new economic opportunities.

Nova Scotia

In alignment with the *Environmental Goals and Climate Change Reduction Act (2021)*, Nova Scotia is committed to reducing solid waste disposal rates to no more than 300 kg per person per year by 2030. In 2023, public engagement, including online and in-person forums, played a key role in shaping Nova Scotia's waste reduction strategy, providing valuable insights into the current disposal system and future opportunities to promote circular practices.

To further these efforts, in August 2023, the Department of Environment and Climate Change amended Solid Waste Resource Management Regulations, introducing Extended Producer Responsibility (EPR) programs for items such as small appliances, batteries, and lamps. Additionally, a new EPR regulation for packaging, paper products, and packaging-like products has been launched, underscoring the province's dedication to sustainable waste management. These initiatives aim to create an affordable, solution-oriented approach to reducing waste, supporting Nova Scotia's goal of achieving 300 kg of waste per person annually by 2030.

2.4.7 Land Use, Land-Use Change, and Forestry

The climate change crisis and biodiversity loss are very closely interconnected. Climate change is now a leading threat to biodiversity and, conversely, destruction of ecosystems undermines nature's ability to provide a critical contribution to climate change mitigation and adaptation. Nature-based solutions can make a significant and cost-effective contribution to greenhouse gas reductions through actions like planting trees, restoring grasslands and wetlands, and improving agricultural land and ocean management to capture and store more carbon.

The Natural Climate Solutions Fund is a 10-year, nearly $5.5 billion program that was announced in the 2020 Fall Economic Statement and aims to address climate change and biodiversity loss in Canada. It

includes Agriculture and Agri-Food Canada's Agricultural Climate Solutions Program (including the On-Farm Climate Action Fund and Living Labs), Environment and Climate Change Canada's Nature Smart Climate Solutions Fund, and Natural Resources Canada's 2 Billion Trees Program. These programs aim to provide substantial emissions reductions (13 Mt to 17 Mt of CO_2 annually in 2050) while also providing important co-benefits for human well-being and biodiversity.

Canada has committed to conserving 25% of its land and 25% of its waters by 2025, and with the release of its 2030 Nature Strategy, Canada has reaffirmed its commitment to protect and conserve 30% of its lands and waters by 2030. As of July 2024, Canada has conserved:

- 13.7% of its terrestrial area (land and freshwater), including 12.8% in protected areas; and,
- 15.54% of its marine territory, including 11.09% in protected areas and 4.25% in other effective area-based conservation measures.

Canada has committed to historic investments of more than $1 billion to meet the ambitious marine conservation targets and is investing more than $400 million over five years to protect and expand 22 of Canada's national wildlife areas. This funding, as part of the Enhanced Nature Legacy, will also see the government create ten new national parks and four new freshwater marine conservation areas, while working to acquire the land needed to expand and complete existing national parks. Canada recognizes the importance of Indigenous leadership in conservation and is supporting Indigenous-led conservation, including Indigenous Protected and Conserved Areas (IPCAs), to support reconciliation and conservation through Canada's *United Nations Declaration on the Rights of Indigenous Peoples Act* Action Plan. Canada has committed up to $800 million in funding to support up to four Indigenous-led conservation initiatives through an innovative funding model known as Project Finance for Permanence (PFP). From this total, $200 million was allocated to support the Great Bear Sea PFP announced in June 2024, representing a significant investment in marine conservation and reconciliation. This work remains grounded in science, Indigenous Knowledge (with the direct participation of Indigenous Knowledge holders), and local perspectives.

In 2022, the Canadian Council of Forest Ministers endorsed the Renewed Forest Bioeconomy Framework to accelerate development of the bioeconomy and maximize the Forestry sector's contribution to net-zero. The Framework builds on the recognition that emissions reductions can be achieved by increasing the use of wood in construction and by using waste and forest residuals to generate bioenergy and produce bioproducts that substitute for more emissions-intensive materials.

2.4.7.1 Provincial and territorial land use, land-use change, and forestry measures

Provinces and territories are responsible for the majority of land use, land-use change, and forestry policies and regulations. The following section provides an overview of some of their efforts, and a full accounting can be found in Annex 3.

British Columbia

In 2024, British Columbia released an updated Forest Carbon Offset protocol to enable new forest carbon offset projects going forward. As an example, the Great Bear Forest Carbon Offset Projects implement an ecosystem-based management regime and protect 85% of the 6.4-million-hectare area but were developed under a previous version of the forest carbon offset protocol from 2011.

Saskatchewan

Saskatchewan's Agricultural Water Management Strategy supports responsible and sustainable agricultural water management practices that protect the environment, including to reduce direct nitrous

oxide (N_2O) emissions from agricultural runoff and enhance carbon sequestration by conserving wetland habitats. Saskatchewan invested $1 million in 11 demonstration and research projects and undertook comprehensive engagement to develop an Agriculture Water Stewardship Policy, which includes wetland retention.

Manitoba

Manitoba's Growing Outcomes in Watersheds (GROW) Program is the province's approach to encouraging and supporting the delivery of ecological goods and services in Manitoba. GROW promotes the conservation of natural areas and positive changes to the agricultural landscape by focusing on watershed health, management, and resiliency. The $52 million GROW Trust was established in 2019. The $50 million Wetlands GROW Trust was established in 2020. The GROW program provided $9.7 million in funding in 2024.

In November 2022, Manitoba launched its Water Management Strategy Framework, which is a guiding document that sets the stage for future work and decision-making on water in the coming decades. The second component of the strategy, the Water Strategy Action Plan, was released in July 2023. The strategy builds on the Water Management Strategy Framework and further engagement with Manitobans. It summarizes new water-related projects, programming, and initiatives that the government has launched since the release of the Water Management Strategy Framework. Manitoba is embarking on a structured, dedicated Indigenous engagement in 2023-24 to better understand Indigenous water priorities, needs, and ideas, and how Indigenous Peoples would like to be engaged in the ongoing development and implementation of the strategy.

Ontario

Ontario's land use policy, plans, and legislation helps guide emissions reductions both at the provincial and municipal levels. Ontario's *Planning Act* requires that planning authorities, in carrying out their responsibilities under the Act, shall have regard to matters of provincial interest, including the mitigation of GHG emissions. It also requires that a municipal official plan contain policies that identify goals, objectives, and actions to mitigate GHG emissions. The Provincial Planning Statement 2024 (PPS 2024) applies Ontario-wide and sets the policy foundation for regulating the development and use of land. The PPS 2024 includes a range of policies to support reduction of GHG emissions (such as promoting compact form, a structure of nodes and corridors, the use of active transportation, transit-supportive development, and intensification), and requires municipalities to integrate these considerations in their local official plans, zoning by-laws, and land use planning decisions.

Ontario is implementing *Sustainable Growth: Ontario's Forest Sector Strategy* as a way to enhance carbon sequestration through increased forest growth and increased carbon storage in wood products, and to mitigate emissions through substitution benefits associated with replacing less environmentally friendly products (e.g., concrete, plastics) with wood. As part of delivering on commitments in the strategy, the province developed a Forest Biomass Action Plan aimed at securing jobs and encouraging sustainability in the forest sector, while supporting economic development through the use of forest biomass (i.e., mill by-products and forest biofibre).

New Brunswick

New Brunswick, pursuant to its Climate Change Action Plan commitment to increase carbon stocks of its forests and wetlands, has developed the ability to estimate current forest level carbon stocks and forecast those stocks 80 years into the future. This forecasting ability has been incorporated into the evaluation of management strategies for both Crown and private land forests. In April 2024, the first

New Brunswick Forest Carbon Inventory report was published. New Brunswick is taking similar measures for its wetlands and developing an assessment tool to quantify and protect high-functioning carbon stock wetlands.

Nova Scotia

Nova Scotia's *Environmental Goals and Climate Change Reduction Act* (2021) aims to conserve at least 20% of the total land and water mass of the province by 2030 as protected areas and other effective area-based conservation measures. This target is echoed as an action in the *Climate Action Plan* (2022), which also includes a commitment to plant 21 million trees and an action to research the use of natural carbon sinks for greenhouse gas emission offsets. Ecosystem services, including carbon storage, are values that will be considered in selecting candidate sites for protection under the province's *Collaborative Protected Areas Strategy* (2023). Through the Sustainable Communities Challenge Fund, Nova Scotia has invested in community-led nature-based solutions projects such as living shorelines projects in Mahone Bay and Baddeck. The province, through the Department of Agriculture and Public Works, has invested in dyke realignment/salt marsh restoration projects that reduce flood risk to infrastructure and restore coastal flood plains.

Northwest Territories

Emissions from the 2023 wildfires in the Northwest Territories were roughly 277 times greater than the territory's anthropogenic emissions. To better understand its carbon stocks and landscape emissions, Northwest Territories is hosting a workshop on Landscape Carbon in February 2025. This workshop will help identify the best suited nature-based solutions for the territory and form the basis of a five-year Northwest Territories Landscape Carbon Roadmap.

2.5 Summary of greenhouse gas emissions and removals

The following section addresses paragraph 91 of the MPGs.

Canada's National Greenhouse Gas Inventory is prepared and submitted annually to the UNFCCC in accordance with the modalities, procedures, and guidelines for the transparency framework for action and support referred to in Article 13 of the Paris Agreement, adopted through Decision 18/CMA.1 in 2018.[170] The annual inventory submission consists of the NIR and data reporting tables. This is the first year Canada, and all other Parties, are reporting under the Paris Agreement.

The GHG inventory includes emissions and removals of carbon dioxide (CO_2), and emissions of methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs), sulphur hexafluoride (SF_6) and nitrogen trifluoride (NF_3) in five sectors: Energy; Industrial Processes and Product Use (IPPU); Agriculture; Waste; and Land Use, Land-Use Change and Forestry (LULUCF). The GHG emissions and removal estimates in Canada's GHG inventory are developed using methodologies consistent with the IPCC 2006 Guidelines for National Greenhouse Gas Inventories. In line with the principle of continuous improvement, the underlying data and methodology for estimating emissions are revised over time; hence, total emissions in all years are subject to change as both data and methods are improved.

Table 2-4 summarizes Canada's net anthropogenic greenhouse gas emissions and removals by IPCC GHG category, as reported in the *National Inventory Report 1990–2022: Greenhouse Gas Sources and Sinks in Canada* and submitted to the UNFCCC.

Table 2-4: Canada's net anthropogenic GHG emissions and removals by IPCC sector, selected years, Mt CO_2 eq

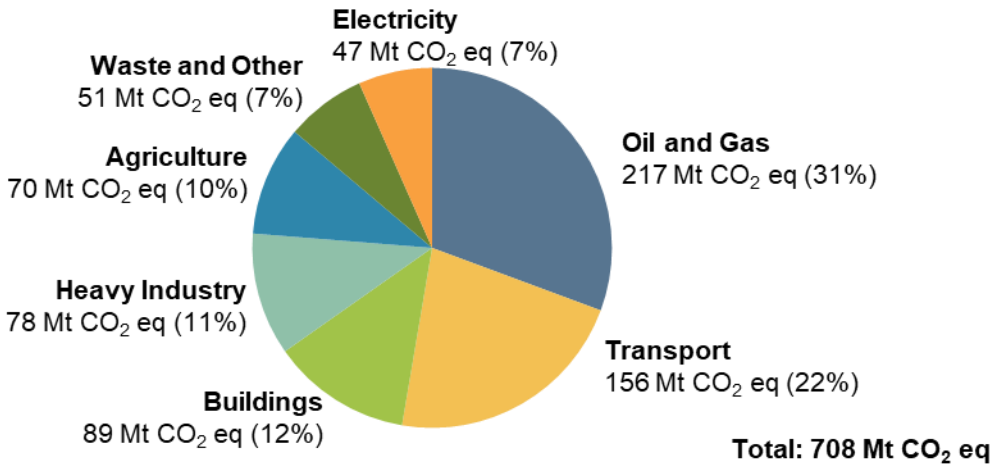
GHG Categories	1990	2005	2017	2018	2019	2020	2021	2022
TOTAL[a, b]	**608**	**761**	**742**	**753**	**752**	**686**	**698**	**708**
ENERGY	**489**	**626**	**613**	**622**	**622**	**558**	**569**	**577**
a. Stationary Combustion Sources	278	338	321	324	326	302	304	306
Public Electricity and Heat Production	94	124	79	71	69	62	61	56
Petroleum Refining Industries	17	20	15	15	16	14	14	14
Oil and Gas Extraction	31	63	101	107	108	104	108	109
Mining	4.7	4.3	4.5	6.0	6.0	5.3	6.1	6.2
Manufacturing Industries	56	48	43	43	43	39	40	41
Construction	1.9	1.4	1.3	1.4	1.4	1.4	1.5	1.6
Commercial and Institutional	26	32	36	37	38	35	33	35
Residential	44	43	39	40	41	39	37	39
Agriculture and Forestry	2.4	2.2	3.1	3.2	3.3	3.0	3.1	3.3
b. Transport	145	190	202	209	210	179	188	196
Aviation	7.5	7.7	7.9	8.7	8.6	4.7	5.6	7.7
Road Transportation	92	122	129	132	132	111	116	120
Railways	6.8	6.5	7.2	7.3	7.4	6.8	6.8	6.8
Marine	3.1	4.0	3.5	3.5	4.3	3.8	4.4	5.0
Other Transportation	36	50	55	58	58	52	55	56
c. Fugitive Sources	66	97	89	89	86	77	77	75
Coal Mining	3.2	1.6	1.4	1.5	1.6	1.3	1.4	1.5
Oil and Natural Gas	63	95	88	88	85	75	76	74
d. CO_2 Transport and Storage	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00
INDUSTRIAL PROCESSES AND PRODUCT USE	**55**	**55**	**52**	**54**	**52**	**50**	**51**	**51**
a. Mineral Products	8	10	8.6	8.7	8.9	8.2	9.0	8.4
b. Chemical Industry	16	10	6.3	6.4	6.2	5.9	5.7	5.8
c. Metal Production	23	20	15	15	14	13	14	14
d. Production and Consumption of Halocarbons, SF_6 and NF_3	0.82	4.8	11	12	11	11	11	11
e. Non-Energy Products from Fuels and Solvent Use	5.8	10	11	11	11	10	11	12
f. Other Product Manufacture and Use	0.36	0.51	0.58	0.65	0.62	0.66	0.66	0.65
AGRICULTURE	**42**	**56**	**53**	**54**	**54**	**56**	**55**	**56**
a. Enteric Fermentation	25	35	27	27	27	27	27	27
b. Manure Management	6.0	8.7	7.9	7.9	7.9	7.8	7.9	7.8
c. Agricultural Soils	10	12	15	16	16	18	17	18
d. Field Burning of Agricultural Residues	0.24	0.05	0.05	0.05	0.05	0.06	0.04	0.05
e. Liming, Urea Application and Other Carbon-Containing Fertilizers	1.2	1.4	2.4	2.6	2.7	3.0	3.1	2.9
WASTE	**21**	**24**	**24**	**23**	**24**	**23**	**23**	**23**
a. Solid Waste Disposal (Landfills)	18	20	20	19	20	19	19	19
b. Biological Treatment of Solid Waste	0.08	0.24	0.34	0.38	0.38	0.39	0.48	0.47
c. Wastewater Treatment and Discharge	1.9	2.2	2.5	2.6	2.5	2.5	2.5	2.5
d. Incineration and Open Burning of Waste	0.26	0.34	0.18	0.17	0.17	0.15	0.14	0.16
e. Industrial Wood Waste Landfills	1.0	1.1	0.86	0.84	0.82	0.80	0.78	0.76
LAND USE, LAND-USE CHANGE AND FORESTRY	**49**	**66**	**19**	**23**	**14**	**26**	**14**	**51**
a. Forest Land	-89	-64	-99	-99	-103	-101	-104	-108
b. Cropland	0.31	-23	-24	-23	-19	-16	-19	22
c. Grassland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
d. Wetlands	5.4	3.1	3.1	2.8	3.1	3.5	3.2	3.3

GHG Categories	1990	2005	2017	2018	2019	2020	2021	2022
e. Settlements	1.8	1.8	2.4	2.3	2.2	2.3	2.2	2.2
f. Harvested Wood Products	131	148	137	139	130	136	131	132

Notes: Totals may not add up due to rounding.
0.00 Indicates emissions were truncated due to rounding.
- Indicates no emissions.
a. National totals calculated in this table do not include emissions and removals reported in LULUCF.
b. This summary data is presented in more detail at open.canada.ca.

In addition to the inventory reporting requirement of allocating emissions by IPCC GHG categories, it is useful to allocate emissions by economic sector for the purpose of analyzing economic trends and policies. A comprehensive emission profile for each economic sector was developed by reallocating the relevant proportion of emissions from various IPCC subcategories. This reallocation simply re-categorizes emissions under different headings and does not change the overall magnitude of Canadian emissions estimates. Figure 2-6 illustrates how Canada's GHG emissions break down by economic sector for the year 2022.

Figure 2-6: Breakdown of Canada's GHG emissions by economic sector (2022) (excluding LULUCF)



Overall, GHG emissions trends in Canada's economic sectors are consistent with those described for IPCC sectors. The Oil and Gas, Agriculture, and Buildings economic sectors showed emission increases of 21 Mt (11%), 4.6 Mt (7.0%) and 3.9 Mt (4.5%), respectively, since 2005 (Figure 2-6, Table 2-5). These increases have been more than offset by emission decreases in Electricity (-69 Mt or -59%), Heavy Industry (-10 Mt or -11%), and Waste and others (-4.3 Mt or -7.8%). Since 2005, Transportation emissions have generally increased, with an important drop in 2020. Emissions in 2022 from the Transportation economic sector are now similar to 2005 levels.

Table 2-5: Canada's GHG emissions by economic sector, selected years, Mt CO_2 eq

Economic Sector	2005	2017	2018	2019	2020	2021	2022
National GHG Total	761	742	753	752	686	698	708
Oil and Gas	195	221	228	226	209	216	217
Electricity	117	72	62	61	53	51	47
Transportation	156	165	169	170	143	150	156
Heavy Industry	88	77	80	79	74	78	78
Buildings	85	88	92	94	89	85	89
Agriculture	66	67	69	69	70	69	70
Waste and Others	55	51	52	52	48	49	51

Note: Totals may not add up due to rounding.
"Waste and Others" include Waste, Coal Production, and Light Manufacturing, Construction and Forest Resources sectors.
This summary data is presented in more detail at open.canada.ca.

2.6 Projections of greenhouse gas emissions and removals

The following sections address paragraphs 92 through 100 of the MPGs.

For the First BTR, Canada presents projections of its greenhouse gas emissions and removals using a "With Measures" (WM) scenario, and a "With Additional Measures" (WAM) scenario for the years 2023 to 2040. This section provides a summary of these projections. For more information on Canada's projections, please refer to Annex 4.

Consistent with its previous UNFCCC reporting, Canada has chosen not to present projections for a Without Measures (WOM) scenario. It would require significant effort to develop appropriate assumptions for this counterfactual scenario, and high-quality results are not guaranteed. Thus, the results of a WOM scenario would not provide useful insights.

2.6.1 Methodology

This section addresses paragraph 96 of the MPGs.

Canada develops its projections of GHG and air pollutant emissions by:

- Using the Energy, Emissions and Economy Model for Canada (E3MC): a detailed, proven energy, emissions, and economy model for Canada;
- Using the most up-to-date statistics on GHG emissions and energy use at the time of analysis (Fall 2024), and sourcing key assumptions from the best available public and private expert sources; and
- Aggregating and reporting results from external models to account for the accounting contribution of the LULUCF sector.

Provincial, territorial, and federal government departments, as well as other experts, were consulted during the development of the projections.

2.6.1.1 Models and underlying assumptions

Canada's GHG and air pollutant emissions projections are derived using the Energy, Emissions and Economy Model for Canada (E3MC). E3MC has two components: ENERGY 2020, which incorporates Canada's energy supply and demand structure; and Oxford Economics' North America Economic

Model (NAEM), a regional macroeconomic model. In E3MC, energy data is allocated to individual subsectors based on data from Statistics Canada, Natural Resources Canada's Office of Energy Efficiency, Canada's GHG Reporting Program, the Canadian Energy and Emissions Data Centre and various oil sands reports. These subsectors are then aggregated into the economic sectors presented in this report. Macroeconomic variables, such as gross domestic product (GDP), population and industry growth assumptions from the macroeconomic model, are key drivers of energy use and GHG emissions in most sectors. More information about the E3MC model is available in Annex 4 section A4.6.

Projections for the LULUCF accounting contribution are developed separately, using reference level accounting for Forest Land remaining Forest Land (FLFL, excluding afforested land) and the associated Harvested Wood Products (HWP), and Net-net accounting for all other land categories. The suite of models that Canada uses to develop its LULUCF projections includes:

- The National Forest Carbon Monitoring Accounting and Reporting System (NFCMARS), which builds on information in Canada's National Forest Inventory and on additional provincial and territorial forest inventory information.
- The Carbon Budget Model of the Canadian Forest Sector (CBM-CFS3), the core model of NFCMARS. CBM-CFS3 is an aspatial, stand- and landscape-level modelling framework used for international reporting of the forest carbon balance of Canada's managed forest. It is a Tier 3 forest carbon dynamics estimation tool that is fully consistent with the IPCC inventory guidelines.
- The Canadian Regional Agricultural Model (CRAM), a static partial equilibrium economic model that provides a detailed characterization of agriculture activities in Canada.
- The Canadian Agricultural Greenhouse Gas Monitoring Accounting and Reporting System (CanAG-MARS), used to estimate the resource use patterns of the Agriculture sector for projections. These are fed into CanAG-MARS to generate emissions/removals estimates for CLCL.
- The Canada-specific National Forest Carbon Monitoring, Accounting and Reporting System for Harvested Wood Products (NFCMARS-HWP), to monitor and quantify the end use of carbon from domestic harvest.

See Annex 4 Section A4.6.4 for more information on the models and assumptions used to develop Canada's LULUCF projections.

2.6.1.2 Changes in methodology

Since the release of the NC8/BR5 in 2022, Canada has made several revisions to how it develops projections of GHG and air pollutant emissions to improve the accuracy of results. Significant methodological improvements were implemented in the NIR2024 for the upstream oil and gas and managed forest land sectors, among others, along with the implementation of the IPCC Fifth Assessment Report (AR5) Global Warming Potential (GWP) values. Overall, NIR2024 incorporates upward revisions of 29 Mt in 2005 and 28 Mt in 2021, relative to the previously (2023) published inventory. As the projections are calibrated using historical data, those revisions carry forward into the projections. The enhanced methods use Canadian-specific studies and knowledge, facilitate the adoption of new scientific data, and better reflect evolving technologies and industry practices.

This is the first time the NAEM was used to develop ECCC projections in E3MC. The main differences between the NAEM and the former macroeconomic model (The Informetrica Model) is that NAEM is solved at the regional level rather than national and is based on the current System of National

Accounts, including recent Supply and Use Tables. The process imposed for developing the projections remains unchanged with the new macroeconomic model. For more information on the NAEM, see Annex 4, Section A4.6.3.

For the first time in its UNFCCC reporting, Canada has included a probabilistic analysis which shows the statistical uncertainty arising from the uncertainty associated with future economic activity and energy prices.

For more information on how Canada's methodology for calculating projections of GHG and air pollutant emissions has changed, including historical data, policy coverage, and methods, see Annex 4, Section A4.6.6.

2.6.1.3 Assumptions on policies and measures

Canada's GHG emissions projections are based on the current economic structure and policy context subject to future changes that will occur in government policy, energy supply, demand and technology, or domestic and international economic and political events. A series of plausible assumptions are made regarding, among others, population and economic growth, prices, demand and supply of energy, and the evolution of technologies. More details about the assumptions used in the 2024 projections can be found in Annex 4, Sections A4.6.1 and A4.7.4.

"With Measures" Scenario

Following international guidelines, projections in Canada's WM scenario include federal, provincial, and territorial policies and measures that were in place as of the cutoff date of August 2024, and assume no further government action. They also include the accounting contribution from the LULUCF sector. To be included in the WM scenario, policies and measures must:

- Have the necessary legislative and financial support;
- Have sufficient quantifiable information available for its impact to be estimated; and
- Be expected to produce meaningful reductions (at least 100 kt CO_2 eq)

The list of policies and measures modelled in the WM scenario can be found in Annex 4, Section A4.6.7, Tables 8 and 9. Where program funding is set to end, the projections assume that the impacts of these programs, other than those embodied in consumer behaviour, cease when the approved funding terminates.

The WM scenario is designed to incorporate the best available information about economic growth, as well as energy demand and supply into the future. It starts with historical economic and demographic information, projected into the future using expected population and household estimates, economic projections (including real and nominal GDP growth, GDP inflation, exchange rate, interest rates, unemployment rate and consumer price index inflation), and historical and projected estimates of agricultural production and fuel use. It includes assumptions about future world oil and natural gas prices and production, and electricity generation and consumption. The projections capture the impacts of future production of goods and services in Canada on GHG emissions.

Alternate pathways of key drivers of emissions were modelled to explore a range of plausible emissions growth trajectories. The WM scenario represents the mid-range of these variations but remains conditional on the future path of the economy, world energy markets, and government policy.

“With Additional Measures” Scenario

The WAM scenario accounts for those additional policies and measures that are under development and for which there is enough information for the policies and measures to be modelled. It includes all federal, provincial, and territorial policies and measures from the WM scenario as well as those that have been announced but have not yet been fully implemented. This scenario also includes the accounting contribution from the LULUCF sector, and the impact of nature-based climate solutions (NBCS), agriculture measures, and credits purchased under the Western Climate Initiative (WCI). The WAM scenario excludes measures that are still in the development or planning stages for which there is not enough available information. For funding programs that have yet to fund specific projects, the scenarios include proxies that are based on the performance of similar programs. A list of policies and measures modelled in the WAM scenario can be found in Annex 4, Section A4.6.7, Tables 10 and 11.

Where program funding is set to end, the projections assume that the impacts of these programs, other than those embodied in consumer behaviour, cease when the funding terminates.

The WAM scenario is developed with assumptions similar to those used for the WM scenario. In the WAM scenario, however, real GDP growth is stronger than in the WM scenario through most years through 2040 due to added investment activity. Overall, real disposable income growth and labour productivity are somewhat stronger than the result for the WM scenario for years 2024 to 2040. Electricity generation is assumed to have more renewable and nuclear sources, and significantly lower fossil fuel use.

2.6.1.4 Sensitivity analysis

Given the uncertainty inherent in projecting into the future, the WM emissions projections should be seen as one estimate within a set of possible emissions outcomes over the projection period. To address this uncertainty, Canada examines alternative scenarios using sensitivity analysis, technology scenarios, and uncertainty analysis.

The sensitivity analysis shows how different assumptions of future domestic economic activity and energy prices would alter GHG emissions in 2030. In this analysis, alternative cases are modeled and analysed to explore the variability in, and the interaction of, future energy markets and economic growth, as well as their impact on emissions, under a range of assumptions.

Specifically, the sensitivity analysis includes six scenarios:

- Fast economic and population growth, high oil and natural gas prices;
- Fast economic and population growth;
- High oil and natural gas prices;
- Slow economic and population growth;
- Low oil and natural gas prices; and,
- Slow economic and population growth, low oil and natural gas prices.

The scenario with slow GDP growth, slow population growth, and low world oil and gas prices represents the low end of the range of the sensitivity estimates that have been prepared around the central WM scenario. The high end is represented by the scenario with fast GDP growth, high population growth, and high world oil and gas prices. The scenarios do not consider the impact of the LULUCF accounting contribution, NBCS, Agriculture Measures, and WCI Credits.

Canada also examines two separate technology (TECH) scenarios that explore the impact on emissions of the uptake of several emerging technologies and trends with significant potential to reduce

energy use and emissions, using the same initial assumptions as the WAM scenario. Specifically, it examines a High Adoption Tech scenario, and a Low Adoption Tech scenario. The High Adoption Tech scenario assumes that the stringency of carbon pricing performance standards is increasing post 2030 in line to keep the carbon pricing markets in balance. Conversely, the Low Adoption Tech scenario models slower technological progress and less aggressive cost reductions.

For the first time, Canada has included an uncertainty analysis of its projections of GHG and air pollutant emissions projections, in the form of probabilistic analysis. This analysis shows the statistical uncertainty arising from the uncertainty associated with future economic activity and energy prices. This information is important because it indicates the extent to which the emissions projections are influenced by different assumptions. The limitation of this analysis is the lack of information about the likelihood of these different scenarios. Monte Carlo uncertainty analysis fills this void by taking into account the probability distribution function (PDF) of both input variables.

For a detailed description of the assumptions, sensitivity analysis and alternative scenarios used in the 2024 projections, see Annex 4, Section A4.4.

2.6.2 Projections of Canada's key indicator to determine progress towards its Nationally Determined Contribution

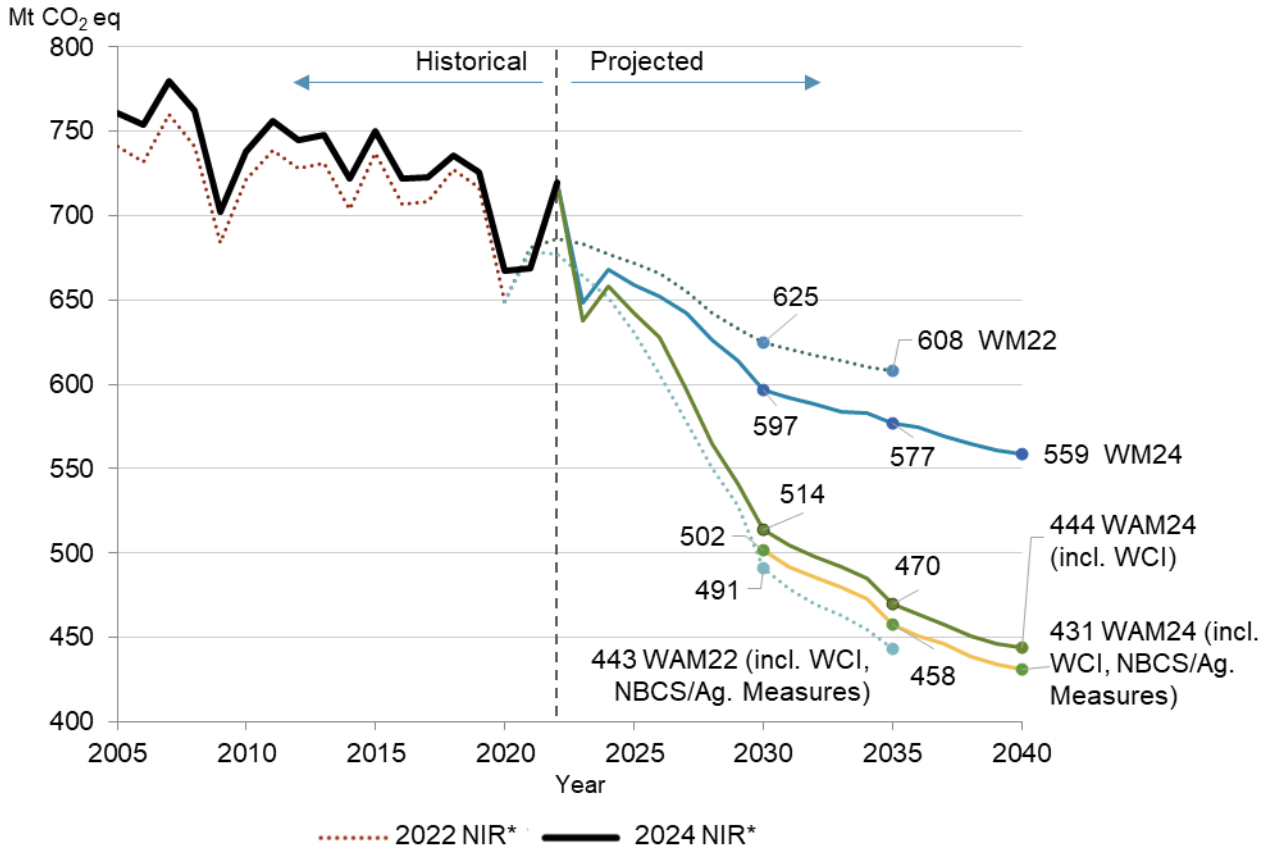
The following section is also intended to address MPG 97.

Canada uses emissions reductions as the indicator to assess progress towards its NDC. Projections of emissions as a national total may provide an estimate of the direction of Canada's key indicator and are summarized in Section 2.6.3.1 and detailed in Annex 4.

Table 2-6: Total Canadian GHG emissions (Mt CO_2 eq), including LULUCF accounting contribution, historic emissions and With Additional Measures (WAM) projections scenario, selected years

Year	National Total Excluding LULUCF	LULUCF Accounting Contribution	Total	% Change in total from 2005	Historical / Projection
2005	761*	NA	761	NA	Historical
2021	698	-29	669	-12%	Historical
2022	708	12	720	-5%	Historical
2023	682	-44	638	-16%	Projection (WAM)
2024	687	-29	658	-14%	Projection (WAM)
2025	671	-29	642	-16%	Projection (WAM)
2026	656	-28	628	-18%	Projection (WAM)
2027	625	-28	597	-22%	Projection (WAM)
2028	593	-28	565	-26%	Projection (WAM)
2029	570	-28	541	-29%	Projection (WAM)
2030	530	-28	502	-34%	Projection (WAM)

Figure 2-7: Total Canadian GHG emissions (Mt CO_2 eq), including LULUCF accounting contribution, current and previous projections (scenarios from 2022 and 2024 projections), 2005 to 2040



Notes: Historical emissions data come from NIR2022 and NIR2024, and include the LULUCF accounting contribution. Access more data.
WM24: Current With Measures scenario.
WAM24: Current With Additional Measures scenario.
WM22: With Measures scenario published in NC8/BR5 in 2022.
WAM22: With Additional Measures scenario published in NC8/BR5 in 2022.

2.6.3 Projections as a national total, on a sectoral basis, and by gas

This section addresses paragraph 98 of the MPGs.

2.6.3.1 Projections as a national total

In 2022, the last year for which historical data was available, Canada's emissions excluding LULUCF were 708 Mt. When including the accounting contribution of the LULUCF sector, Canada's emissions reached 720 Mt (or 5.5% below 2005).

Between 1990 and 2022, Canada's total GHG emissions increased from 608 Mt to 708 Mt. The Oil and Gas sector saw the most significant rise, nearly doubling from 118 Mt to 217 Mt. Transportation emissions also grew substantially, from 118 Mt to 156 Mt. Conversely, emissions from the Electricity sector decreased significantly, from 94 Mt to 47 Mt. Heavy Industry emissions dropped from 97 Mt to 78 Mt, while emissions from Buildings increased from 72 Mt to 89 Mt. Agriculture emissions rose from 51 Mt to 70 Mt, and emissions from Waste and Other sources slightly decreased from 57 Mt to 51 Mt.

Summaries of drivers are provided below for each economic sector. A more detailed discussion of the underlying trends driving these changes is provided in Annex 4, Section A4.3.2.

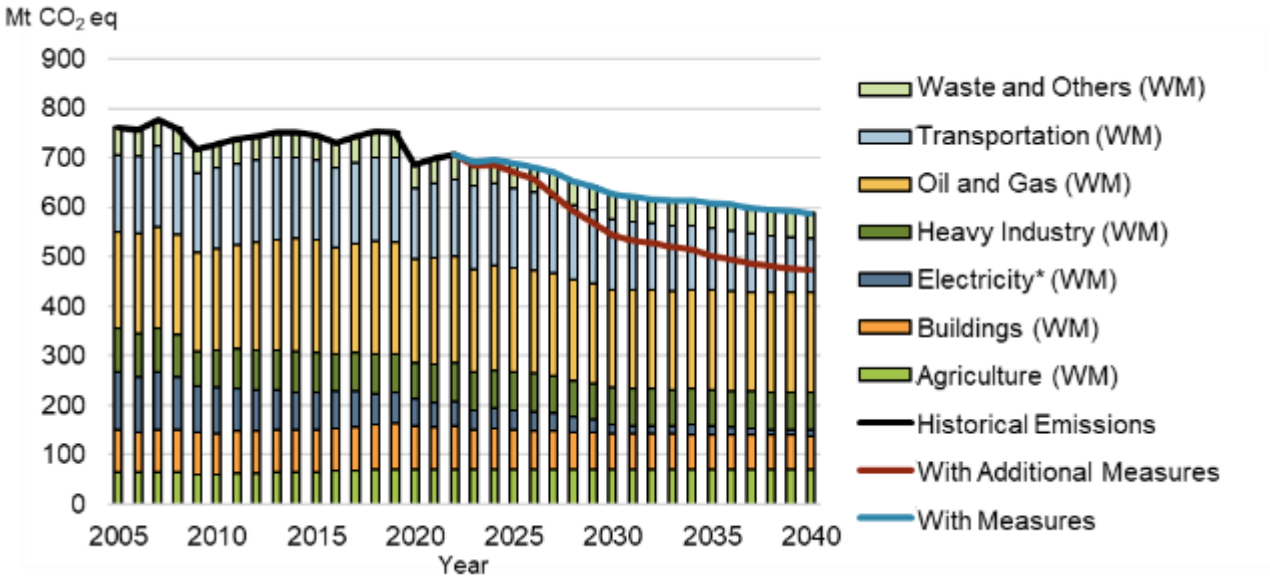
Under the WM scenario, GHG emissions excluding LULUCF are projected to decline to 626 Mt in 2030. With the LULUCF accounting contribution included, 2030 emissions are projected to be 597 Mt in the WM scenario. Post-2030, emissions projected in the WM scenario continue to decline, reaching 559 Mt in 2040 (including the LULUCF accounting contribution).

Under the WAM scenario, emissions in 2030 decline to 502 Mt, including the LULUCF accounting contribution as well as contributions from NBCS, Agriculture Measures, and credits purchased under the WCI. Post-2030, emissions projected in the WAM scenario (including LULUCF accounting contribution, NBCS, Agriculture Measures, and WCI Credits) continue to decline, reaching 431 Mt in 2040.

2.6.3.2 Projections of Emissions on a Sectoral Basis

For the purposes of analyzing economic trends and policies, Canada classifies emissions by economic sector as opposed to IPCC sectors. Canada's emissions are broken down by the following economic sectors: Oil and Gas, Transportation, Electricity, Heavy Industry, Buildings, Agriculture, and Waste and Others (Others includes coal production, light manufacturing, construction, and forest resources). Throughout this section, the word "sector" generally refers to economic sectors as defined above, except when the expression "IPCC sectors" is used in reference to the Canadian context.

Figure 2-8: Economy wide emissions by economic sector (Mt CO_2 eq), WM and WAM scenarios, excluding LULUCF accounting contribution, NBCS, Agriculture Measures, and WCI credits, 2005 to 2040



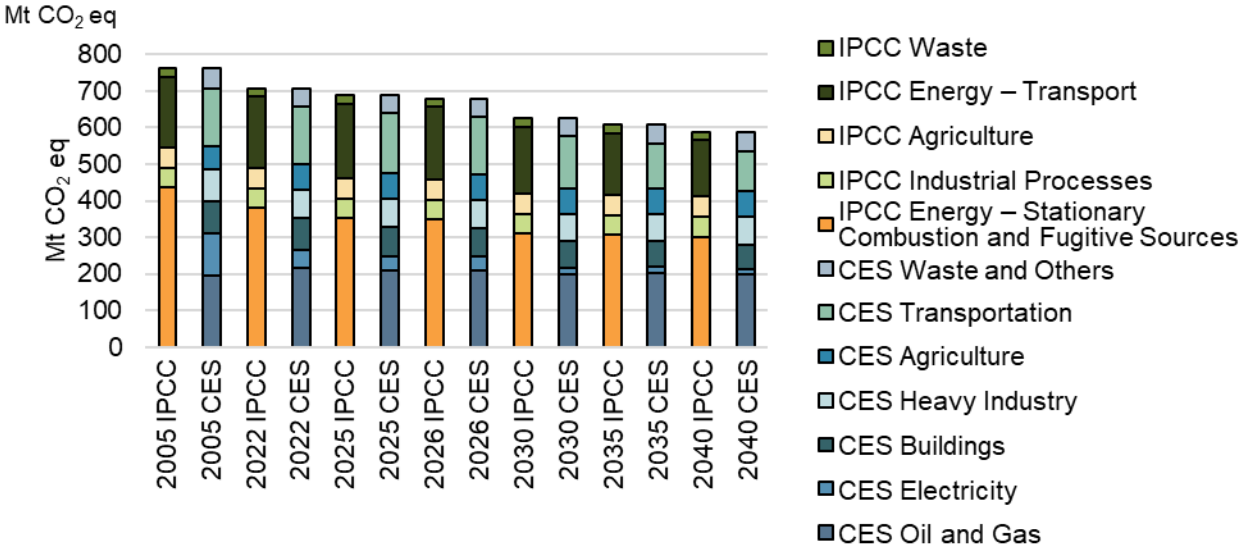
For information on specific policies and measures included in the WM and WAM scenarios, please refer to Annex 4, section A4.6.7.

Table 2-7: Emissions by economic sector (Mt CO_2 eq), WM and WAM scenarios, 1990 to 2040 (selected years)

Economic Sector	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	2005	2022	2025	2026	2030	2035	2040	2025	2026	2030	2035	2040
Oil and Gas	118	195	217	209	208	199	201	201	205	202	153	152	151
Electricity	94	117	47	40	39	18	18	11	39	37	19	14	9
Transportation	118	156	156	162	158	142	125	109	163	159	144	118	92
Heavy Industry	97	88	78	77	77	74	73	77	74	71	58	57	63
Buildings	72	85	89	81	79	75	71	69	81	79	70	60	54
Agriculture	51	66	70	70	69	69	69	69	69	67	65	66	66
Waste and Others	57	55	51	49	49	50	51	53	47	46	33	34	37
Subtotal	***608***	***761***	***708***	***688***	***680***	***626***	***608***	***589***	***679***	***662***	***543***	***501***	***473***
WCI Credits	NA	NA	NA	NA	NA	NA	NA	NA	-8	-5	-1	0	0
LULUCF Accounting Contribution	NA	0	12	-29	-28	-28	-31	-30	-29	-28	-28	-31	-30
NBCS and Agriculture Measures	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-12	-12	-12
Total	**608**	**761**	**720**	**659**	**652**	**597**	**577**	**559**	**642**	**628**	**502**	**458**	**431**

While this section deals primarily with economic sectors, Figure 2-9 and Table 2-8 outline Canada's GHG emissions based on IPCC sectors.

Figure 2-9: Total Canadian GHG emissions, WM scenario (Mt CO_2 eq), excluding LULUCF accounting contribution – by IPCC and Canadian Economic Sector (CES) categorization



Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024.

Table 2-8: Emissions by IPCC sector (Mt CO_2 eq), excluding LULUCF accounting contribution, NBCS, Agriculture Measures, and WCI credits, WM and WAM scenarios, 1990 to 2040 (selected years)

IPCC Sector	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	2005	2022	2025	2026	2030	2035	2040	2025	2026	2030	2035	2040
Energy – Stationary Combustion and Fugitive Sources	344	435	381	354	350	312	308	301	343	333	239	221	215
Transport	145	190	196	202	198	184	169	154	202	199	184	159	134
Industrial Processes	55	55	51	53	52	51	52	54	54	52	54	55	57
Agriculture	42	56	56	56	56	56	56	56	56	54	52	53	53
Waste	21	24	23	24	24	24	24	24	24	24	14	14	14
Total	**608**	**761**	**708**	**688**	**680**	**626**	**608**	**589**	**679**	**662**	**543**	**501**	**473**

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.

Oil and Gas sector

Historical emissions: Between 1990 and 2022 emissions increased by 99 Mt, largely due to a rapid expansion of Canada's oil sands. Emissions in 2022 were relatively stable with a 0.4% increase from 2021. In 2022, emissions from the Oil and Gas sector represented approximately 31% of Canada's total GHG emissions, excluding the LULUCF accounting contribution.

WM scenario: During the projection period, emissions from increased production in Canada's Oil and Gas sector are expected to be partly offset by declining emission intensities across all subsectors. Government measures like methane regulations, carbon pricing, and *Clean Fuel Regulations*, along with the growth of carbon capture and storage technology, will help constrain emissions despite rising production. Oil and gas price and production projections are based on external preliminary forecast from the upcoming Canada Energy Regulator's Energy Future 2025 outlook.

WAM scenario: The WAM scenario explores how the sector could evolve in a more ambitious policy environment. In this scenario, the Oil and Gas sector experiences substantial additional emissions abatement due to announced policies such as enhanced methane regulations, oil and gas emissions cap and others, further driving decarbonization, energy efficiency, and methane emissions reductions throughout the industry.

More details about projections in the Oil and Gas sector are available in Annex 4, section A4.3.2.1.

Transportation sector

Historical emissions: Most transport emissions in Canada come from road transportation, which includes personal transportation (light-duty vehicles and trucks) and heavy-duty vehicles. Despite a reduction in kilometers driven per vehicle, the total vehicle fleet in 2022 increased by 27% since 2005, most notably for trucks (both light- and heavy-duty), leading to more kilometers driven.

Overall, emissions levels in 2022 were the same as in 2005. The Transportation sector was the second largest contributor to Canada's GHG emissions, making up 22% of overall emissions, excluding LULUCF.

WM scenario: A small increase will be seen in the short-term as activity continues to ramp up post-2020. By 2027 emissions will decline below both peak and 2005 levels as the stock turns over to more efficient vehicles and ZEVs.

Each subsector (passenger, freight, and others) of the Transportation sector exhibits different trends during the projection period. For example, emissions from passenger and freight transportation are projected to decrease between 2005 and 2030, while those from offroad vehicles (for example, recreational, commercial, and residential) are projected to slightly grow over the same period. Passenger emissions post-2030 through 2040 drop further, as the required ZEV share of new light-duty vehicle sales reaches 100% in 2035 and an increasing number of ZEV on the road are balanced with economic growth driving increased freight emissions. Freight emissions are projected to increase in post-2030 as economic growth continues.

WAM scenario: Emissions will decline slightly further due to efficiency gains in diesel and gasoline vehicles from alignment with the US regulations. Freight sector emissions will be lower due to stricter ZEV sales targets in MHDVs. MHDV ZEV new vehicle market share sees their increase take effect in later years targeting 35% in 2030 and 100% where feasible in 2040. Improved efficiency for marine, air, and trucks, as well as funding to retrofit MHDVs will contribute to 2030 emissions reductions in the freight subsector. Greater efficiency of the on-road passenger fleet will continue.

More details about projections in the Transportation sector are available in Annex 4, section A4.3.2.2.

Electricity sector

Historical emissions: Between 1990 and 2022, emissions decreased by 47 Mt (-50%), despite an increase in demand domestically and in exports. Electricity emissions have decreased by 69 Mt (-59%) since 2005, despite a 10% increase in demand. Emissions reductions result from less GHG-intensive sources being used to generate electricity. Currently, about 88% of the utility electricity supply in Canada is generated from non-GHG emitting sources, comprising only 7% of total Canadian GHG emissions, excluding LULUCF, in 2022.

WM scenario: Emissions in the sector are projected to decrease further by 2030 despite an expected increase in electricity generation. Electricity generation in Canada is dominated by hydro. In 2022, in the WM scenario, it represents 65% of utility generation and 27% of industrial generation. The remaining utility generation is made up of nuclear (14%), fossil fuels (12%) and other renewables (8%), whereas the remaining industrial generation is comprised of fossil fuels (62%) and other renewables (10%). In the projections, the fastest source of growth is from wind and hydro. The share of nuclear is expected to remain stable, while emissions from coal-fired generation are projected to decline due to coal-fired electricity phase out by 2030. Emissions from refined petroleum products are also expected to decline, while emissions from natural gas are expected to remain significant as it replaces coal in some provinces.

WAM scenario: Electricity generation is higher by the end of the projections in the WAM scenario than in the WM scenario due to more ambitious electrification of the economy. Despite this, electricity emissions projections are lower in the WAM scenario after 2035. The *Clean Electricity Regulations* is the main reason why emissions are lower in the WAM scenario.

More details about projections in the Electricity sector are available in Annex 4, section A4.3.2.3.

Heavy Industry sector

Historical emissions: Emissions from this sector represented 16% of total Canadian emissions in 1990, falling to 12% in 2005. In more recent years, emissions have fallen further because of reduced economic activity and the continued evolution of Canadian production towards other sectors and services, decreasing by 10 Mt (-11%) between 2005 and 2022. In 2022, the sector contributed 11% to Canada's total emissions.

WM scenario: From 2023 to 2030, emissions are projected to decline in the WM scenario due to efficiency efforts, decarbonization of facilities and industries funded by LCEF, SIF-NZA, and other programs, and the OBPS. From 2031 to 2040, GHG emissions are projected to increase relative to their 2030 levels but remain slightly below their 2022 levels.

WAM scenario: From 2023 to 2030 emissions will decline further, driven by SIF-NZA projects, further hydrogen adoption, and investments from the Canada Growth Fund and carbon revenue returns. Like the WM scenario, emissions are projected to increase slightly relative to their 2030 levels between 2031 and 2040 but remain below 2022 levels.

More details about projections in the Heavy Industry sector are available in Annex 4, section A4.3.2.4.

Buildings sector

Historical emissions: While residential fuel use has remained steady since 1990, increases in the commercial subsector have resulted in an increase in emissions of 16 Mt (23%) between 1990 and 2022. Since 2005, emissions increased by 3.9 Mt or 4.5%. In 2022, the Buildings sector contributed 13% to total Canadian emissions.

WM scenario: Between 2022 and 2030, emissions are projected to decline by 14 Mt, mostly due to electrification of heating equipment and phase-down and ban on bulk imports of hydrofluorocarbons (HFCs) used in refrigeration and air conditioning. Post-2030, emissions from buildings are expected to decline by a further 6 Mt.

WAM scenario: Emissions will decline to 70 Mt by 2030, largely due to the introduction of net-zero ready building codes for new buildings. In 2040, buildings emissions are projected to reach 54 Mt in the WAM scenario.

More details about projections in the Buildings sector are available in Annex 4, section A4.3.2.5.

Agriculture sector

Historical emissions: The majority of emissions from agriculture are due to biological processes in animal and crop production, and inorganic and organic fertilizer. Emissions from the Agriculture sector rose from 51 Mt in 1990 to 66 Mt in 2005, and 70 Mt in 2022.

WM scenario: Projections from the WM scenario show a slight decrease in emissions between 2022 and 2030, with 2030 emissions still slightly higher than their 2005 levels, reflecting the impact of reductions from cross-sectoral measures such as carbon pricing and the *Clean Fuel Regulations* as well as the Agricultural Clean Technology program.

WAM scenario: Agricultural emissions (excluding the LULUCF accounting contribution from Cropland) emissions decline more rapidly to just below 2005 levels in 2030. This is due to the fertilizer target, a reduction of N_2O emissions from fertilizer application to 30% below 2020 levels. Emissions are projected to remain at stable levels in both scenarios from 2030 to 2040.

More details about projections in the Agriculture sector are available in Annex 4, section A4.3.2.6. Agricultural land also makes significant contributions to LULUCF emissions, with agricultural lands acting as carbon sinks in most years since 2005. More details about the contribution of agricultural lands to LULUCF accounting are provided in the LULUCF section.

Waste and Others

Historical emissions: Subsectors in the Waste and Others sector include waste, light manufacturing, coal production, construction, and forest resources. In 2022 emissions were reported to have decreased by 6.9 Mt (-12%) since 1990 and 4.3 Mt (-7.8%) since 2005.

WM scenario: Between 2023 and 2030, emissions are projected to remain flat relative to their 2022 levels. Post-2030 emissions are projected to increase out to 2040. Waste emissions are influenced by provincial and territorial waste diversion programs and landfill gas regulations. Key policy measures like carbon pricing, Québec's decarbonization programs, and energy efficiency initiatives help limit GHG emissions growth in light manufacturing and other subsectors. Additionally, stable demand for coal, primarily metallurgical, helps to constrain emissions from coal production.

WAM scenario: In the WAM scenario, GHG emissions are lower than in the WM scenario, mainly due to additional measures like federal landfill gas regulations and investments from the Canada Growth Fund. From 2030 to 2040, emissions in solid waste and light manufacturing are expected to rise but remain below 2022 levels due to increasing projected output in light manufacturing. Emissions in forestry, construction, and coal production are also projected to increase slightly due to economic growth. In contrast, waste emissions are expected to significantly decline after the implementation of federal landfill gas regulations in 2027.

More details about projections in the Waste and Others sector are available in Annex 4, section A4.3.2.7.

2.6.3.3 Projections by Gas

Carbon Dioxide (CO_2): Between 1990 and 2022, emissions increased by 93 Mt. It represented 75% of total Canadian GHG emissions in 2005, a trend that will continue rising. CO_2 emissions are projected to decline by 15% between 2005 and 2030 in the WM scenario, and by 23% in the WAM scenario. Between 2022 and 2030, CO_2 emissions are projected to decrease in all sectors in the WM and WAM scenarios. This trend is expected to continue after 2030 in both scenarios.

Methane (CH_4): Emissions have risen since 1990, peaking at 152 Mt in 2006, then fluctuating and decreasing to 117 Mt by 2022, matching 1992 levels and making up 17% of the country's total emissions. In the WM scenario, emissions are projected to decrease by 9% between 2022 and 2030. The WAM scenario projects methane emissions to be significantly lower, due to the impacts of the proposed federal landfill gas regulations and strengthening of the oil and gas methane regulations. Both the WM and WAM scenarios project CH_4 emissions will stay near 2030 levels until 2040, with a 1% increase in the WM scenario, and a 2% decrease in the WAM scenario. In November 2021, Canada joined over 100 countries in supporting the Global Methane Pledge (GMP). This pledge commits members to a collective goal of reducing human-caused methane emissions by 30% below 2020 levels by 2030. In the WM scenario, CH_4 emissions are 11% lower than their 2020 level in 2030, and 41% in the WAM scenario.

Nitrous oxide (N_2O): Emissions accounted for 28 Mt CO_2 eq (4%) of Canada's emissions in 2022, down 2.3 Mt (-7.4%) from 1990 levels. In the WM scenario, emissions are projected to remain relatively flat

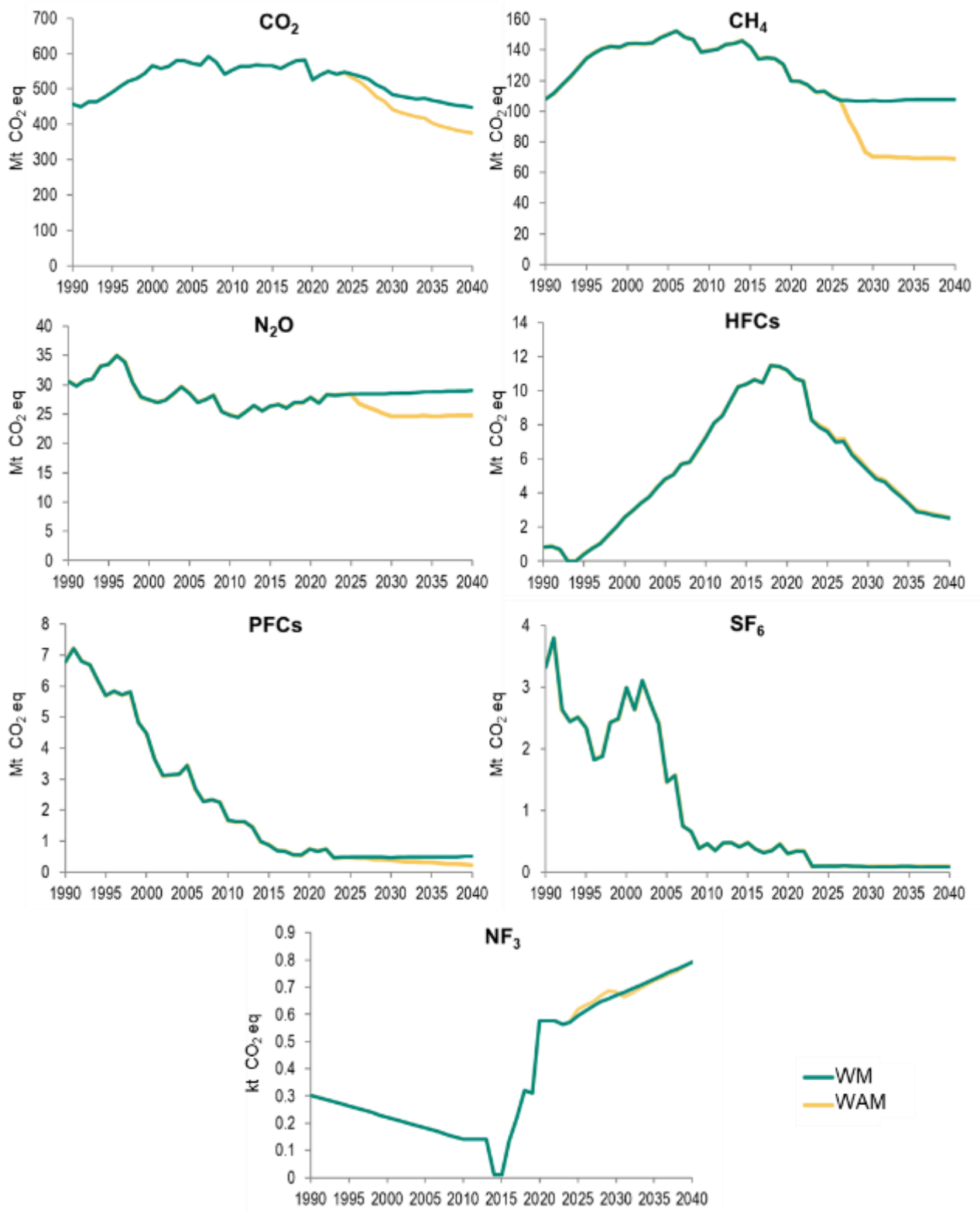
between 2022 and 2030. The WAM scenario reflects the impact of achieving the 30% reduction in N_2O emissions from fertilizer application below 2020 levels in the Agriculture sector. Post 2030, N_2O emissions are projected to increase by 2% by 2040 in the WM scenario and by 1% in the WAM scenario.

Hydrofluorocarbons (HFCs): Emissions in 2022 were 9.8 Mt higher than in 1990 due to the replacement of hydrochlorofluorocarbons (HCFCs) with HFCs. Emissions of HFCs are projected to peak in 2018 at 11 Mt CO_2 eq before declining to 5 Mt CO_2 eq in 2030 in the WM and WAM scenarios. Emissions are projected to decline further to 3 Mt by 2040 in the WM and WAM scenarios. Emissions of HFCs are projected to be slightly higher in the WAM scenario than in the WM scenario due to higher investments and increased activity in the commercial sector.

Perfluorocarbons (PFCs) emissions and sulphur-hexafluoride (SF_6) emissions have both declined between 1990 and 2022 and are projected to decrease substantially over the projection period. Emissions of nitrogen trifluoride (NF_3) are expected to be less than 1 kt during the same period in both the WM and WAM scenarios.

For more information about the historical trends of these gases please refer to Section 2.2 of NIR2024. For more information about the projection trends of these gases and underlying policies and measures, please refer to Annex 4, section A4.3.5.

Figure 2-10: Total Canadian emissions (Mt CO_2 eq, except for NF_3), excluding LULUCF, NBCS, agriculture measures, and WCI credits, by gas, WM and WAM scenarios, 1990 to 2040



Note: Historical emissions data come from NIR2024. Access more data.

GHG emissions projections by sector and by gas under the WM and WAM scenarios, excluding LULUCF, NBCS, agriculture measures, and WCI Credits are presented in Table 31 through Table 37 in Annex 4, section A4.7.1.

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[169] From 2025, Environment and Climate Change Canada's Federal Plastics Registry will collect more granular data on plastic products that are diverted to reuse, repair, remanufacture, refurbishment and then to recycling and disposal.
[170] Previously, this inventory was prepared and submitted in accordance with the revised Guidelines for the Preparation of National Communications by Parties Included in Annex I to the Convention, Part I: UNFCCC Reporting Guidelines on Annual Inventories (UNFCCC Reporting Guidelines), adopted through Decision 24/CP.19 in 2013. Since 2024, reporting is done using the Enhance Transparency Framework's MPGs.

Chapter 3: Climate change impacts and adaptation

Chapters 3 and 4 of this report also serve as Canada's second Adaptation Communication under the Paris Agreement.

3.1 National circumstances, institutional arrangements, and legal frameworks

The following section addresses paragraph 106 of the MPGs.

3.1.1 National circumstances

The following section addresses paragraph 106(a) of the MPGs.

Canada's diverse climate, geographic and demographic circumstances, as well variations in social and economic activities require adaptation to be tailored to regional and local contexts. Despite its vastness, Canada's population remains the smallest among the G7, at 41.2 million in 2024. Two-thirds of Canada's population live in areas located within 100 kilometres of the Canada–US border, leaving large parts of the country sparsely populated.

Canada experiences a wide range of climate conditions, with most of southern Canada, where majority of the population lives, experiencing warm summers and cold winters. Long-term warming of Canada's climate is evident and well-documented. Northern regions have experienced the strongest amount of warming, while overall, Canada has warmed at about twice the global rate. Ongoing climate warming is increasing the frequency and intensity of many kinds of extreme weather events around the world, including those occurring in Canada.

3.1.2 Institutional arrangements and governance

The following section addresses paragraph 106(b) of the MPGs.

Adaptation is a shared responsibility spanning all orders of government and all sectors of Canadian society. Canada is a federation consisting of ten provinces and three territories that share a common federal government. Canada's Indigenous Peoples have an inherent right to self-government, which is recognized and affirmed under Section 35 of Canada's *Constitution Act, 1982*.

3.1.2.1 Federal government

The federal government makes key contributions to adaptation action by demonstrating leadership, supporting foundational science and information, building knowledge and capacity, convening partners to coordinate action, and investing in adaptation solutions. For example, the government:

- generates climate change data and information to inform evidence-based decision-making related to climate change impacts and adaptation;
- convenes and facilitates collaboration amongst key partners and stakeholders to advance the alignment of climate change adaptation efforts;
- sets long-term policy in areas of national concern;
- uses the federal spending power to enable targeted actions by others in areas where there are strong justifications to do so;
- creates and implements nationally applicable measures, such as laws, regulations, codes, and standards, to meet the needs of Canadians living in various contexts across the country;
- advances Nation-to-Nation relationships with First Nations, Inuit, and Métis; and,
- supports the consideration of Indigenous science on par with western science.

3.1.2.2 Provincial and Territorial governments

Provincial and territorial governments play important roles in climate adaptation in their jurisdictions, particularly relating to property and social matters, through their work developing land-use planning and building regulations, managing healthcare and natural resources, investing in resilient infrastructure, funding and implementing emergency services and education, and collecting local data to assess climate risks. Territorial governments share the same areas of responsibility as their provincial counterparts; however, the specific challenges in Canada's North, such as less resourcing and capacity, influence their ability to implement the full range of adaptation policies and programming under their jurisdiction. As such, the federal government holds additional responsibilities in provision of financial, technical, and human resource capacity to address complex crises such as climate change in the territories.

3.1.2.3 Indigenous Peoples

Since time immemorial, the ability of Indigenous Peoples to adapt to and care for their territories has been crucial in ensuring a flourishing way of life and rich, strong cultures. Unique relationships with the land, waters, and ice compound the effects of climate change for Indigenous Peoples, leading to disproportionate impacts on First Nations, Inuit, and Métis, including intensified effects of wildfires and flooding, food insecurity, and health impacts.

Faced with the current challenges of anthropogenic climate change, First Nations, Inuit, and Métis are already leading efforts to adapt to the impacts of climate change and are developing climate change

strategies and actions to set out a long-term vision for adaptation in their communities and regions. These include national-, regional-, and community-level strategies and initiatives that reflect the diverse circumstances and priorities of Indigenous Peoples across the country. Adaptation actions in Indigenous communities and territories are more effective, meaningful, and durable when they are designed, delivered, and determined by and for Indigenous Peoples.

For First Nations, Inuit, and Métis, climate change adaptation must be premised on the right to self-determination and should support Indigenous Peoples in caring for their lands, waters, and ice and leading adaptation action within their territories. Indigenous-led strategies demonstrate that Indigenous Knowledge Systems encompass different perspectives for understanding environmental complexity, and they include action plans to reduce, manage, and adapt to environmental change in a place-based and holistic manner. In a changing climate, it is critical to prioritize Indigenous Knowledge Systems and support Indigenous self-determined actions and initiatives aimed at protecting biodiversity and maintaining the adaptive capacity of ecosystems. Indigenous Peoples have demonstrated the success of Indigenous-led climate action, from nature stewardship to clean energy projects, across the country. Indigenous Peoples are best placed to know the solutions that will work within their territories and are well-positioned to identify the actions that will support adaptation efforts as they cope with the impacts of climate change.

Indigenous Peoples have called for Canada to respond meaningfully to their priorities in the climate space and to make funding support for climate action more accessible and equitable for First Nations, Inuit, and Métis. Further, Indigenous Peoples have been calling for Canada to implement climate action that is consistent with the Paris Agreement, including urgent and transformative measures to slow climate change and address the impacts of a rapidly changing climate.

To support Indigenous Peoples' actions in response to their climate priorities and adaptation plans, the Government of Canada is committed to advancing an Indigenous Climate Leadership Agenda. The goal of the Indigenous Climate Leadership Agenda is to implement a model of partnership for climate action between the federal government and Indigenous Peoples that is based on the recognition of rights, respect, and cooperation.

3.1.2.4 Local and regional governments

Local and regional governments have been at the frontlines of climate adaptation, providing a lens into local circumstances and directly involving citizens and communities in adaptation efforts. Municipalities and regional governments are integrating adaptation considerations into the decision-making process, including land-use planning and zoning, water supply and wastewater management, and flood and wildfire risk management.

3.1.2.5 Private sector

Businesses of all sizes and across sectors in Canada are integrating climate considerations into their investments, planning, and operational decisions. There is growing demand for climate services and information. For example, many professional associations seek this information to inform and equip their members in addressing climate change.

3.1.3 Legal and policy frameworks and regulations

The following section addresses paragraph 106(c) of the MPGs.

Canada's first National Adaptation Strategy, released in 2023, provides a national policy framework for adaptation, establishing a shared vision for a climate-resilient Canada and setting goals and objectives to guide whole-of-society adaptation action.

Climate change adaptation is primarily managed by environment departments at federal, provincial, and territorial levels. Environment and Climate Change Canada leads coordination for the implementation of the National Adaptation Strategy, structured around five interconnected systems overseen by different federal departments, ensuring policy coherence and program integration.

To support a collaborative framework aimed at fostering a sustainable Prairie economy, the *Building a Green Prairie Economy Act* was passed in December 2022. The commitment by the federal government to have stronger coordination between federal departments is structured around five key pillars: growing key regional sectors; effective movement of goods, people, and information; expanding and capitalizing on clean electricity; community economic development; and economic reconciliation and inclusive growth, led by Indigenous Services Canada.

Some provinces and territories have legislation that supports adaptation. For example, British Columbia's *Climate Change Accountability Act* requires the Minister of Environment and Climate Change to prepare a public report each year that includes information on actions taken and planned to manage and progress on climate risks. Nova Scotia's *Environmental Goals and Climate Change Reduction Act* required the province to create a strategic plan to adapt to the impacts of climate change (the *Climate Change Plan for Clean Growth* was released in 2022, is reported on annually, and will be reviewed and updated within five years of its release), and the province also published *The Future of Nova Scotia's Coastline: A plan to protect people, homes and nature from climate change* (2024);. Prince Edward Island's *Net-Zero Carbon Act* requires the province to report on climate change risks and progress every fifth calendar year after 2021.

3.2 Impacts, risks, and vulnerabilities

The following section addresses paragraph 107 of the MPGs.

3.2.1 Current and projected climate trends and hazards

Canada's climate is undergoing irreversible changes, with consequences for current and future generations of people across the country. Climate change is increasing the frequency and intensity of many kinds of severe weather and climate events nationwide; additional climate warming will exacerbate the risks of such events. Additionally, slow-onset changes, such as permafrost thaw and sea-level rise, are transforming landscapes and coastlines, affecting communities, livelihoods, and identities.

Over the past two decades, Canada has led three comprehensive national climate change assessment processes, which included sector- and region-specific reports focusing on the risks and opportunities presented by climate change and assess the country's readiness to adapt to potential impacts.

A comprehensive national climate science report was included for the first time in the most recent assessment cycle. The 2019 *Canada's Changing Climate Report* concluded that both past and future warming in Canada is, on average, about double the global rate, while warming in Northern Canada is approximately three times the global average. As additional warming in Canada is inevitable, many of the climate trends already observed in Canada are projected to continue. These include more extreme heat, less extreme cold, longer growing seasons, earlier spring peak streamflow, shorter snow and ice cover seasons, thinning glaciers, thawing permafrost, and rising sea-levels along many Canadian coastlines. A warmer climate will also contribute to increased drought and wildfire risks, and more intense rainfalls will increase urban flood risks. The magnitude of changes projected for Canada, as for all countries, clearly depends on future emissions of greenhouse gases globally.

Building on the *Canada in a Changing Climate Report*, the 2021 *National Issues Report* focused on climate change impacts and adaptation issues of national importance, such as communities, water resources, economic sectors, and international dimensions. The report highlighted that people across Canada are already experiencing climate change impacts, which will persist and intensify over time, necessitating additional efforts to effectively adapt. It also concluded that lessons on good practices are continuing to emerge in Canada and are helping to inform successful adaptation.

The 2022 *Health of Canadians in a Changing Climate* assessed climate risks to health and provided evidence-based information on how climate change affects health and healthcare systems. The report concluded that without concerted action, climate change will continue to cause injury, illness, and death in Canada, with greater warming posing greater health risks. It emphasized the need for rapidly scaling up inclusive and equitable actions to adapt to these growing threats. The 2024 *For Our Future: Indigenous Resilience Report* is the first Indigenous-led assessment report that discusses climate change impacts, experiences, and adaptation from the perspectives of First Nations, Inuit, and Métis. The report provides numerous examples of Indigenous-led initiatives and case studies, to support urgent calls to action on climate change.

Reports by external organizations also identify key climate impacts, vulnerabilities, and risks across Canada. For example, the Canadian Climate Institute's *Costs of Climate Change* series comprised five reports and provide an understanding and quantification of the potential costs of a changing climate in Canada. The findings demonstrated that climate change is already resulting in large national income losses. By 2025, Canada is expected to experience $25 billion in losses relative to a stable-climate scenario, which is equal to 50% of projected GDP growth. These losses could rise to $78 billion and $101 billion annually by 2050 for a low- and high-emissions scenario respectively, and $391 billion and $865 billion respectively by 2100. The Canadian Climate Institute found that climate change will cause job losses and reduce productivity, which will contribute to raising prices and undermining the economy.[171] There are also social, environmental, and intangible costs associated with a changing climate.

In the event of a large-scale natural disaster, the Government of Canada also provides financial assistance to provincial and territorial governments through the Disaster Financial Assistance Arrangements (DFAA), administered by Public Safety Canada.[172] When response and recovery costs exceed what individual provinces or territories could reasonably be expected to bear on their own, the DFAA provide the Government of Canada with a fair and equitable means of assisting provincial and territorial governments. Through the DFAA, assistance is paid to the province or territory—not directly to affected individuals, small businesses, or communities. A request for reimbursement under the DFAA is processed immediately following receipt of the required documentation of provincial or territorial expenditures and a review by federal auditors. In late 2022, an advisory panel presented its work in a final report titled *Building Forward Together: Toward a more resilient Canada*. The report outlines key findings and recommendations on how to modernize the DFAA program to not only support disaster recovery, but also help build more resilient communities.

Since the DFAA program was established in 1970, the Government of Canada has contributed over $9 billion in post-disaster assistance to help provinces and territories with the costs of response and returning infrastructure and personal property to pre-disaster condition. $5.2 billion (62% of this contribution) was paid over the past decade.

3.2.2 Sector-specific impacts

The following section provides an overview of the latest knowledge on key climate impacts affecting Canadians, based on recent national assessments.

3.2.2.1 Extreme weather events and climate-related disasters

Canada has seen increasing trends in many kinds of extreme weather events and climate-related hazards in recent decades. The frequency of events such as heatwaves, wildfires, and extreme rainfall-induced floods has risen, which can lead to injuries, community displacement, significant economic disruptions and damages, and loss of life. The increasing frequency of these events, sometimes occurring in rapid succession, can place difficult pressures on emergency response systems and our capacity to prevent, prepare, respond to, and recover from these disasters.

3.2.2.2 Ecosystems and ecosystem services

Climate change is negatively affecting Canadian ecosystems and their capacity to provide services. Increasing climate-related hazards, including extreme weather events, as well as shifting climate patterns, will continue to impact ecosystems and biodiversity in a variety of ways, such as species geographical-distribution shifts and disruption of the timing of critical life events. These impacts affect the ability of ecosystems to provide multiple values (e.g., cultural, spiritual, and societal values) and services to communities (e.g., food and water, climate regulation, carbon sequestration, air purification), with impacts expected to grow in severity under a changing climate. The *Canada in a Changing Climate: National Issues Report* (2021) concluded that climate change presents a multitude of risks, opportunities and trade-offs for Canada's ecosystems and the people that rely on them. The nature and severity of the impacts will depend on the rate and magnitude of climate changes in the years to come and in the success of adaptation measures.[173]

3.2.2.3 Infrastructure

Canada's infrastructure delivers essential services, including wastewater and stormwater management, drinking water access, energy production and distribution, and the movement of goods and people. Due to factors like age and historical design practices, climate change is expected to increasingly impact Canada's infrastructure, heightening the exposure and vulnerability of these assets. Such impacts could lead to structural failures and service disruptions, negatively affecting health and well-being, service reliability, and public safety.

Unlocking the potential of infrastructure for adaptation and resilience requires policies and programs focused on significantly avoiding damages and providing co-benefits, such as enhanced livability and protection of Canada's biodiversity. There are opportunities to significantly scale up investment to support Canadian communities in making their infrastructure more resilient to a changing climate, in ways that match the magnitude and time horizon of the risks being faced while considering the interdependencies across infrastructure systems. Additionally, natural infrastructure solutions are increasingly seen as win-win investments that support traditional infrastructure outcomes, such as stormwater management, while delivering valuable co-benefits, such as climate change resilience, reduced pollution, and carbon sequestration.

Decision-makers and professionals across Canada require tools and support for constructing and maintaining climate-resilient infrastructure. New climate-informed national guidance and standards are being developed to ensure infrastructure reflects current and future climate conditions, as many existing specifications are outdated. For example, updated floodplain maps and future extreme heat information are vital for optimal facility placement and design.

3.2.2.4 Health and well-being

People in Canada are already experiencing negative health impacts due to climate change, which are expected to worsen with continued warming. Climate change drives direct health effects related to rising temperatures, such as increasingly frequent and severe events like extreme heat and, wildfires, poor air quality, including due to wildfire smoke, and the spread of zoonotic diseases like Lyme disease. Climate change is also impacting mental health, both driving the onset of new mental health conditions and by exacerbating existing mental health conditions.[174] Climate change contributes to indirect health effects by impacting the social, environmental, cultural, and economic conditions that are critical to good health and strong health systems. Climate change is also increasing risks to health facilities and supply chains, disrupting the ability of health professionals to deliver essential health services. The 2022 *Health of Canadians in a Changing Climate* concluded that, without concerted action, climate change will continue to cause injury, illness, and death in Canada, with greater warming posing greater health risks.

3.2.2.5 Economy

The 2021 *National Issues Report* concluded that climate change is affecting nearly every sector of the Canadian economy, with impacts set to increase in the future. Natural resource-based sectors are particularly sensitive, including forestry, fisheries, agriculture, mining, energy, transportation, and tourism. For instance, the forestry sector faces risks including pest outbreaks, wildfires, and long-term species shifts, reducing the health and resilience of forests and constraining timber supply. It is important to understand the interconnections within and between multiple sectors. For some sectors, such as transportation, this is particularly evident given its critical role in supply chains.[175]

The costs of rebuilding from climate-induced damage and recovering from disasters limit households, businesses, and governments from making new investments that could address existing inequities, enhance productivity, or improve quality of life. Nonetheless, proactive adaptation is estimated to yield $13 to $15 in benefits for every dollar spent.[176]

3.2.2.6 Disproportionate impacts

Climate change exacerbates existing vulnerabilities and socio-economic inequities, disproportionately impacting certain populations, including Indigenous communities, Black communities, racialized groups, low-income individuals, 2SLGBTQI+ individuals, and women. These impacts can be compounded when multiple forms of inequities and disadvantages intersect. Marginalized and underserved populations, particularly in coastal communities, often have limited resources and capacity to cope with climate impacts; for example, residing more frequently in areas prone to climate risks like flood zones or in neighborhoods and buildings with limited cooling options during heat waves.

3.3 Adaptation priorities and barriers

The following section addresses paragraph 108 of the MPGs.

3.3.1 Adaptation priorities

Canada's National Adaptation Strategy, developed with provincial, territorial, and municipal governments, Indigenous partners, the private sector, non-governmental organizations, adaptation experts, and youth, outlines a shared vision for a climate-resilient Canada and offers the opportunity to scale-up ongoing actions and advance new initiatives and leadership through the help of shared priorities and collaboration for action.

Informed by key climate impacts and risks identified through the *Canada in a Changing Climate* National Assessment Process, the 2019 *Canada's Top Climate Risks* report by the Canadian Council of Academies, and Indigenous Knowledge Systems, the Strategy aims to direct whole-of-society action to achieve adaptation outcomes across five interconnected systems:

- reducing the impacts of climate-related disasters;
- improving health and well-being;
- protecting and restoring nature and biodiversity;
- building and maintaining resilient infrastructure; and
- supporting the economy and workers.

Building climate resilience is a long-term challenge that requires ambitious and sustained action. The National Adaptation Strategy is designed to be iterative as climate risks and adaptation needs and priorities evolve. Regular evaluation and refinement of the Strategy will build on the achievements and lessons learned from previous actions and set a flexible pathway to enable Canada to adapt. Up-to-date and accessible information on current and projected climate risks and impacts will continue to inform the Strategy as it evolves. The next update to the Strategy is expected in 2030.

3.3.2 Adaptation challenges and barriers

Canada has and continues to experience barriers and challenges to adaptation. Examples of barriers are provided in the 2023 *Canada in a Changing Climate Synthesis Report*. These include insufficient financial resources; lack of human resources capacity; constraining policies or regulations; limited access to relevant data and information; poor coordination and/or understanding of roles; market failures; behavioural barriers; history of colonization; and barriers to equitable participation.

The National Adaptation Strategy and the actions and measures contained in the associated federal Government of Canada Adaptation Action Plan seek to address these challenges/barriers and to accelerate and mainstream adaptation.

3.4 Adaptation strategies, policies, plans, goals, and actions to integrate adaptation into national policies and strategies

The following section addresses paragraph 109 of the MPGs.

Effective adaptation action requires a whole-of-society effort. In Canada, all orders of government, Indigenous Peoples, businesses, and civil society have increasingly taken individual and collective action to address climate risks over the past two decades.

3.4.1 National Adaptation Strategy

Canada's National Adaptation Strategy, establishes the following vision for a resilient Canada to guide whole-of-society action:

> "All of us living in Canada, our communities, and the natural environment are resilient in the face of a changing climate. Our collective adaptation actions enhance our well-being and safety, promote justice, equity, and reconciliation with Indigenous Peoples, and secure a thriving natural environment and economy for future generations."

The Strategy is underpinned by a set of guiding principles intended to direct and inform decisions on how adaptation actions are designed and advanced. They acknowledge the importance of how Canada reaches it goals and objectives. These principles are:

1. respect jurisdictions and uphold the rights of Indigenous Peoples;
2. advance equity and climate and environmental justice;
3. take proactive, risk-based measures to reduce climate impacts before they occur; and
4. maximize benefits and avoid maladaptation.

The Strategy goes beyond the individual hazards, risks, and assets approach by recognizing there are important connections among these systems and that adaptation actions in one area can affect outcomes in another. The Strategy identifies five interconnected systems of disaster resilience, health and well-being, nature and biodiversity, infrastructure, and economy and workers.

For each of the five National Adaptation Strategy systems, as well as the foundational elements, the Strategy sets long-term transformational goals for 2050 and medium-term objectives for 2030. The Strategy articulates specific, timebound, and measurable near-term targets to focus the efforts of governments and communities across the five systems and to help ensure future climate change adaptation investments are targeted and effective (see Section 3.6).

A series of actions are intended to support the implementation of the National Adaptation Strategy by outlining immediate and shared priorities on adaptation and helping to support investments, including the Government of Canada Adaptation Action Plan, federal–provincial and federal–territorial action plans, and the Indigenous Climate Leadership Agenda.

Alignment and collaboration between national and sub-national governments are essential to ensure effective support for local, place-based adaptation. In Canada's federal system, climate change adaptation is discussed in various federal–provincial–territorial fora, including at sector-specific tables such as forestry, fisheries, infrastructure, emergency management, health, etc. Federal–provincial and federal–territorial discussions are ongoing to establish shared priorities, to identify key areas for increased collaboration and alignment, and to support mainstreaming adaptation in the work of various ministries. In efforts to advance reconciliation, tri-lateral discussions with Indigenous governments or organizations will be prioritized, where agreed to by all partners, with the goal of furthering alignment and collaboration.

Efforts to co-develop the Indigenous Climate Leadership Agenda are well underway, with the aim of establishing a clear pathway to delivering on Canada's commitment towards a renewed partnership with First Nations, Inuit, and Métis on climate change. Distinctions-based strategies for implementation will build regional and national capacity and progressively vest authorities and resources to advance self-determined climate action, including adaptation, in the hands of First Nations, Inuit, and Métis communities, governments, and representative organizations.

3.4.2 Federal strategies, policies, plans, and goals

The federal Government of Canada Adaptation Action Plan comprises an evergreen inventory of federal measures that will contribute to the Strategy's goals, objectives, and targets. It includes new and existing investments and programming to address both short-term and long-term climate change issues and risks facing Canada. It also acknowledges that climate resilience requires alignment of efforts across the federal government and with partners and stakeholders. The federal action plan includes foundational and cross-cutting measures and actions to make targeted contributions to each of the five systems under the National Adaptation Strategy.

Federal departments and agencies also have commitments to enhance the climate resilience of the government's assets, services, and activities through the Greening Government Strategy. These commitments aim to reduce emissions from government operations while also minimizing the risk of disruption of critical government assets, services, and activities, and the costs associated with climate impacts.

The federal government is also working with internal and external stakeholders to develop a Climate Data Strategy to ensure that the private sector and communities have access to climate data to inform planning and infrastructure investments. The strategy aims to create an enabling environment for the implementation of climate change-related risk assessment for infrastructure, climate change-related financial disclosures, and the development of net-zero plans for federally regulated institutions. The Climate Data Strategy is anticipated to be released in 2025.

The Government of Canada is advancing nationally-driven, regionally-focused efforts to identify and accelerate shared economic priorities for a low-carbon future in the energy and resource sectors through the Regional Energy and Resource Tables (Regional Tables). Regional Tables are joint partnerships between the federal government and individual provinces and territories, in collaboration with Indigenous partners, and with input from key stakeholders. By aligning resources and timelines and better coordinating regulatory and permitting processes, each region can turn its individual strengths and unique mix of natural resources into a comparative advantage for the global, low-carbon economy.

The Regional Tables are supporting these efforts by helping to inform a vision of Canada's economic success: one that includes fostering clean energy growth, ensuring Indigenous participation, and setting clear economic objectives. Central to the Regional Tables initiative is better prioritizing federal action by undertaking regional analysis of labour markets, supply chains, and regional resource constraints.

As of October 2024, Regional Tables are formally underway in 10 provinces and territories (British Columbia, Manitoba, Ontario, New Brunswick, Nova Scotia, Price Edward Island, Newfoundland and Labrador, Yukon, Northwest Territories, and Nunavut). In addition, the federal government and Alberta are collaborating through an alternative process called the Alberta–Canada Working Group to discuss and develop a shared information base, helping to understand and provide certainty regarding actions and timeframes to achieve these governments' shared goals of economic prosperity and a carbon-neutral economy by 2050.

To date, three Regional Tables in British Columbia, Newfoundland and Labrador, and Nova Scotia have produced Collaboration Frameworks that outline agreed-upon areas of opportunity for the low-carbon economy and the joint, short- and medium-term actions required to realize them.

3.4.3 Provincial and territorial strategies, policies, plans, and goals

Canada's provinces and territories are influential in adaptation due to their jurisdiction over regional and local governance, natural resource management, health and healthcare, and community planning. Many are either implementing stand-alone adaptation strategies or are incorporating them into comprehensive climate change action plans, informed by climate risk and vulnerability assessments. Additionally, many provincial governments have also introduced legislation that mandates regular adaptation planning, implementation, and reporting. A concise summary of provincial and territorial adaptation plans and initiatives is provided in Section 3.5.2.

3.4.4 Indigenous strategies, policies, plans, and goals

First Nations, Inuit, and Métis have produced a rich breadth of climate strategies and action plans reflecting distinct bodies of knowledge, cultures, languages, ways of living, and nationhoods. These resources seek to advance self-determined efforts to predict, monitor, and address adverse climate impacts, provide scalable Indigenous-led climate solutions, highlight community and regional needs, and recommend ways to bridge gaps and guide localized mitigation efforts. For more details and a non-exhaustive list of strategies, plans, and actions being led by and for First Nations, Inuit, and Métis, please see Section 3.5.3.

3.4.5 Municipal strategies, policies, plans, and goals

Municipalities find themselves on the frontlines facing climate change impacts while simultaneously driving innovative adaptation solutions. Local governments, including various levels of Indigenous governments, are increasingly taking proactive measures to enhance resilience against climate risks. Their efforts encompass comprehensive adaptation plans, risk assessments, regulatory interventions through bylaws and land-use planning, training and communication initiatives, and the development of protective and resilient infrastructure.

3.5 Progress on implementation of adaptation

The following section addresses paragraph 110 of the MPGs.

All the actions taken by government, private and non-profit organizations, and individuals across the country collectively support the improvement of resiliency to climate change impacts across Canada. The first report to comprehensively assess progress against the National Adaptation Strategy's goals and objectives is planned for 2026. Some examples of efforts underway by various orders of government to adapt to climate change are provided below.

3.5.1 Federal actions

The Government of Canada Adaptation Action Plan is a comprehensive inventory of federal actions that support the implementation of the National Adaptation Strategy objectives. Federal actions in the Government of Canada Adaptation Action Plan are organized under each of the five National Adaptation Strategy systems and foundational elements. A summary of key actions in Government of Canada Adaptation Action Plan is presented below.

Taking action to enhance Canada's emergency management and disaster risk reduction capabilities: Canada is taking proactive measures to enhance the nation's emergency management and disaster risk-reduction capabilities, empowering Canadians to better prepare for, respond to, and recover from climate-related disasters. These efforts are backed by strategic government investments, including:

- the Wildfire Resilient Futures Initiative, which aims to enhance community prevention and mitigation activities, support innovation in wildland fire knowledge and research, and establish a Centre of Excellence for Wildland Fire Innovation and Resilience;
- expanding the Flood Hazard Identification and Mapping Program to provide Canadians with access to free, up-to-date, and high-quality flood hazard maps, working in collaboration with provinces and territories to increase Canada's resilience to flooding;

- developing an interest-free flood insurance program to protect households at high risk of flooding and without access to adequate insurance;
- creating a new, publicly accessible online portal to ensure Canadians have access to information on their exposure to flooding; and,
- identifying high-risk flood areas and implementing a modernized Disaster Financial Assistance Arrangements program to incentivize disaster mitigation efforts.

Taking action to protect the health and well-being of people in Canada: Recognizing the profound impacts of climate change on human health and well-being, Canada is taking critical action to rapidly scale up efforts to protect individuals, communities, and health systems from these challenges. Federal initiatives aimed at building resilience in the health sector include:

- providing the best available guidance and resources to Canadians in addressing extreme heat;
- supporting partners in creating climate-resilient and low-carbon health systems through a HealthADAPT Program; and,
- addressing climate change-related needs and vulnerabilities in health services for First Nations and Inuit through the Climate Change and Health Adaptation Program.

Taking action to enhance a thriving natural environment: To promote more resilient natural environments, Canada is implementing conservation programs that support projects focused on:

- supporting the goals of protecting 25% of Canada's land and waters by 2025, and 30% by 2030 by conserving and protecting national wildlife areas, supporting Indigenous-led conservation, including Indigenous Protected and Conserved Areas (IPCAs), and conserving species at risk and migratory birds through Canada's Enhanced Nature Legacy and Marine Conservation Program;
- strengthening ecological connectivity to allow species to move freely and better adapt to a changing climate through the National Program for Ecological Corridors; and,
- contributing to Canada's conservation targets through an innovative model called Project Finance for Permanence, where government and private funding is leveraged to support large-scale, long-term Indigenous conservation projects: Northwest Territories, Great Bear Sea, Qikiqtani, and Omushkego Wahkohtowin.

Taking action to enhance our resilient natural and built infrastructure: The Government of Canada is making substantial investments to build climate-resilient infrastructure that provides co-benefits to biodiversity across the nation. Key areas of focus include:

- the Disaster Mitigation and Adaptation Fund, which continues to help municipalities and townships build new infrastructure to increase community resilience to natural disasters;
- the Natural Infrastructure Fund, which supports and accelerates the uptake of nature-based solutions to enhance climate resilience;
- efforts to accelerate the use of climate-informed codes, standards, and guidelines for resilient infrastructure across Canada. For example, the Standards Council of Canada has started the Northern Infrastructure Standardization Initiative developing standards for the North that

consider a changing climate with federal financial support and in-kind staff support from many organizations including territorial governments, community governments, and industry; and,

- the development of a Climate Toolkit to increase the adoption of climate-resilient practices and investments in communities.

Taking action to protect the economy and workers: Canada's economy will anticipate, manage, adapt, and respond to climate change impacts and will advance new and inclusive opportunities within a changing climate, particularly for communities at greater risk, Indigenous Peoples, and vulnerable economic sectors. This will be done by:

- enhancing the resiliency of Canada's supply chains in the event of disasters, providing workers with the tools and the skills they need to thrive under a changing climate, and supporting industries, such as agriculture and mining, which are vulnerable to climate change; and,
- piloting a new approach to implementing regional climate resilience through the new Climate-Resilient Coastal Communities Program, which will enable communities to partner with other stakeholders to address barriers and develop novel solutions to climate change risks.

Building knowledge and understanding of Canada's changing climate: To ensure that Canadians have access to relevant climate change information and resources, expertise, advice, and services to support climate-informed decisions, the Government of Canada is:

- undertaking state-of-the-art climate modelling and research, and sharing this information in a meaningful way, using a user-driven approach, through the Canadian Centre for Climate Services and its regional partners;
- developing enhanced capability to make projections of future extreme events, to provide rapid event attribution results, to disseminate climate information to a wide range of Canadian stakeholders, and to deliver a new Canada-wide climate science assessment, which will provide authoritative knowledge and new data about ongoing and future climate change in Canada and underpin the direction for future adaptation; and,
- developing a climate data strategy through analysis of federal initiatives and federal data inventories that support the assessment of physical and transition risks in Canada, as well as the resulting identification of data gaps and barriers to accessing and using data.

Developing tools and resources to support communities in adapting: The Government of Canada is investing in capacity building tools and resources to support communities in greatest need, including:

- supporting community-based adaptation initiatives across Canada in collaboration with the Federation of Canadian Municipalities and the Green Municipal Fund's Local Leadership for Climate Adaptation; and,
- enhancing existing programs such as First Nation Adapt, Climate Change Preparedness in the North, and Indigenous Community-based Climate Monitoring, programs that aim to build adaptation capacity and support community-led adaptation measures in Indigenous and northern communities.

Establishing governance and demonstrating leadership: Clear accountabilities and responsibilities are needed to align and improve adaptation actions across society. Adaptation governance mechanisms bring together the perspectives of different orders of government, Indigenous Peoples,

marginalized groups, the private sector, and civil society. In addition, integrating adaptation efforts into federal policy, planning and investments, the Government of Canada is leading by example in building climate-resilient institutions. The Government of Canada will:

- continue to jointly advance an Indigenous Climate Leadership Agenda with First Nations, Inuit, and Métis that transforms the current model of federal support for Indigenous climate action to one that is holistic, enabling in nature, and responsive to Indigenous rights to self-determination; and,
- work to enshrine adaptation into everyday decision-making to ensure that all programs, policies, initiatives and departments consider climate change risks and support Canada's national adaptation objectives.

Taken together, as of 2024 the Government of Canada Adaptation Action Plan includes over 70 federal actions across 22 departments and agencies, illustrating the depth and breadth of action being taken.

3.5.2 Provincial and territorial plans and actions

Provinces and territories across Canada are implementing a range of measures to advance resiliency and adaptation to climate-related impacts. Below is an overview of each province and territory's current adaptation actions and priorities.

3.5.2.1 British Columbia

The *Climate Preparedness and Adaptation Strategy: Actions for 2022–2025* outlines a broad range of actions for 2022 to 2025 to address climate impacts and build resilience across British Columbia and is supported by $500 million in funding. The strategy addresses foundational needs for data, training, and capacity, and presents targeted actions that support Indigenous nations and communities, local governments, businesses, and industry so they can better prepare for and adapt to the changing climate. Notable adaptation achievements include the development of a provincial flood strategy and resilience plan and the development of an extreme heat preparedness plan, including a Provincial Heat Alert and Response System.

3.5.2.2 Alberta

The *Alberta Emissions Reduction and Energy Development Plan* (2023) includes a section on climate change adaptation and resilience that highlights current and future work. Alberta has established partnerships aimed at advancing climate resilience. These include investments in Climate West to generate regional climate data; the Indigenous Wisdom Advisory Panel; and the Municipal Climate Change Adaptation Centre to support urban and rural municipalities in developing climate adaptation and resilience plans.

The province's adaptation work is focused on flooding, wildfire, extreme weather, and the forestry and agricultural sectors, as well as the integration of climate adaptation considerations into government operations, policies and programs, and decision making.

3.5.2.3 Saskatchewan

The *Prairie Resilience: A Made-in-Saskatchewan Climate Change Strategy* (2017) strongly focuses on adaptation/resilience in five key areas: natural systems; physical infrastructure; economic sustainability; community preparedness; and human well-being. Saskatchewan's system-wide approach to climate resilience focuses on strengthening the province's ability to absorb, adapt, and transform throughout all key resilience areas. The province's Climate Resilience Measurement Framework monitors

resilience-related progress; this includes specific targets around resilient forest management practices, flood-proofing of the highway system, agricultural yield, and income.

3.5.2.4 Manitoba

The Made-in-Manitoba Climate and Green Plan (2017) aims to make Manitoba Canada's cleanest, greenest, and most climate-resilient province. The strategic framework includes adaptation as one of the keystones in which to guide progress. Manitoba's proposed resiliency objectives focus on creating a healthy agro-ecosystem, flood and drought forecasting and response, healthy forests and natural areas, and resilient infrastructure. Recent adaptation spending focused on building regional capacity-matching federal funding for adaptation capacity-building, and support for the agricultural sector in building watershed resilience and flood protection. There is also a Conservation and Climate Fund that funds adaptation projects.

3.5.2.5 Ontario

The Made-in-Ontario Environment Plan (2018) includes sections on protecting water, air, and natural spaces and species, and addressing climate change, to increase awareness and help prepare the province for the impacts of a changing climate. Climate change adaptation actions undertaken by the provincial government include: completing and releasing a provincial Climate Change Impact Assessment in 2023; establishing an advisory panel on climate change; and, developing a provincial flooding strategy.

3.5.2.6 Québec

Québec's 2030 Plan for a Green Economy sets out clear principles to guide the directions and actions of the government, and emphasizes collaborative efforts with Indigenous communities, municipalities, researchers, companies, and citizens to implement actions. Adapting to climate change is one of four key actions under the Plan, with a focus on protecting the health and safety of citizens, adapting infrastructure, building resilience in Québec's economy, and protecting ecosystems and biodiversity.

Québec employs a dynamic and scalable approach to implement its 2030 Plan, which is achieved through the development of five-year implementation plans that are updated annually. Québec is currently following its fourth implementation plan (available in French only), which covers the period from 2024 to 2029. Québec's adaptation priorities include building resilience in northern communities, protecting human health and safety, investing in built and natural infrastructure, supporting economic sectors and resilient ecosystems. Specific objectives include developing adaptive solutions to forest fires, preventing flooding risks, adapting infrastructure to climate change impacts, strengthening the adaptive capacity of the most vulnerable economic sectors, and acquiring and disseminating the knowledge needed to adapt to climate change.

3.5.2.7 New Brunswick

The New Brunswick *Climate Change Act* (2018) requires the province to review its action plan at least every five years. New Brunswick released its 2022–2027 Climate Change Action Plan (2022), which includes preparing for climate change as a core pillar. The adaptation actions are organized under priority commitments to advance climate resilience, including enhancing understanding and communication of climate change, moving from adaptation planning to implementation, and supporting biodiversity through nature-based solutions. A significant action in the plan is to conduct a comprehensive provincial climate change risk assessment, which will inform future adaptation planning efforts.

3.5.2.8 Nova Scotia

Nova Scotia's *Environmental Goals and Climate Change Reduction Act* (2021) legislates 28 climate action and sustainable prosperity goals. Nova Scotia released a provincial climate change risk assessment (Weathering What's Ahead, 2022), which outlines and ranks climate hazards and risks for Nova Scotia to support prioritization and planning. The *Our Climate, Our Future: Nova Scotia's Climate Change Plan for Clean Growth* was released in December 2022 and includes 68 actions, a subset of which are adaptation actions.

Nova Scotia's adaptation priorities include coastal protection. *The Future of our Coastline: A plan to protect people, homes, and nature from climate change*, Nova Scotia's three-year Coastal Protection Action Plan, has 15 actions that empower informed decision-making, support municipal leadership, and align government resources with coastal protection. As part of the action plan, an online Coastal Hazard Map and a resource guide for coastal property owners are available for Nova Scotians. Nova Scotians can also contact navigators who can help them use the Coastal Hazard Map and connect them with more resources. Also, the government is working hand-in-hand with municipalities to develop example by-law content that municipalities can tailor to the needs of their communities and use to regulate coastal protection.

Additional adaptation priorities include: updating the provincial climate change risk assessment; enhancing access and use of climate data and information; bolstering capacity for adaptation planning and action across government communities, and industry sectors; and, reducing climate impacts through the protection and restoration of natural areas and ecosystems. Seven climate adaptation coordinators have been hired by organizations representing a range of sectors (including agriculture, coastal parks, and freshwater) to support the development and/or implementation of sectoral climate adaptation plans. The province is coordinating research on how climate change will impact groundwater and biodiversity.

3.5.2.9 Prince Edward Island

Prince Edward Island released its *Building Resilience: Climate Adaptation Plan* in October 2022, aiming to match the ambition of its 2040 net-zero target. To date, the province has advanced several adaptation priorities, focusing on flood protection, forestry and agriculture sectors, climate information and tools, and awareness-raising. The province's updated adaptation plan outlines 28 detailed actions to support six key objectives in disaster resilience and response; resilient communities; climate-ready industries; health and mental well-being; natural and habitat biodiversity; and knowledge and capacity.

3.5.2.10 Newfoundland and Labrador

The Way Forward on Climate Change in Newfoundland and Labrador (2019 to 2024) includes support for infrastructure resilience, human health and municipal emergency planning, northern-specific adaptation activities, and the ocean environment. The province's adaptation work to date has focused on strengthening the understanding of climate impacts and improving the integration of climate change adaptation into decision-making. This includes the preparation of downscaled climate data and projections as well as localized coastal erosion studies, the implementation of infrastructure measures to enhance resiliency, and the development of resources and pilot projects to aid and assist stakeholders. This also includes the implementation of a wide range of policies to build provincial government's capacity across multiple departments and policy areas such as health, municipal planning, infrastructure, renewable resource management, emergency management, and adaptation in the north. A new stand-alone provincial adaptation strategy is being developed for the 2025 to 2030 period. This will be the province's first stand-alone adaptation plan.

3.5.2.11 Yukon

Our Clean Future: Yukon Strategy for Climate Change, Energy and a Green Economy (2020) includes adaptation objectives in several areas of the strategy. The adaptation target set out in Our Clean Future is that the Yukon will be highly resilient to climate change by 2030. In 2022, the Government of Yukon released Assessing Climate Change Risk and Resilience in the Yukon, the first Yukon-wide climate risk assessment. The top priority areas to build resilience in the Yukon include extreme weather and precipitation impacts on transportation infrastructure, floods, and fires affecting communities and livelihoods, permafrost thaw impacting infrastructure as well as health and well-being and changing conditions on the land. There are over 75 adaptation actions in Our Clean Future, with 25 new actions added in 2023. Work is underway in various areas such as developing and implementing community wildfire protection plans, establishing a geohazard monitoring program for priority hazards, and developing flood hazard maps in flood-prone communities.

3.5.2.12 Northwest Territories

The Government of the Northwest Territories (GNWT) has developed a *2030 Northwest Territories Climate Change Strategic Framework 2019–2023 Action Plan*, which is the first of two five-year Action Plans to support the implementation of the 2030 Northwest Territories Climate Change Strategic Framework and provide the Northwest Territories with a roadmap for addressing climate change. The Action Plan has three goals, two of which are adaptation-focused (improve knowledge of climate change impacts and build resilience and adapt to a changing climate). The GNWT is currently developing a 2025 to 2029 Northwest Territories Climate Change Action Plan for release in early 2025.The Northwest Territories' adaptation priorities include improving knowledge and information on climate impacts, including planning, management and use of information, and research and monitoring to improve knowledge, analysis on implications and impacts of community relocation due to permafrost thaw and coastal erosion, and management of winter roads and impacts on access to essential services and supplies of food and goods. The territory is also developing a Climate Monitoring Plan; however, it is important to note that access to robust data and climate hazard information in the North has been a considerable limitation.

3.5.2.13 Nunavut

Nunavut released its adaptation strategy, Upagioatavut Setting the Course, in 2011. Nunavut's Climate Change Secretariat, established in 2016, develops programs, policies, and partnerships that enable Nunavummiut to take leadership on adaptation, and promotes knowledge sharing of community-based climate change adaptation solutions. The Secretariat hosts a web-based climate change resource that shares climate change knowledge in Nunavut, while making information more accessible to the public. The website houses a wealth of resources, including climate change publications, updates on adaptation projects, and a community map where users can find community-specific climate change information and programs.

Nunavut is prioritizing adaptation to climate change through partnerships with universities, the private sector, the Federal Government, and communities. Research and monitoring efforts are underway to understand local impacts, while integrating climate education into school curricula aims to transfer knowledge from elders to youth. The territory also aims to raise awareness globally about climate impacts on Nunavut and Inuit culture and incorporate these considerations into emergency planning.

3.5.2.14 Pan-Territorial activities

Through the Pan-Territorial Adaptation Partnership, Yukon, Northwest Territories and Nunavut collaborate on adaptation as a result of the 2011 Pan-Territorial Adaptation Strategy. In September

2024, the three territories proposed “A Northern Approach” to support the implementation of the National Adaptation Strategy aiming to enhance the Government of Canada’s climate adaptation policies and programs to be more inclusive and accessible to the territories, and to better integrate Northern climate change adaptation priorities.

3.5.3 Indigenous strategies, plans, and actions

First Nations, Inuit, and Métis are already leading Canada’s efforts to adapt to the impacts of climate change and are developing climate change strategies and actions to set out a long-term vision for adaptation in their communities and regions. These include national, regional, and community-level strategies and initiatives that reflect the diverse circumstances and priorities of Indigenous Peoples across the country (see Section 3.4.4). Adaptation actions in Indigenous communities and territories are more effective, meaningful, and durable when they are designed, delivered, and determined by and for Indigenous Peoples.

Below is a non-exhaustive list of climate strategies, plans, reports, actions, and declarations from First Nations, Inuit, and Métis government and representative organizations who are leading efforts to mitigate climate change and adapt to the impacts of a changing climate.

First Nations:

- Assembly of First Nations National Climate Change Strategy (2023)
- Assembly of First Nations National Climate Gathering Report (2020)
- 2nd Assembly of First Nations Climate Gathering Report (2022)
- First Nations Fire Protection Strategy 2023 – 2028 (2023)
- Assembly of First Nations’ Urgent and Transformative Climate Action through the AFN National Climate Strategy (Resolution no. 36/2023)
- Assembly of First Nations’ Declaring a First Nations Climate Emergency (Resolution no. 05/2019)
- Open Letter to Prime Minister Trudeau on Perpetuating Climate Injustice Against First Nations (Chiefs of Ontario, 2023)
- Anishinabek Nation’s Final Report: Climate Change and Food Security Study (2022)
- BC First Nations Climate Strategy and Action Plan (2022)
- Poplar River First Nation Fire Vulnerability Assessment (2018)
- Yukon First Nation Reconnection Vision
- Indigenous Climate Hub

Inuit:

- National Inuit Climate Change Strategy (Inuit Tapiriit Kanatami, 2019)
- On Thin Ice: Inuit climate leadership for the world – UNFCCC COP28 Position Paper (Inuit Circumpolar Council, 2023)
- Statement of the Arctic Peoples’ Conference 2023 – Inuiaat Issittormiut Ataatsimeersuarnerat 2023 (Inuit Circumpolar Council, 2023)
- Nunavit Tunngavik Incorporated 2021-2022 Annual Report (2022)
- Nunavit Tunngavik Incorporated News Releases (2000-2024)
- Nunavik Climate Change Adaptation Strategy (2024)
- Nunavik and Nunatsiavut Regional Climate Information Update (2020)
- Aqqiumavvik Society in Arviat’s Community Climate Change Manual
- Upagiaqtavut Setting the Course: Climate Change Impacts and Adaptation in Nunavut (2010)
- Inuvaluit Settlement Region Climate Change Strategy (2021)
- Inuvialuit Settlement Region Energy Action Plan (2022)

Métis:

- Weaving Resilience and Building Métis Climate Leadership: The Métis Nation National Climate Strategy (2024)
- Manitoba Métis Foundation's Riel and Resilient: The impact of climate change on Red River Métis health (2023)
- Métis Nation Climate Change and Health Vulnerability Assessment (2020)
- Lifestyle as Medicine: The Way We Have Always Lived – Métis Climate Resilience Gathering Summary (2022)
- Métis Nation British Columbia's Climate Preparedness Workshop Series (2021)
- Métis Nation of Alberta's Health and Climate Change Toolkit
- Métis Nation of Alberta's Climate Action Plan (2017)
- Métis Nation - Saskatchewan Community-Based Climate Monitoring Program
- Métis Nation of Ontario Climate Change Forum Reports

For First Nations, Inuit, and Métis, climate change adaptation must be premised on the right to self-determination and should support Indigenous Peoples in leading adaptation action in and on their lands, territories, ice, and waters. To achieve this, the Government of Canada will work in partnership with First Nations, Inuit, and Métis to advance an Indigenous Climate Leadership Agenda, which will be the main pathway for implementing Indigenous communities' adaptation priorities. The Indigenous Climate Leadership Agenda will support the progressive transition of the resources and authorities necessary for Indigenous governments, communities, and representative organizations to implement self-determined climate actions.

3.5.4 Municipal actions

Many municipalities across Canada, both large and small, have developed plans to guide adaptation action within their jurisdictions and are taking action. Two examples are presented below, but many other municipalities across the country have climate change adaptation and plans.

The Municipality of Toronto released a 2019 *Resilience Strategy*, which focused on building climate resilience across sectors, including housing, mobility, equity, civic engagement, and community connectedness. Some current actions being taken by the municipality to increase climate resilience include Toronto's *Heat Relief Strategy* which aims to reduce the incidence of heat-related illness and death in Toronto due to extreme heat; its *Wildfire Smoke Response Strategy*, which was developed in 2023 in response to unprecedented air quality impacts from wildfire smoke; and the Green Streets initiative promoting green infrastructure to manage the impact of wet weather events and while garnering the social, economic and environmental co-benefits.

The Municipality of Halifax is building climate resilience by increasing their capacity to respond to climate-related impacts and disruptions. The municipality is addressing the need for adaptation by collaborating with Clean Foundation on implementing resilient home retrofits to build homes that can better withstand extreme weather events; implementing a green infrastructure approach for Shore Road in Eastern Passage through the construction of a nature-based approach for erosion mitigation, which will increase the long-term resilience of the shoreline to increasing climate change pressures; and funding the Joint Emergency Management Teams, which help respond to a wide range of climate emergencies.

3.6 Monitoring and evaluation of adaptation actions and processes

The following section addresses paragraphs 112, 113, and 114 of the MPGs.

Canada's National Adaptation Strategy recently established Canada's first national monitoring and evaluation framework for adaptation. The monitoring and evaluation framework is a critical component of Canada's adaptation process, providing the information necessary to learn what is working and adjust the course of action.

Canada's National Adaptation Strategy establishes a framework for measuring progress at the national level. It outlines a vision for climate resilience in Canada with five transformational goals for 2050 under each of the Strategy's five interconnected systems. As of November 2024, the framework includes 22 medium-term objectives targeted for 2030 and 23 near-term targets. These are supported by 10 medium-term objectives and two near-term targets underpinning the foundational elements necessary for effective adaptation.

The Strategy also includes an initial set of indicators (National Adaptation Strategy Annex D) to track national progress on adaptation across Canada. Since climate change impacts are broad, from the economy and infrastructure to human health and the environment, the Strategy's framework represents data and information from across the five systems. The monitoring and evaluation framework provides a national-level view of adaptation that is neither exhaustive nor exclusive of other monitoring systems in various regions and sectors.

The Strategy commits the federal government to working with other orders of government, Indigenous Peoples, and experts to build on this initial set of indicators as the Strategy is implemented. Indicators will be updated as relevant, new data becomes available to support ongoing improvement of the monitoring and evaluation framework. An updated monitoring and evaluation framework is anticipated to be completed prior to the first National Adaptation Strategy Progress Report, planned for release in 2026. The first progress report will provide a snapshot of collective progress in achieving the Strategy's goals, objectives, and targets, inform policy and investment decisions, and promote transparency and accountability to the public.

The Government of Canada reports on progress of its adaptation initiatives under a variety of reporting processes. This includes reporting on adaptation efforts through the Federal Sustainable Development Strategy, which supports Canada's efforts to advance the 17 Sustainable Development Goals of the United Nations 2030 Agenda for Sustainable Development, including Climate Action. The federal government also tracks and reports data through federal reporting mechanisms, such as reporting by each department delivering on adaptation programming under their respective annual Departmental Results Reports, Performance Information Profiles, and the new Climate Change Adaptation Horizontal Initiative.

The Government of Canada is actively engaging with Indigenous Peoples on adaptation through three distinctions-based Senior Bilateral Tables on Clean Growth and Climate Change. These tables are instrumental in fostering relationships between the federal government and Indigenous partners, sharing climate action that Indigenous Peoples are leading, and providing opportunities for cultural teachings and land-based learning. They are important spaces for identifying barriers, finding mutually beneficial solutions, and advancing joint climate priorities. Both the First Nations-Canada Joint Committee on Climate Action and the Métis Nation-Canada Goose Moon Table publish annual reports

that document positive strides towards reconciliation, highlight areas where further efforts are needed, and contribute to the forging of stronger climate partnerships. These reports also highlight shared strategies, challenges, and pathways to accelerate positive climate outcomes grounded in a rights-based approach.

Provinces, territories, and municipalities are also leading efforts to report on adaptation progress through their plans and strategies. Some provinces have legislated responsibilities for climate change adaptation reporting (see Section 3.1), and some provinces have frameworks to support reporting. For example, Saskatchewan's Climate Resilience Report shares trends and progress in meeting the province's climate change goals through a series of 22 resilience indicators. Similarly, Nova Scotia reports annually on progress against the 28 goals of the *Environmental Goals and Climate Change Reduction Act* (2021) and the 68 actions of the Climate Action Plan (2022), many of which are focused on adaptation. Nova Scotia also reports publicly on the 15 actions included in the Coastal Protection Action Plan.

3.7 Averting, minimizing, and addressing loss and damage associated with climate change impacts

The following section addresses paragraph 115 of the MPGs.

Canada does not apply a loss and damage lens to its domestic climate resilience interventions as it views adaptation as the main driver of climate resilience.

3.8 Cooperation, good practices, experience, and lessons learned

The following section addresses paragraph 116 of the MPGs.

Several elements are proving essential in supporting adaptation action across Canada and helping to make progress towards Canada's adaptation objectives. Some examples of key elements that have and continue to support adaptation across Canada are provided below. Many of these are elaborated upon in previous sections.

3.8.1 Knowledge and information

Authoritative, robust, and accessible information is essential to support decision-making on adaptation. Understanding how to use this information is as critical to enabling various users to meet their specific needs and context. The importance of this is demonstrated by the ongoing success (i.e., use and relevance) of the reports under the *Canada in a Changing Climate* National Assessment Process led by Natural Resources Canada. The report findings are used to help inform and advance adaptation decision-making and action.

3.8.2 Climate information and services

Climate data and information help inform decision-making in key sectors such as health, agriculture, infrastructure, transportation, and natural resource management. Accessing and understanding this information is foundational for assessing climate vulnerabilities and risks, as well as developing appropriate adaptation strategies. Climate services refer to "climate information prepared and delivered to meet users' needs"[177] and enhance users' knowledge and understanding about climate change and its impacts. In the context of adaptation, it includes climate data, information, tools, and assistance that support adaptation planning and decision-making by individuals and organisations in a tailored way.

Climate services in Canada bring together many actors, such as the federal, provincial, and territorial governments, as well as regional climate services providers.

Environment and Climate Change Canada is responsible for climate monitoring and climate information products and services including determination of trends, seasonal outlooks (e.g., bulletins and consultation process), value-added long-term historical climate data sets, past climate change and variability assessments, climate change projections and downscaled scenarios, and assessments of future climate change, with an emphasis on extremes.

In addition, the Department provides long-term historical climate data sets for internal and external users through its engineering climate services. Examples include historical snow and ice conditions, which are incorporated into the development of rooftop snow-load requirements for the National Building Code of Canada; wind-pressure analysis that informs the telecommunications and renewable energy industries; and analysis on the intensity, duration, and frequency of extreme rainfall to support storm and wastewater management.

Other federal departments are also building the knowledge base for sector-specific information and developing decision-making tools to support adaptation. Programs are advancing research and services related to how the changing climate affects permafrost and northern landscapes, coastlines, and aquatic ecosystems, as well as agriculture and food production.

3.8.3 Canadian Centre for Climate Services

In 2018, the Canadian Centre for Climate Services was established to provide information and support to those seeking to understand, and reduce their vulnerability to, climate change. The Canadian Centre for Climate Services leads a Government of Canada-wide approach, collaborating with provinces, territories, and climate science experts to provide credible, useful, and timely climate data, information, and tools for Canadians to consider climate change in their decisions.

Recognizing that regional approaches are required to address the unique needs across the country, the Canadian Centre for Climate Services created a national network of regional climate service providers. Regional organizations that are part of the national network include:

- Pacific Climate Impacts Consortium (PCIC), in the Pacific and Yukon region;
- ClimateWest, in the Prairies region (which covers the provinces of Manitoba, Saskatchewan and Alberta);
- ORCCA, in the Great Lakes and Ontario region;
- Ouranos, in the Québec region;
- CLIMAtlantic, in the Atlantic region (which covers the provinces of New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador); and,
- In the North, the Canadian Centre for Climate Services has engaged with Crown–Indigenous Relations and Northern Affairs Canada, territorial governments, and representatives from northern and Indigenous organizations on potential northern climate services.

These regional climate service organizations are supported by the provincial and federal governments and are overseen by boards aiming for diverse representation.

To serve the needs of users with various capacities, the Canadian Centre for Climate Services supports a series of climate data portals. These portals provide a range of information and functionalities from broad, directional climate change trends to tools for analyzing high-resolution climate data. ClimateData.ca is a climate data portal produced collaboratively by the country's leading climate organizations and supported, in part, by the Government of Canada. The goal of this portal is to support climate change adaptation awareness, planning and decision-making across a broad spectrum of sectors and locations by providing the most up to date climate data, at a high resolution, in easy-to-use formats and visualization. It includes a range of climate indices and user-defined climate datasets, and various ways to analyze climate data.

- The Canadian Centre for Climate Services' Climate data viewer and Climate data extraction tool allow users to view mapped climate data or download subsets of climate data from a selection of Environment and Climate Change Canada datasets including future climate simulations, value-added historical datasets, and historical climate and river data. The Climate data viewer has recently been enhanced, notably with the ability to overlay supplementary datasets showing Indigenous communities, national parks, transportation networks, and meteorological/hydrological events from the Canadian disaster database.
- There are additional reputable sources of climate data and information in Canada, including the Pacific Climate Impact Consortia's Data Portal; the Canadian Climate Data and Scenarios data portal; and the Meteorological Service of Canada's Weather, Climate and Hazard Services and Information webpage.

The Canadian Centre for Climate Services operates a Support Desk that provides personalized support and guidance to help Canadians find, interpret, and use the data and information suitable for their individual needs. The Support Desk draws on a network of experts to respond to inquiries and support adaptation decision-making.

3.8.4 Early warning systems

Canada has an early warning system to warn residents of extreme weather events, with early warnings relying on sophisticated weather and environmental prediction models. The Meteorological Service of Canada operates a wide array of meteorological and hydrological networks to monitor and collect weather, water, climate data from the ground and above from satellites. Environment and Climate Change Canada works closely with emergency management organizations and delivers early warning and alert products for weather to the public via the internet, mobile applications, Weatheradio, social media, the National Public Alerting System, as well as through broadcast media. As a member of the World Meteorological Organization, Canada strives to meet the standards set out by the Global Basic Observation Network, which ensures the availability of data required for high quality weather forecasts and early warning systems that help improve the safety and well-being of citizens across Canada and the world.[178]

The Government of Canada is prioritizing the enhancement of its early warning systems for natural disasters, focusing on improving accuracy and timeliness of forecasts and notifications. Key goals include:

- upgrading weather products, services, modeling, and prediction capabilities;
- enhancing weather monitoring networks across the country;
- developing an Early Warnings for All Domestic Strategy; and,

- improving early warning systems for extreme weather events, particularly floods and storm surges.

These initiatives aim to protect all Canadians with effective early warning systems by 2027, aligning with the UN's Early Warnings for All initiative. The Government of Canada recognizes early warnings as one of the most cost-effective adaptation measures, contributing to Canada's broader climate adaptation goals. These efforts will strengthen the country's resilience to natural disasters and improve public safety across all regions.

3.8.5 Indigenous Science and Knowledge

Indigenous Knowledge Systems provide guiding principles and values that have developed over many lifetimes and serve as essential frameworks for decision-making on climate change. Indigenous Knowledge Systems are vast and diverse and cover a wide range of ethical, spiritual, legal, and epistemological frames to inform climate action, ambition, partnerships, and ways of being. Indigenous science is a culturally specific method of accumulating knowledge, refining hypotheses, and changing practices associated with the deep understanding that First Nations, Inuit, and Métis have of the natural world. Indigenous science is wholistic (a term used to describe the ecosystem as a whole), and deeply braids, or weaves, new information with a long-term perspective. Indigenous Knowledge Systems and Indigenous Science, with these embedded principles and values, urge Canada to focus its climate policies on restoring a holistic, respectful, and reciprocal relationship with Mother Earth, a relationship that has been essential to survival of Indigenous Peoples since time immemorial.

3.8.6 Monitoring, evaluation, and learning

Fundamental to the National Adaptation Strategy's adaptation policy cycle is building on past achievements and learning from past efforts to adjust and iterate over time. Despite the nascency and challenges around measuring adaptation, the importance of monitoring and evaluation is underscored by the inclusion of a robust national adaptation monitoring and evaluation framework and a commitment to continue refining the indicators needed to measure progress and to provide regular reporting to help inform future iterations of national adaptation policy development (see Section 3.6).

3.8.7 Collaboration, partnerships, and governance

Effective, efficient, and accountable horizontal and vertical governance mechanisms have been and continue to be strengthened to achieve results for adaptation across Canada. The level of collaboration required on adaptation spans all levels of government and across portfolios, both within and between departments at all levels of government. Collaboration and governance are essential to helping break down silos and mainstream adaptation and avoid maladaptive actions. Success in adaptation cannot be achieved without collaboration, partnerships, and strong governance.

Federal–Provincial–Territorial Environmental Governance

The Canadian Council of Ministers of the Environment (CCME) is an intergovernmental body that brings together representatives from federal, provincial, and territorial governments. Its primary objective is to facilitate discussions on national environmental priorities and drive collective action through cooperative efforts. The Climate Change Committee under the CCME plays a crucial role in enhancing coordination and alignment of adaptation policies across federal, provincial, and territorial governments.

3.8.8 Helping developing countries

Canada engages in multilateral forums to foster international collaboration on climate adaptation, including loss and damage. Through its engagement, Canada has sought to support effective and ambitious action on adaptation by sharing experiences and best practices with peer countries. Canada also provides significant support to developing countries as part of its climate finance commitment as detailed in Chapter 4 of this report.

Over the period covered by this Biennial Transparency Report, Canada has engaged in UNFCCC processes, actively contributing to the Paris Agreement's goals, including on adaptation. An outline of how Canada contributes to achieving the global goal on adaptation is provided in Section 3.9 of this chapter. In UNFCCC negotiations, Canada advocates for all countries to develop institutional capacity to plan and implement transformative adaptation action in a transparent and inclusive manner that encourages active participation of the people and communities on the frontlines of climate change, including women and girls in all their diversity, and Indigenous Peoples. Understanding countries in the Global South are experiencing impacts of climate change that are beyond the reach of adaptation action, Canada has engaged as a member of the Transitional Committee on Loss and Damage tasked to present recommendations at COP28 on the operationalization of the Fund for Responding to Loss and Damage.

3.9 Other information

The following section addresses paragraph 117 of the MPGs.

3.9.1 Global goal on adaptation

Canada's efforts on adaptation, as described throughout this chapter, contribute to achieving the targets in the UAE Framework for Global Climate Resilience. Federal government actions that support domestic progress towards targets on the thematic areas of human health, ecosystems and biodiversity, infrastructure, agriculture, and livelihoods are listed in Section 3.5 of this chapter. Canadian domestic work on adaptation for agriculture falls under the Economy and Workers system as outlined in the National Adaptation Strategy. Canadian domestic work on adaptation and water systems is related to the National Adaptation Strategy in the systems for Health and Well-Being, Natural Environments, and Infrastructure.

Regarding the UAE Framework targets related to the adaptation policy cycle, this chapter describes Canada's work on impacts, risks, and vulnerabilities (Section 3.2); national planning and instruments (Section 3.4); implementation (Section 3.5); and monitoring, evaluation, and learning (Section 3.6).

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Chapter 4: Provision of financial, technological, and capacity-building support

4.1 Overview

As a party to the United Nations Framework Convention on Climate Change (UNFCCC), Canada is committed to the global fight against climate change. This includes providing climate finance, technology, and capacity building support to help developing countries mitigate and adapt to climate change and to support those most vulnerable to its effects. Canada is steadfast in its commitment to meet the objectives of the Paris Agreement, and to jointly mobilize, from a wide variety of sources, US$100 billion in climate finance per year through to 2025.

This chapter provides information on the climate finance that Canada has provided and mobilized over the calendar years 2021 and 2022, which totaled over $3.39 billion. This support, drawn from various sources, includes Canada’s international climate finance commitments ($2.65 billion from 2015 to 2021 and $5.3 billion from 2021 to 2026), as well as other climate-relevant support to developing countries.

Beyond the climate finance it delivers, Canada plays a leadership role in improving transparency and encouraging further ambition among climate finance contributors. With Germany, and in close collaboration with contributors, Canada developed the Climate Finance Delivery Plan in 2021 and its Progress Report in 2022, to outline a common path forward towards meeting the US$100 billion goal and to take stock of progress. Since then, Canada and Germany have built on this work by co-authoring open letters providing periodic updates on climate finance delivery and efforts undertaken in priority areas, such as adaptation finance and private finance mobilization.

This chapter also provides information on the technological and capacity-building support provided during the reporting period, both from within and outside of Canada's climate finance program. To best adhere to the reporting guidelines, the activities are tagged to one of two categories, "Technology Transfer" or "Capacity Building". However, many of the activities include elements of both as capacity-building is crucial for ensuring successful technology deployment and sustained positive impacts over the long term.

4.2 National circumstances and institutional arrangements

The following sections address paragraphs 119 and 120 of the MPGs.

4.2.1 Information on national circumstances and institutional arrangements for the provision and mobilization of climate finance support

Canada rigorously tracks and reports its climate finance contributions from various sources to ensure a comprehensive and accurate representation of its climate finance flows. Canada applies a whole-of-government approach, whereby Environment and Climate Change Canada collects data from Government of Canada departments, as well as Crown Corporations and sub-national levels of government, to provide a holistic view of support provided and mobilized.

Canada's tracking and reporting of its climate finance adheres to international standards, including UNFCCC guidelines and, where relevant, requirements for Official Development Assistance (ODA) flows.

Projects funded under Canada's public climate finance commitment are selected through an investment planning process spearheaded jointly by Environment and Climate Change Canada and Global Affairs Canada. Recipients of funding are selected in accordance with UNFCCC Non-Annex 1 country eligibility requirements and adhere to ODA eligibility in accordance with Canada's *Official Development Assistance Accountability Act* (ODAAA). In line with the ODAAA, projects contribute to poverty reduction, consider the perspectives of the poor, and are consistent with international human rights standards.

Selected projects are subsequently assessed by environmental specialists in accordance with principles outlined in the Organisation for Economic Co-operation and Development (OECD) Development Assistance Committee (DAC) Rio marker guidelines. Canada uses the Rio markers for Climate to identify and report climate finance projects as "principal" (i.e., entirely dedicated to climate) or "significant" (i.e., funded for other objectives but designed to meet climate concerns). Project activities and objectives are analyzed to attribute appropriate scoring on the Rio marker scale. For projects with the "significant" climate change marker, Canada counts 30% of the funding to the project as climate finance.

Projects must also integrate gender equality considerations and demonstrate alignment with the Climate Finance Program's Results Framework, which is used to track the outcomes of Canada's climate finance projects. Where relevant, projects should demonstrate alignment with the OECD-DAC blended finance principles. Projects are evaluated against these criteria during planning exercises.

Beyond its public climate finance commitments, Canada tracks and reports the climate share of its core contribution to multilateral institutions by applying the OECD's imputed multilateral shares for climate, where available. Where shares from the OECD are unavailable, Canada works with recipient multilateral institutions to compute a share of climate-relevant programming to apply to its core contribution. Canada also reports on climate-relevant investments by Export Development Canada (EDC) and Canada's development finance institution, FinDev Canada, by using the International Finance Corporation (IFC) Definitions and Metrics for Climate-Related Activities to identify eligible transactions and projects.

Through this whole-of-government approach, Canada maintains up-to-date internal records of climate finance provided and mobilized to inform public reporting exercises, both domestically and internationally. This includes data provision to the OECD to inform aggregate reporting on progress towards climate finance goals and to the Standing Committee on Finance to support the production of Biennial Assessments, as well as biennial (Biennial Reports, Biennial Transparency Reports) and quadrennial (National Communications) reporting exercises through the UNFCCC and Paris Agreement.

Data on climate finance is also provided for Government of Canada-wide reporting exercises where relevant, such as for the OECD's Total Official Support for Sustainable Development (TOSSD) survey, which tracks and encompasses all international assistance contributing to Sustainable Development Goals, including climate finance.

Environment and Climate Change Canada publishes information on projects funded through Canada's climate finance commitments on its climate finance project browser.[179] This includes information on project activities, outcomes and support provided and mobilized by year. Global Affairs Canada also publishes information on all international assistance projects funded by Canada on a separate project browser.[180]

Climate finance data tracking is an inherently complex undertaking, and Canada continues to identify ways to work through challenges. For example, Canada's climate finance disbursements are planned by fiscal year (April to March), rather than by calendar year, which is what is used to report under the Paris Agreement. Canada takes extra care to align its climate finance tracking and reporting practices across the two systems.

Additionally, climate finance in Canada, as in many countries, is not distributed from one single source. Several federal departments, crown corporations, and the province of Québec disburse funds, and even more shareholders and rightsholders play a role in programming. A holistic and transparent report of Canada's climate finance requires horizontal and vertical coordination among all these actors to track and consolidate data.

Canada strives to maximize the accuracy and comparability of its climate finance flows through sustained efforts towards improving practices. This includes the continued use of international standards such as Rio markers, imputed multilateral shares for climate, and the IFC Definitions and Metrics for Climate-Related Activities, to identify relevant activities and flows.

Beyond this, Canada works to improve the granularity of its climate finance reporting across sources, notably its public climate finance commitments. Since the publication of its Fifth Biennial Report (BR5) in 2022, Canada has updated its reporting methodology to more adequately capture the breadth of projects with both mitigation and adaptation objectives. The methodological change implicated projects coded with both a principal and significant climate change Rio marker. When attributing the type of support to projects with dual objectives, Canada previously attributed 100% of funding to the marker with the lead score. For example, projects coded with a principal adaptation marker and a significant mitigation marker were counted entirely as adaptation finance. Under the improved methodology, projects with dual markers have 70% of funding counted towards the lead marker and 30% towards the significant climate marker. This change in reporting is more accurate and better captures the nature of projects providing support for both mitigation and adaptation by accurately disaggregating funding by type of support at the project level.[181]

Canada also works to align its practices with those of other current climate finance contributors where possible, with the aim to improve harmonization in climate finance reporting.

4.2.2 Information on national circumstances and institutional arrangements for the provision of technology development and transfer and capacity building support

Canada's support for climate technology development and transfer and capacity building takes place largely through ODA funded projects under its climate finance envelope (as reported in Sections 4.4.2 and 4.4.3 of this chapter) through bilateral and multilateral channels.

Support for technology transfer and capacity building outside of the climate finance envelope is undertaken across the Government of Canada under the prerogative of individual federal departments and agencies and, unlike Climate Finance, is not coordinated through a central planning and implementation mechanism.

This reflects the reality that technology transfer and capacity building activities are embedded within the expertise of each department or agency, and the ability to undertake such activities is based upon what is possible within the mandate, resources, capacities, and legal parameters of each federal organization.

In 2023, Canada established an exercise to improve its tracking of technology transfer and capacity building support through the Total Official Support for Sustainable Development (TOSSD) Survey. To measure the full breadth of Canada's resources allocated to sustainable development in developing countries, Canada circulates a whole-of-government survey twice annually to implicated departments and agencies. To better track technology transfer support, survey administrators added a "technology development and transfer" field for respondents to indicate whether projects support the transfer of designs, inventions, materials, software, technical knowledge, research products, scientific findings, data, methods, etc. Respondents are also asked to indicate whether their projects support technical cooperation, which comprises activities whose primary purpose is to augment the level of knowledge, skills, technical know-how, or productive aptitudes of the population of developing countries (i.e., increasing their stock of human intellectual capital, or their capacity for more effective use of their existing factor endowment). This component of the survey tracks capacity building support provided by Canada.

Canada will aim to integrate results from this component of the survey in subsequent Biennial Transparency Reports to provide more granular information on the technology transfer and capacity building dimensions of Canada's climate finance support.

4.3 Underlying assumptions, definitions, and methodologies

The following sections address paragraphs 121 and 122 of the MPGs.

Canada's climate finance accounting captures sources, both public and private, of financing that seek to support mitigation and adaptation actions to address climate change. Canada considers public climate finance to be financial resources and instruments drawn from public sources, while private climate finance refers to financial resources and instruments drawn from private sources. For more information on private finance, refer to Section 4.3.2. Given the complexity and evolving nature of the international climate finance landscape, Canada is of the view that climate finance should be defined in a manner that is comprehensive to allow for effective implementation of the Paris Agreement. In line with this, Canada strives to apply a transparent approach to defining its climate finance by applying international guidelines and standards to robustly identify relevant flows and transparently report on them.

Canada recognizes the value in providing new and additional resources to support climate action in developing countries. Financial support beyond what was planned prior to the entry into force of the United Nations Framework Convention on Climate Change and the 2009 Copenhagen Accord is considered to be new and additional by Canada. Canada continues to undertake efforts to scale up the volume of climate finance it provides and mobilizes. Notably, climate finance provided through Canada's public climate finance commitment represents new and additional resources. The $5.3 billion public climate finance commitment (2021 to 2026) represents a doubling from Canada's previous $2.65 billion public climate finance commitment (2015 to 2021).

Canada's international climate finance aims to effectively address the needs and priorities of developing countries. It supports the transition to sustainable, low-carbon economies by strengthening their capacity to align with their own country-driven priorities, in line with Nationally Determined Contributions (NDCs) and National Adaptation Plans (NAPs). Projects supported by Canada respond to the adaptation and mitigation needs of the people and communities that are most vulnerable to climate change, particularly those living in least developed countries (LDCs), small island developing states (SIDS) and coastal communities. Canada's climate finance is delivered through a range of financial instruments and channels to address the complex set of needs and priorities of developing countries across sectors and regions to ensure transformational and efficient delivery of climate finance, and to maximize access to finance.

Canada tracks the results of its climate finance investments by measuring the number of megatonnes of GHG emissions reduced or avoided, as well as the number of people benefitting from Canada's adaptation finance in developing countries. This approach to outcome measurement is centered around results that illustrate tangible benefits to developing country recipients; however, there are a broader range of climate-positive outcomes not captured under this approach which are considered through qualitative analysis.

More broadly, climate finance provided and mobilized by Canada aims to enable progress towards the long-term goals of the Paris Agreement, as outlined in Article 2. As such, the delivery of climate finance to developing countries is part of wider efforts to incentivize a whole-of-economy transformation

towards a future in which all financial flows are consistent with low greenhouse gas emissions and climate-resilient development. Beyond climate finance provision and mobilization, success in achieving the long-term goals of the Paris Agreement will depend on progress towards this overarching shift.

4.3.1 Notes on Common Tabular Format elements

In reporting climate finance dates through the Common Tabular Format (CTF) for the First Biennial Transparency Report, Canada applied the following methodologies and assumptions to various parameters:

Reporting date range: Data reported in this First Biennial Transparency Report covers climate finance provided and mobilized during the calendar years 2021 and 2022.

Status: Canada reports climate finance at the disbursement stage, except for transactions from FinDev Canada, which are reported on a commitment basis. FinDev Canada defines a commitment as a firm written obligation to provide resources of a specific amount under specified financial terms and conditions and for specified purposes. FinDev Canada transactions cover those committed to during the calendar years 2021 and 2022; funding will be disbursed over future years. Disbursements record the transfer of financial resources and are defined as the release of funds to a recipient or implementing partner; by extension, the amount spent.

Conversion to USD: Canada uses OECD exchange rates to convert funding amounts from CAD to USD for the purposes of this report. The rate applied for 2021 was 1.254 and the rate for 2022 was 1.302.

Delivery channel: Projects listed in the CTF tables are labeled as having been delivered through either bilateral or multilateral channels. Bilateral funds are channeled to bilateral partners and specific countries, while multilateral funds are delivered to multilateral organizations and not channeled to a specific country. Multi-bi funds are listed under bilateral support and are intended for a specific program and/or countries, but channeled via multilateral institutions (e.g., World Bank), in contrast to core contributions to multilateral organizations. Examples of multi-bi programming include Canadian facilities at multilateral development banks, such as the Canada-International Finance Corporation Blended Finance Program, and the Canadian Climate Fund for the Private Sector in Asia.

Funding source: Projects reported in this Biennial Transparency Report are identified as sourced either through Official Development Assistance (ODA) or Other Official Flows (OOF). Canadian ODA is defined in the *Official Development Assistance Accountability Act*. This definition is compatible with the international definition created by the DAC of the OECD. When support does not qualify as ODA, it is classified as OOF.

Financial instruments: Canada uses a blend of financial instruments to deliver its climate finance, including grants, concessional loans, equity, among others, in line with UNFCCC commitments. All instruments are reported at face value.

Type of support: Canada defines a climate project as a project with one of the following objectives or co-benefits: mitigation, adaptation, and cross-cutting. Canada’s definition of these sectors is based on those defined by the OECD-DAC. When funded activities support both adaptation and mitigation equally, support is identified as "cross-cutting" programming. Sectors are determined at a project level for bilateral contributions using OECD-DAC definitions.

Multilateral finance: Canada reports on the funds it disburses to multilateral institutions (i.e., its inflow contributions). Multilateral contributions are reported as “climate-specific” where the OECD-DAC

imputed share for the organization is available or if the contribution has a “principal” climate change marker based on the OECD-DAC Rio Markers for Climate. Contributions are reported as “core/general” if the imputed share of the organization is not available, but its portfolio includes some amount of climate finance and climate-related activities. Where a multilateral institution delivers climate support as part of its programming, but the OECD-DAC does not provide values for climate-related imputed shares, Canada works in consultation with the relevant organization to determine the climate-specific share of its contribution.

Avoiding double counting: In line with best international practice, Canada tracks climate finance delivered through bilateral, regional, and other channels at the project level. This level of granularity allows for a comprehensive picture of Canada’s climate finance and avoids double counting public flows. Where such a project involves multiple recipient countries, Canada lists the recipients and provides the total amount disbursed, as opposed to country-by-country reporting. In attributing climate-specific shares of funding for multilateral contributions, Canada uses inflow data to multilateral organizations only.

4.3.2 Private finance mobilization

Beyond its public international finance flows, Canada reports on private finance mobilized, which includes financial resources from private entities that have been mobilized as a direct result of an intervention by an official actor. Key criteria for counting mobilized private finance include causality and additionality. In terms of causality, there must be a clear causal link between the official intervention and the mobilization of private finance. The intervention must be a significant factor in the decision of private actors to invest. When determining additionality, the private finance mobilized must be additional, meaning that it would not have been invested without the official intervention. This criterion ensures that the reported mobilized finance represents genuinely new resources for development purposes.

When accounting for private finance mobilized, Canada follows the OECD-DAC's guidelines, which establishes a framework that all official actors must follow. These guidelines provide a standardized approach to measuring and reporting mobilized private finance. One of the key features of the OECD-DAC methodologies is that all official actors involved in a transaction receive credit for mobilized private finance according to their level of risk and amount invested, thereby ensuring there is no double counting. Furthermore, the OECD-DAC collects data on mobilized private finance centrally. This centralized approach allows for cross-checking and validation of reported data to identify and correct any potential double counting.

4.3.3 Technology transfer

The data collection exercise for this report approached technology transfer in line with the definition used in the IPCC Special Report on Methodological and Technological Issues on Technology Transfer (SRTT).[182] This defines the term ‘technology transfer’ as *“*a broad set of processes covering the flows of know-how, experience and equipment for mitigating and adapting to climate change” (IPCC). However, as required by the BTR guidelines, this report restricts the activities to flows from the Government of Canada not other sources as addressed by the IPCC.

The IPCC definition also sets out a useful expansion on the process which “comprises the process of learning to understand, utilize and replicate the technology, including the capacity to choose and adapt to local conditions and integrate it with Indigenous technologies”.[183]

4.3.4 Capacity building

Canada's approach to reporting on Capacity Building aligns with the definition as laid out in Paragraph 1 of Article 11 of the Paris Agreement: *"*Capacity-building should facilitate technology development, dissemination and deployment, access to climate finance, relevant aspects of education, training and public awareness, and the transparent timely and accurate communication of information". In UNFCCC negotiations related to Capacity Building, Canada supports transparent, needs-based, country-driven approaches that prioritize the specific challenges faced by developing countries.

Information collection on both tech transfer and capacity building activities for this report were undertaken leveraging the Government's Director General Climate Plan Implementation Committee (DG CPI). Using this Committee ensures reach to all relevant departments and agencies engaged in climate change activities in implementing the Government of Canada's climate agenda. Members of this committee (consisting of 18 or more departments and agencies) were provided with templates to provide information aligned with the requirements in the relevant CMA decision for the ETF and the ETF guidance document.

4.4 Financial support provided and mobilized under Article 9 of the Paris Agreement

The sections that follow address paragraphs 123, 124, and 125 of the MPGs.

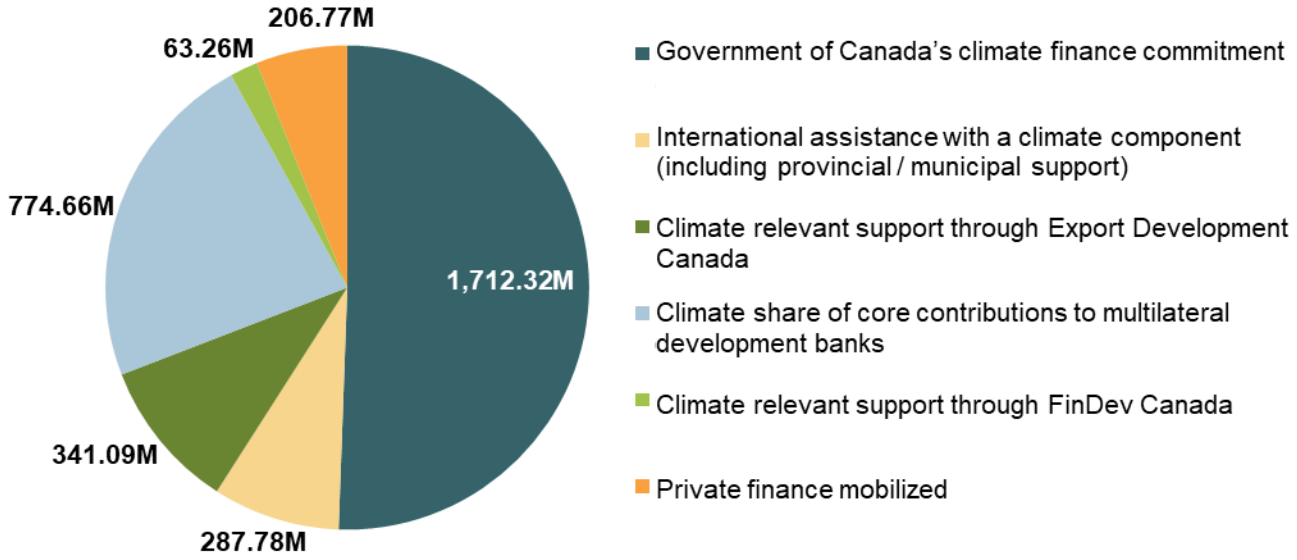
4.4.1 Overview of Canada's climate finance

Canada's climate finance support over 2021 and 2022 totaled over $3.39 billion from all sources. This support, drawn from various sources, includes Canada's public finance commitments ($2.65 billion from 2015 to 2021 and $5.3 billion from 2021 to 2026), as well as international assistance with climate elements, core contributions to multilateral development banks (MDBs) providing climate support, climate investments mobilized from the private sector through public finance in developing countries, and innovative climate resources, such as climate investments through Export Development Canada (EDC) and FinDev Canada.

This includes:

- $1.71 billion from Canada's $2.65 billion (delivered between 2015 and 2021) and $5.3 billion (being delivered between 2021 and 2026) climate finance commitments;
- $287.78 million from Canada's international assistance with a climate change component, which includes support from subnational governments;
- $774.66 million in core contributions to multilateral development banks (MDBs);
- $341.09 million in support delivered through Export Development Canada (EDC);
- $63.26 million in climate support from FinDev Canada; and,
- $206.77 million in private finance mobilized from Canada's public investments.

Figure 4-1 Canada's total climate finance delivered over 2021 and 2022, by source ($ millions)



4.4.1.1 Canada's public climate finance commitment

Building on its previous $2.65 billion climate finance commitment (2015 to 2021), Canada announced its five-year (2021 to 2026) $5.3 billion climate finance commitment in 2021. This commitment features four main thematic areas to guide programming: clean energy transition and coal phase-out, climate-smart agriculture and food systems, nature-based solutions and biodiversity, and climate governance.

In addition to thematic areas, Canada's $5.3 billion climate finance commitment includes the following policy targets:

- 40% of funding towards adaptation to help developing countries build resilience to climate change impacts;
- A minimum of 20% of funding to projects that leverage nature-based climate solutions and projects that contribute biodiversity co-benefits; and,
- 80% of projects that integrate gender equality considerations, in line with Canada's Feminist International Assistance Policy.

Through this commitment, Canada is also increasing its proportion of grant funding up to 40%, from 30% previously.

Increasing support for adaptation

Canada recognizes the need to support developing countries, particularly the poorest and most vulnerable, in their efforts to build resilience to climate change impacts. That is why Canada's $5.3 billion commitment is bolstering support for adaptation action by increasing its provision of funding towards adaptation to a minimum of 40%. This represents a more than doubling of funding for adaptation relative to Canada's previous public commitment. This funding plays an important role in contributing to the COP26 Glasgow Climate Pact's urging for developed country Parties to at least

double their collective provision of climate finance for adaptation to developing country Parties from 2019 levels by 2025.

Examples illustrating the type of initiatives supported by Canada's adaptation funding are outlined in sections below.

Leveraging nature-based solutions and biodiversity co-benefits

Canada recognizes that the climate and biodiversity crises are interconnected and aims to support positive nature outcomes through its climate finance. To support developing countries in the fight against the dual crises of climate change and biodiversity loss, Canada is allocating at least 20% of funding to projects that leverage nature-based solutions and projects that deliver biodiversity co-benefits.

For example, Canada is providing $10.3 million to the On-Air for Gender-Inclusive Nature-based Climate Solutions project in collaboration with Farm Radio International. This project supports the creation of a common understanding across Sub-Saharan Africa of what nature-based solutions (NbS) are for climate adaptation, using Farm Radio International's wide radio network and its innovative approaches to design, produce and air gender-responsive, interactive, and local radio programs. It also supports local sub-Saharan African communities, particularly women and youth, in implementing NbS (such as fruit tree forests for wind protection and food security or mangrove rehabilitation for erosion and storm protection). The High Impact Radio Series partners with 20 radio stations to produce broadcasts in Burkina Faso, Côte d'Ivoire, Ethiopia, Ghana, Uganda, and Zambia. The project aims to help local communities, particularly the hardest to reach, address their climate adaptation needs.

Gender equality and empowerment of women and girls

Canada's public climate finance prioritizes gender responsiveness, reflecting the Government of Canada's Feminist International Assistance Policy, which puts gender equality and empowering women and girls at the heart of its international assistance efforts. This policy considers women and girls as powerful agents of change to advance climate action and address biodiversity loss, environmental degradation, pollution, and other environmental concerns. Canada's feminist approach to environment and climate action focuses on supporting women's leadership and decision-making in all aspects of climate action and sustainable natural resource management, ensuring climate-related planning, policymaking and financing address the needs and challenges of women and girls, supporting employment and business opportunities for women in the renewable energy sector. Canada is ensuring that at least 80% of projects funded through its public climate finance commitment integrate gender equality considerations.

Project examples detailed throughout Chapter 4 illustrate the mainstreaming of gender considerations in Canada's climate finance.

Supporting locally led solutions and Indigenous climate leadership

Canada recognizes the importance of locally led solutions and that leadership from those on the frontlines of climate change is important to achieve effective climate action.

In line with this and as part of its public finance commitment, Canada is allocating $315 million to the Partnering for Climate initiative to fund projects from civil society, Indigenous Peoples and other organizations in Canada that will support climate change adaptation in Sub-Saharan Africa and other parts of the world. Funding for this initiative was announced in 2022. Of this funding, $300 million is

dedicated to supporting projects that use nature-based solutions to help countries, communities and people in Sub-Saharan Africa, a particularly climate-vulnerable region, become more resilient to the impacts of climate change. A further $15 million supports Indigenous Peoples Partnering for Climate, which was co-designed with representatives of national Indigenous organizations in Canada. This initiative emphasizes the importance of Indigenous climate leadership and seeks to foster partnerships between Indigenous Peoples that build the climate resilience of Indigenous Peoples in developing countries.

Enhancing access

Canada acknowledges the increasingly complex nature of the climate finance architecture, where significant barriers impeding access to climate finance for developing countries remain. This issue was highlighted in the Climate Finance Delivery Plan Progress Report in 2022 as one of the areas where more concerted action is needed. Canada is committed to continue working with a wide variety of stakeholders, such as the operating entities of the Financial Mechanism of the UNFCCC and the Paris Agreement, as well as MDBs, to address barriers to access, including by simplifying processes and enhancing the coherence of the wider climate finance system.

Canada is also prioritizing improved access through its public climate finance commitment. This includes providing direct support to initiatives designed to improve access, notably in small island developing states (SIDS) and least developed countries (LDCs), which face challenges due to insufficient human resources and technical capacity required to unlock climate funding. For example, Canada partnered with the Rocky Mountain Institute to launch the Climate Finance Access Network (CFAN) in 2020 and made an additional contribution in 2022 to expand the network. CFAN is a global network of climate finance advisors that help developing countries build their capacity to structure and secure public and private finance for their priority climate investments. Canada disbursed its $9.5 million pledge to CFAN in 2021 to support the launch of CFAN, notably for Pacific SIDS, and expand the network to the Caribbean. Canada has since pledged an additional $5.25 million to CFAN under its $5.3 billion commitment. Since then, CFAN has deployed advisors in 17 Pacific and Caribbean countries and three regional entities and has grown a pipeline of over 90 projects worth over $750 million, including over $60 million mobilized from various funding sources.

In addition, Canada recognizes the importance of grant funding in facilitating access to climate finance for the most vulnerable recipients. In line with this, as part of its $5.3 billion commitment, Canada is increasing its proportion of grant funding up to 40%, from 30% previously.

4.4.1.2 Mainstreaming climate in international assistance

Beyond its public climate finance commitment, Canada works to mainstream climate considerations into its development assistance. Canada seeks to ensure that international development funding to developing countries can help address climate change and its impacts, recognizing that climate change and biodiversity loss are inextricably linked to poverty, global security, financial stability, humanitarian issues and pandemics. This is consistent with the 2030 Agenda for Sustainable Development, particularly the Sustainable Development Goal (SDG) 13: taking urgent action to combat climate change and its impacts.

Over 2021 and 2022, $287.78 million of Canada’s international assistance was delivered with a climate change component. For example, in 2021, Canada disbursed $825,000 for Improved Rural Women Nutrition in Egypt. The project worked to improve equitable access to gender-sensitive, nutritious food for populations from 10 of the poorest villages in the Minya Governorate affected by the COVID-19 pandemic. Project activities included: reducing COVID-19 related barriers to carrying out smallholder

horticultural production and enhancing food system resilience, as well as persistent environmental and future climate change challenges; providing rural women, their households and communities, with improved access to efficient climate-smart agriculture practices and technologies. The project helped set up 20 greenhouses and tunnels that are making produce available all year round to ensure that the women were able to not only sell the produce to generate income but also improve nutritional outcomes.

Core contributions to MDBs

Multilateral development banks (MDBs) play a critical role in the global climate finance landscape and in supporting the transition towards low-carbon, climate-resilient and sustainable development. Canada's core contributions to MDBs help support climate action through a wide array of climate programming at various banks.

MDBs continue to work to increase their delivery of climate finance, notably reporting significant increases in total climate finance commitments for low- and middle-income economies in recent years, surpassing in 2022 the climate finance targets to 2025 previously set at the United Nations Secretary General's Climate Action Summit in 2019. In addition to being an important channel for public finance, MDBs are also a key mechanism to mobilize private finance. Canada continues to encourage MDBs to scale up the delivery of climate finance and improve private finance mobilization, and works with them to enable transformational change, such as the alignment of their operations with the goals of the Paris Agreement.

Over 2021 and 2022, Canada provided an estimated $774.66 million in climate-related imputed core contributions to MDBs that are increasing support towards climate change. This funding extends beyond Canada's climate finance commitment, to capture the relevant climate share of core support to these institutions.[184]

4.4.1.3 Climate-relevant support through FinDev Canada

The private sector plays a crucial role in achieving the scale of investment required for a successful transition to low-carbon economies, and development finance institutions (DFIs) were a key element in mobilizing resources and bridging the financing gap towards the achieved US$100 billion goal.

As Canada's DFI, FinDev Canada supports development through the private sector by providing a range of financing and investment solutions to mobilize private capital in and into emerging markets and developing economies, in alignment with Paris Agreement commitments and the Sustainable Development Goals (SDGs). Alongside gender equality and market development, climate and nature action is one of FinDev Canada's three development impact priorities, and currently, more than a quarter of all FinDev Canada's financial commitments support climate finance in one of the institution's priority sectors, including the financial industry, sustainable infrastructure, and the agribusiness and forestry value chains.

This aligns with FinDev Canada's investment strategy, focused on contributing to a low-carbon, climate-resilient, and nature-positive economy. The strategy allowed the institution to achieve a net negative GHG emissions portfolio in 2021, and these efforts have continued, assisted by the corporation's Climate Change Strategy, which also aims to address the nexus between gender and climate by including a gender lens to its portfolio decisions, conducting gender assessments and collaborating closely with its clients to identify opportunities to enhance gender inclusion and diversity practices.

As a concrete example, FinDev Canada is supporting Miro Forestry & Timber Products in enhancing its gender action plan, to enable the company to meet its ambitious target associated with providing quality jobs for women in Ghana and Sierra Leone. The company has a significant climate mitigation impact as it has reforested more land in Africa than any other organization over the past five years, with over 20 million trees planted over 20,000 hectares of degraded land.

Another example is the institution's work with IDB (Inter-American Development Bank) Invest to invest US$80 million dollars to support the launch of the region's second private sector blue bond, an innovative structure that crowd in financing to projects linked exclusively to the conservation of the ocean.

4.4.1.4 Climate-relevant support through Export Development Canada

Canada's efforts to scale up climate finance includes climate-related investments in developing countries by Canada's export credit agency, EDC. Over 2021 and 2022, EDC provided $84.9 million and $256.2 million respectively in climate finance support as part of the Government of Canada's commitment to the United Nations Framework Convention on Climate Change, which is directed to low-carbon or carbon-resilient transactions in developing countries. The increase in 2022 was a result of signing more high-value renewable energy financing contracts in 2022.

Export credit agencies can advance global efforts to address climate change by spurring investments in climate activities around the world. To this end, EDC supports the Government of Canada's efforts by supporting investments in the global transition to a low-carbon economy in line with the objectives of the Paris Agreement. Climate-relevant investments by EDC actively support clean technology deployment abroad and provide distinctive financing in areas such as water treatment, energy efficiency, the waste-to-energy sector, renewable energy generation, and smart-grid infrastructure. EDC's climate finance support consists of various financing solutions, including larger scale corporate lending, structured and project finance solutions, and smaller scale buyer financing. EDC is striving to improve its tracking and reporting methodology as it continues to improve its understanding of the impact of indirect financial solutions (e.g., guarantees and insurance) on climate and how these may be more accurately counted as climate finance going forward.

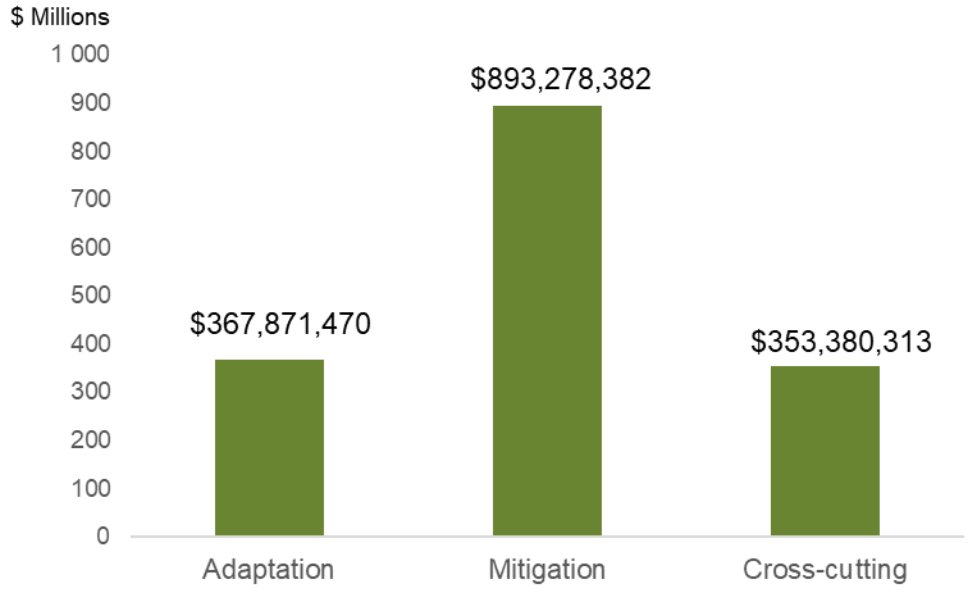
Green bonds are another growing financing vehicle used to drive private climate finance. EDC has been issuing green bonds since 2014 and was the first Canadian financial organization to do so. Funds raised by those green bonds have financed nearly 30 transactions worth more than $2 billion in a range of sectors, each contributing to environmental protection or climate change mitigation. As appropriate, EDC will include qualifying climate finance eligible investments in its green bond issuances. Furthermore, in 2022, EDC released a new, third-party reviewed Sustainable Bond Framework to enable greater support for initiatives that create a more equitable and sustainable world.

4.4.2 Bilateral, regional, and other channels

Canada's climate finance is delivered as mitigation, adaptation and cross-cutting support. Climate finance delivered through bilateral, regional and other channels funds projects which support programming in a variety of sectors, including agriculture, energy, forestry and disaster risk reduction.

In 2021 and 2022, Canada provided a total of $1.614 billion in bilateral climate finance support. Of this, $367.87 million was allocated for adaptation, $893.28 million was allocated for mitigation, and $353.38 million was allocated for cross-cutting projects.

Figure 4-2 Bilateral climate finance by type of support, 2021 and 2022



Over 2021 and 2022, Canada provided targeted bilateral climate funding to 87 developing countries across a wide variety of geographies. Canada also provided regional support to Asia and the Pacific, Latin America and the Caribbean, and Africa, through support for projects such as the **Women-led Coal Transition Mechanism** (of which $15 million was disbursed in 2022), which is providing support for Indonesia, India, South Africa and the Philippines. Various other countries are benefitting from Canada's support through multilateral funds, such as the **Green Climate Fund** and the **Global Environment Facility.** For example, as of June 2022, the Global Environment Facility had a presence in 144 countries and by the end of 2022, the Green Climate Fund was supporting projects in 107 countries.

Figure 4-3 Geographic spread of Canada's targeted bilateral climate funding, 2021 and 2022

4.4.2.1 Mitigation support

International collaboration is critical to ensure that the world's future energy needs are met on a sustainable basis and in line with the Paris Agreement. Recognizing the need to support the energy transition ambition of developing countries, clean energy transition and coal phase-out is one of the key priorities of Canada's climate finance. Canada is working with developing countries to boost investment and cooperation in clean technology innovation to promote affordable, reliable, and sustainable energy access for all, to support mitigation efforts.

For example, Canada is providing $15 million (of which $3.5 million was delivered in 2021 and $3.6 million was delivered in 2022) to the **Climate Change Action for Gender-Sensitive Resilience** project, in collaboration with the United Nations Development Programme. This project worked to advance the development and implementation of national climate change adaptation plans and climate change mitigation actions in nine Caribbean countries: Antigua and Barbuda, Belize, Dominica, Grenada, Guyana, Jamaica, St. Lucia, St. Vincent and the Grenadines, and Suriname. It also developed and implemented plans and actions in sectors that greatly benefit women and girls such as agriculture and tourism. The objective of the project was to strengthen governance related to national climate change planning and to involve women in this planning. In this way, project proposals to access climate finance were not only technically sound but also gender responsive. By the end of 2022, this project had completed sector-level national adaptation plans (NAPs) and Nationally Appropriate Mitigation Actions (NAMAs) for seven countries, which included explicit gender equality and poverty reduction outcomes, impact indicators, and targets. It also completed analyses of social protection systems' responsiveness to shocks (disasters) for five countries and trained 60 individuals across sectors and agencies in applying and using resilient recovery systems.

In addition, Canada is providing $19.9 million (of which $372,630 was delivered in 2021 and $3,186,194 was delivered in 2022) to **the Sustainable Economic Development Through Renewable Energy in Jordan** project, in partnership with Cowater International, Inc. This project worked to improve the livelihoods of 150,000 women, men, and their families in poor communities of the Ajloun and Jordan Valley (Deir Alla) regions in Jordan through the introduction of renewable energy and energy efficiency (REEE) solutions in households. It supported improved skills and employment prospects, particularly for women and youth, in Jordan's renewable energy sector and strengthened the enabling environment for accelerated growth in this sector.

By the end of 2022, the project reported increased use of REEE solutions in the region, resulting in the cumulative emissions reduction of 11,134 t CO_2 eq (equivalent to 3,411 passenger vehicle emissions in one year), surpassing its target of 6,24 t CO_2 eq. The project also conducted REEE awareness-raising activities, reaching 103,000 people, including more than 24,000 school children. The project also helped 315 beneficiaries (191 men and 124 women) find employment opportunities or to become self-employed. It did so by enhancing their knowledge and skills to better suit the needs of the REEE sector, established linkages with employers, arranged interviews and job fairs, and created internship opportunities.

In addition, Canada is providing $20 million (of which $2.04 million was disbursed in 2022) from its $5.3 billion climate finance commitment in bilateral **support for the implementation of developing countries' Nationally Determined Contributions (NDCs)**. The funding supports four countries in West Africa: the Gambia, Ghana, Liberia and Togo. Implemented by a Canadian non-profit organization NovaSphere, Canada's financial support aims to strengthen domestic capacity to plan, scale and accelerate the implementation of country-driven climate priority actions that will support achievement of their NDC and the goals of the Paris Agreement. In 2022, project activities focused on domestic priority setting; identification of potential pilot project activities for implementation; and stakeholder engagement to support governance at different levels of government, and regular stakeholder dialogue.

Canada also partners with Multilateral Development Banks (MDBs) to advance global climate action through targeted climate finance programs. For example, through the World Bank Group (WBG), Canada funds a wide range of climate programs focused on energy transition, sustainable agriculture, and climate-resilient infrastructure. This includes a significant contribution of $400 million in 2022 to the Climate Investment Funds Accelerating Coal Transition (CIF-ACT), which backs renewable energy initiatives in developing countries.

4.4.2.2 Adaptation support

Canada recognizes that support for climate change adaptation is critical for developing countries, particularly the poorest and most vulnerable, as they face climate shocks and other changes with profound impacts on agriculture, infrastructure and well-being. That is why Canada is committed to enhancing the adaptive capacity of vulnerable communities and countries in responding to the impacts of climate change, including through its bilateral and regional support.

For example, Canada is providing $5 million (of which $900,000 was delivered in 2021 and $2,850,000 was delivered in 2022) to the **Advancing National Adaptation Planning in Developing Countries** project, in collaboration with the International Institute for Sustainable Development. This project was a part of a multi-donor, global initiative that aimed to reduce vulnerability to climate change for women and men, by improving the quality and integration of gender equality into national adaptation planning and action in developing countries.

As of March 2022, five Sub-Saharan African (SSA) countries (Central African Republic, Chad, Côte d'Ivoire, Ghana, and Kenya) and two small island developing states (SIDS) (Dominican Republic and the Republic of the Marshall Islands) had improved the quality and integration of gender equality in their National Adaptation Plans. In addition, four SSA countries (Côte d'Ivoire, Kenya, Somalia, and South Africa) and two SIDS (Grenada and the Republic of the Marshall Islands) had improved their capacity to develop and manage climate-related policy and programmes.

In addition, Canada is providing $7 million (of which $150,000 was delivered in 2021 and $2,100,000 was delivered in 2022) to the **Supporting Gender-Centered Climate Resilience in Africa** project implemented by the African Development Bank Group. This project contributes to the Africa Climate Change Fund and focuses on gender equality and climate action in Africa. Funding supports small-scale, climate-resilient projects aimed at increasing women's economic empowerment and initiatives that enhance women's participation in climate negotiations in countries across Africa. The project beneficiaries include women entrepreneurs and their communities as they adapt to climate change, government officials working on climate change strategies and negotiations, and stakeholders seeking to integrate gender equality considerations into the NDC process. By the end of 2022, seven of the ten projects selected through the call for proposals had begun implementation; 18 guideline notes on Gender-transformative Climate Change Adaptation were developed; and two extensive workshops in English and French on Gender-transformative Climate Change Adaptation were carried out with 35 participants (16 of them women) from 26 countries.

Canada is also making significant efforts to support projects that contribute to adaptation while leveraging nature-based solutions to protect oceans and make coastal communities more resilient. For example, Canada is contributing $9 million to the **Ocean Risk and Resilience Action Alliance (ORRAA)** (of which $1,187,860 was delivered in 2021 and $2,540,000 was disbursed in 2022) to support their ongoing work helping Small Island Developing States and coastal developing countries invest in projects that strengthen coastal communities in the Global South through innovative finance and insurance solutions. These solutions may include protecting fishers from extreme weather or funding mangrove restoration with carbon credits, for example. Canada is a founding partner of ORRAA, and this additional support builds on its previous $2.5 million contribution from the $2.65 billion climate finance commitment (2015 to 2021). Under Canada's contribution, ORRAA issued a Call for Proposals to identify 10 locally led projects to support, aiming to strengthen the resilience and adaptive capacity of vulnerable coastal communities in the Global South through finance and insurance products. The projects that ORRAA is managing are deploying an array of activities, including scoping and feasibility studies and pilot testing/implementing novel financing solutions integrated with conservation/blue carbon activities, capacity building, research, gender focus, policy engagement and public/private partnerships. Canada's support also enabled ORRAA to begin the scoping of the Sea Change Impact Financing Facility (SCIFF), an open platform that aims to drive at least US$1 billion of private investment into coastal and ocean ecosystems by 2030, a springboard from which to mobilize at least US$2.5 billion of broader finance capital.

4.4.2.3 Cross-cutting support

Cross-cutting climate change activities can integrate both mitigation and adaptation components and other co-benefits, such as biodiversity and gender equality, towards a sustainable pathway to development.

For example, Canada is providing $2 million (of which $577,837 was delivered in 2021 and $330,919 was delivered in 2022) to the **Building Community Resilience to Climate Change in Senegal** project with the Jane Goodall Institute. This project worked to improve rural communities' resilience to climate

change, especially for women, in the Kedougou region of Senegal. By distributing fonio (a type of heritage grain) seeds and agriculture inputs to 882 women in targeted villages, constructing fonio husking machines and storage spaces in communities, the project has increased the practice of climate-smart agriculture in the region. The project also increased women's roles in decision-making for sustainable livelihoods by providing training to women and community members on gender equality, governance and management structures, planting techniques, biomass briquette production, storage and sustainable forest management, and bush fire prevention. The project resulted in the planting of 3,125 wild trees and the distribution of 1,400 fruit trees to 690 community members (69% of them women), including baobab, guava, and mango trees to promote agroforestry and the use of indigenous tree species to enhance forest carbon sinks.

In addition, Canada is providing $4.5 million (of which $2,000,000 was delivered in or 2022) to the **Accelerating Green & Climate Finance in the Philippines** project, in partnership with the United Nations Development Programme. This project, which began in 2022, aims to improve the resiliency and environmental security of Filipino women and vulnerable communities through support for the climate financing environment in the Philippines. The project is working to create an ecosystem for innovative financing, address capacity gaps and strengthen monitoring and reporting on the Sustainable Development Goals (SDG) impacts of green and climate investments. The project is training finance institutions to design and incorporate gender-responsive and green and climate-related policies in their lending programs. These include the Department of Finance, Central Bank of the Philippines, Climate Change Commission, Department of Environment and Natural Resources, Securities and Exchange Commission, and Public Private Partnership Center.

4.4.3 Multilateral channels

In addition to bilateral and regional programming, Canada delivers climate finance through various multilateral channels. Canada's climate finance support through multilateral channels in 2021 and 2022 was mainly delivered through core contributions to multilateral organizations with a wide variety of activities. In 2021 and 2022, Canada contributed to the Green Climate Fund (GCF), Global Environment Facility (GEF), Adaptation Fund (AF), through the province of Québec, the Least Developed Countries Fund (LDCF), and the Montreal Protocol Multilateral Fund. Canada also provided support to multilateral financial institutions, regional development banks and specialized United Nations bodies.

Over 2021 and 2022, Canada notably disbursed $250 million to the GCF. The funds provided are part of Canada's $600 million pledge to the GCF for the Fund's initial resource mobilization (2015 to 2019) and first replenishment period (2020 to 2023). The GCF is the world's largest international climate fund dedicated to helping developing countries in their climate action.

As of July 2024, the GCF's portfolio included 270 projects with an expected total of US$58.7 billion, of which the GCF has committed US$14.9 billion in funding. The GCF's portfolio is currently composed of 57% public sector projects and 43% with the private sector. The GCF continues to program 50% of its adaptation support to least developed countries, small island developing states, and African States. Recent GCF funding approvals have shifted the Fund's overall profile to slightly more funding towards adaptation (55%) relative to mitigation (45%), in nominal terms.

As of October 2022, the GCF had received 131 adaptation planning proposals for the formulation of National Adaptation Plans and/or other adaptation planning processes under the GCF Readiness Programme. From mid-2018 to November 2022, 23 countries requested and received technical assistance to prepare adaptation planning proposals.

For example, the GCF is implementing a project with the goal of transforming agriculture in the Indus Basin by increasing resilience among the most vulnerable farmers and strengthening government capacity to support communities to adapt. With GCF grant funding of US$35 million and a total project value of US$47.7 million, this project is developing the country's capacity to use the information it needs to adapt to the impacts of climate change on agriculture and water management by putting in place state-of-the art technology. It builds farmers' climate resilience through skills, knowledge and technology enhancement activities while creating a wider enabling environment for continuous adaptation. The project is expected to directly benefit 1.3 million people, and another 16 million indirectly over its 10-year lifespan.

Canada also contributed $886,393 in 2021 and $19,056,180 in 2022 to the Montreal Protocol Multilateral Fund. The goal of the Montreal Protocol is the phasing out of ozone depleting substances (ODS) used in refrigeration, air-conditioning, aerosols, agriculture, and other sectors that contribute to the depletion of the ozone layer and global temperature rise. Phasing out ODS chemicals is one of the most important steps ever taken to curb climate change. Emissions avoided by eliminating ODS have a positive social and economic impact, saving trillions of dollars in recovery efforts by averting potential storms, heatwaves, wildfires, droughts, and other climate-related natural disasters. Between 1995 and 2021, 51.1 Gt CO_2 eq were avoided by developing countries thanks to the Montreal Protocol. This is approximately 1.4 times the global 2022 carbon dioxide emissions from energy combustion and industrial processes. Based on the Multilateral Fund's aggregated disbursement of US$3.63 billion until 2021, it costs the fund US$0.07 to remove 1 t CO_2 eq from the atmosphere.

Canada also works closely with Multilateral Development Banks (MDBs) to advance global climate action. In Latin America and the Caribbean, Canada's collaboration with the Inter-American Development Bank (IDB) supports efforts to combat climate change through sustainable urban development and water resource management initiatives. Canada's involvement with the African Development Bank (AfDB) focuses on adaptation and mitigation strategies crucial for the African continent, particularly in the areas of energy access, food security, and climate resilience. Additionally, Canada's partnership with the Asian Development Bank (ADB) promotes green infrastructure projects and sustainable energy solutions across Asia. These MDB partnerships collectively enable Canada to drive impactful climate solutions in vulnerable regions worldwide.

Through its support to multilateral channels, Canada aims to support the development of innovative facilities to deliver climate support. This includes the International Monetary Fund's new Resilience and Sustainability Trust (IMF-RST), created in 2022, which provides long-term, affordable financing to help low-income and vulnerable middle-income countries build resilience to external shocks, including climate change and pandemic preparedness. Canada has committed a total of 1.4 billion IMF Special Drawing Rights (approximately $2.4 billion) in new loan commitments to the RST and provided a $40 million grant.[185] As of October 2024, 20 RST financing arrangements have been approved for IMF members, all seeking to help countries tackle challenges stemming from climate change.

4.4.4 Information on finance mobilized through public interventions

While it plays a key role in supporting climate action, public finance provision cannot provide the level of resources required to meet the long-term goals of the Paris Agreement. Tapping into a wide variety of sources, instruments and channels is vital in unlocking the funds needed on the path towards low greenhouse gas, climate-resilient development. As such, leveraging the private sector to ensure resources available for climate action are used to their full potential is key in maximizing the effectiveness of climate finance. That is why Canada works with a range of partners to mobilize private finance through its public investments.

Canada is a leader in innovative approaches to mobilize private climate finance, by blending its concessional finance, which is provided on more generous terms (i.e., longer grace periods and lower-than-market interest rates), with commercial resources to more effectively catalyze investments by absorbing risks and removing barriers to private investment in developing countries. Canada uses grant financing where cost-effective market-based financing is not viable, such as for most adaptation projects in the poorest and most vulnerable countries. Blended finance can play a critical role in mobilizing private investments that otherwise would not occur by de-risking investments, as well as helping to create new markets by addressing market failures. These instruments can be adapted to local contexts and are consistent with the ambition of the Paris Agreement, which affirms the role of mobilizing private finance in achieving NDCs.

Canada delivers 60% of its $5.3 billion climate finance commitment (2021 to 2026) through Unconditionally Repayable Contributions (URCs), an innovative finance instrument akin to concessional loans. It uses repayable financial instruments to catalyze private and public sector investment in low-carbon activities such as renewable energy and energy efficiency projects, primarily in middle-income and lower-middle-income countries. In many cases, URCs are used to make private sector investment opportunities more attractive. These instruments allow Canada to absorb some of the risk of development projects so that the private sector can also invest in them.

One of the goals of URCs is to increase positive development impact by catalyzing and pooling new or additional channels of financial resources, including private sector funds, applying new public sources of innovative development financing, and maximizing the use of a new range of partnerships, tools, and policy and program innovations. URCs are also a way to put more capital (usually $50 million+ per project in the case of climate finance) toward climate solutions in a cost-effective manner, providing a quick influx of funding for urgently needed climate actions and initiatives.

Canada uses URCs to create bilateral funds or facilities with partners, including multilateral development banks (MDBs), for a specific purpose such as to catalyze public and private sector investment in climate change mitigation and adaptation in a specific geographic region, sector, or both. Canada has notably established Canadian climate funds at several multilateral development banks (MDBs), which are designed to catalyze public and private sector investment that would not otherwise happen due to market barriers in developing countries such as low returns on investment, and perceived versus actual risk that are, in part, due to political or social instability. These include funds with the African Development Bank, the Asian Development Bank, the Inter-American Development Bank Group, and the World Bank Group.

Phase I of the Canadian Climate Fund (C2F) was established in 2012 with a $250 million investment from Canada. C2F provides evidence of private sector mobilization though Canadian partnerships with MDBs. As of December 2022, US$1.7 billion in public and private resources have been mobilized through C2F-funded projects. Most fund resources have been deployed in renewable energy and infrastructure projects which, in 2022, abated 1,100,614 t CO_2 eq and produced 2,371,220 MWh of renewable energy.

Together with IDB Invest, the private sector arm of the Inter-American Development Bank (IDB) Group, Canadian climate finance is mobilizing private finance through the second phase of the **Canadian Climate Fund for the Private Sector in the Americas (C2F2)**. Canada is contributing $223.5 million to C2F2, $62,000,000 of which was disbursed in 2021. As part of C2F2, IDB launched the New Juazeiro Bifacial Solar Power Project, consisting of the design, construction, operation, and maintenance of a 187-megawatt four bifacial photovoltaic power plants and other interconnection

facilities in the state of Bahia, Brazil. This project is made possible through blended finance arranged by IDB Invest which totals US$42.8 million, of which US$7.5 million came from C2F. IDB Invest also worked with the borrowers to provide employment opportunities in science, technology, engineering, and mathematics not only for women, but also for Afro-descendant Brazilians, whose participation rate in the labour force, particularly in STEM disciplines, is disproportionately low.

4.5 Support for technology development and transfer provided under Article 10 of the Paris Agreement

The following section addresses paragraphs 126 and 127 of the MPGs. MPG 127 is addressed in more detail in Annex 5, Section A5.7.

Developing countries, especially the poorest and most vulnerable, require support for accessing clean, innovative, and affordable technologies to support their economic growth in a manner that does not compromise environmental integrity and exacerbate climate impacts. The right technologies will enable a transition that is sustainable, low-carbon, climate-resilient, nature-positive, and inclusive.

This section provides an overview of the technology transfer activities undertaken by the Government of Canada that facilitated the adoption and use of Canadian clean technologies and related expertise in 2021 and 2022.

4.5.1 Forest and land use carbon modelling

Canada has provided knowledge, mentoring and guidance on forest GHG emissions mitigation and forest management adaptation through the provision of the Carbon Budget Model of the Canadian Forest Sector (CBM-CFS3) and Generic Carbon Budget Model (GCBM).

Software technical support has been readily available for both the CBM-CFS3 and GCBM since their public release. The user community frequently provides feedback through technical support about the training and software, including coding problems and how to improve the training or software to meet evolving needs, and this information is passed along to the software development team to make potential adjustments.

Technology development and transfer was also achieved through financial support to Moja Global. Moja Global is a collaborative project under the Linux Foundation (initiated by the Australian Government and supported by the Canadian Forest Service at Natural Resources Canada) that supports climate action by bringing together a community of experts to develop open-source software including the Full Lands Integration Tool (FLINT) software which allows users to accurately and affordably estimate GHG emissions and removals from agriculture, forestry, and other land uses (AFOLU).

Moja Global promotes domestic and international collaboration on open-source tools to estimate emissions and removals from forests and harvested wood products and developing uncertainty estimates in support of policy. Through the collaboration with Moja Global, the Canadian Forest Service has advanced and implemented the Generic Carbon Budget Model on the FLINT platform to support developing countries in the establishment of advanced measurement, reporting and verification (MRV) systems to quantify forest sector carbon balances.

In 2021-22, the Chile Pilot continued to represent a successful demonstration of the implementation of a FLINT configuration using Canada’s Generic Carbon Budget Model implementation and

documentation. The pilot was implemented by Chilean expert Julian Cabezas Pena in collaboration with the National Forest Corporation or CONAF (Corporación Nacional Forestal) of the Chilean Government. Chile Case Study details can be found online.

The SLEEK (System for Land-based Emissions Estimation in Kenya) is the National Carbon Accounting System for Kenya. The SLEEK used FLINT as an integration tool that brings in datasets from different databases and modules (land cover change, forest biomass, climate, soil, etc.) and provides emissions associated with land use changes. Kenya Case Study details can be found online.

In 2021-22, Moja Global built upon previous efforts to establish and differentiate FLINT in the market by:

- documenting the FLINT's existing applications;
- developing a joint proposal with (IUCN) and ten national governments to support implementation of FLINT-based systems;
- developing an online training platform and online training materials; and,
- significantly improving the quality of Moja Global communications and messaging.

Pilot applications in Chile and Kenya have contributed to the interest expressed by the ten countries who are part of the joint proposal with the IUCN. The online training has also contributed to the growth in interest and support within the technical community. The training and country engagement has also been effective at correcting a degree of misunderstanding and misrepresentation of the FLINT as suitable only for countries with advanced forest and land use inventories, long running monitoring systems and abundant high-quality data.

To encourage international forestry community participation in Moja Global for the purposes of continued development and increased application of the FLINT and GCBM, an informative virtual UNFCCC workshop was held in 2021. Participants from 125 countries attended the workshop.

4.5.2 Global Fire Early Warning System / Fire Danger Rating System

For the Malaysia Fire Danger Rating System / Fire Early Warning System, Canadian experts provide virtual subject matter expertise to support updating the Fire Early Warning (EWS) System in Malaysia, operated by MetMalaysia. Malaysia has been using an adaptation of the Canadian Fire Weather Index (FWI) System as an EWS or Fire Danger Rating System (FDRS) for over 20 years. Their MetMalaysia service produces national danger rating maps, as well as maps for the Association of Southeast Asian Nations (ASEAN) region.

The Canadian Forest Service made its experts in technology and fire danger rating available at all stages of the process, and assistance included the following:

- Shared open-source technology to generate Canadian FWI System outputs;
- Shared documentation on technology that generates FWI System output; and,
- Supported installation and implementation virtually through email and meetings.

MetMalaysia organized and hosted a virtual two-day workshop (January 25 to 27, 2022) on FDRS, FWI, and Fire Behaviour as part of their weeklong workshop on their updated FDRS. Three Canadian Forest Service experts presented on different topics of fire danger rating and implementation of software to generate FDRS outputs.

At a seminar in April 2021, Argentinian and Canadian wildfire experts shared information regarding the current status of FDRS in their respective countries. Argentina has adapted the FWI System in parts of

the country and were interested in hearing more about fuels and further implementation of EWS and FDRS in Argentina. Canadian Forest Service experts in fire danger rating and fire behaviour as well as representatives from the Canadian Forest Service's trade and international affairs division participated in this seminar.

4.5.3 Support for the phase-down of hydrofluorocarbons (HFCs) and improving energy efficiency in the refrigeration sector

Canada also provides technology transfer support to developing countries through its climate finance program. For example, Canada is providing bilateral support to Colombia, Senegal, and Peru to support the phase-down of hydrofluorocarbons (HFCs) and improve energy efficiency in the refrigeration sector in these countries.

In collaboration with the United Nations Development Programme (UNDP), Environment and Climate Change Canada (ECCC) is supporting technology transfer and capacity-building to assist four countries (Colombia, Mexico, Peru, and Senegal) in reducing their use and emissions of HFCs while improving energy efficiency in the refrigeration sector. Canada is providing a total of $2.2 million for this project (of which $854,828 was disbursed in 2022). Activities include the provision of technologies, equipment, tools, and expertise in selected enterprises in these countries, the demonstration of innovative low-global warming potential (GWP) refrigeration systems, and training of refrigeration technicians and equipment operators. Specifically, under each of the project, activities being undertaken include the following.

Colombia: Two manufacturers in Bogota are receiving assistance to build two prototype centralized refrigeration systems than use low-GWP "CO_2 transcritical" technology instead of traditional high-GWP HFC-based technologies. The prototypes will then be installed in two small supermarkets and monitored for their performance. CO_2 transcritical technology not only eliminate the need for HFC refrigerants but can also significantly enhance the energy efficiency of centralized refrigeration systems. A mobile CO_2 transcritical training unit has been provided by a Canadian supplier and is being used in Colombia to train refrigeration technicians on this technology. The project is part of a larger strategy by the government of Colombia to gradually transition supermarket refrigeration in the country towards the use of low-GWP technologies.

Mexico: Five refrigeration units functioning on HFCs to cool small cold rooms used in public markets in Mexico City will be replaced by units using lower-GWP refrigerants. The new units will demonstrate the use and performance of these alternative refrigerants in Mexican public markets to encourage the further take-up of these technologies. In addition, an HFC-based centralized system in a large supermarket will be converted to low-GWP CO_2 transcritical technology. Associated training for the operators of the system will also be provided.

Senegal: Equipment to recover, recycle and re-use (RRR) HFCs is being provided to a refrigeration training centre in Dakar, which will then carry out training of refrigeration technicians on the use of the equipment. The equipment will then be distributed to selected technicians who successfully complete the training. The effective implementation of RRR practices avoids the venting of refrigerants when servicing equipment and reduces the need to import new HFCs, thereby leading to a reduction of use and emissions. In addition, throughout the project, the refrigeration centre will be reinforced through the provision of expertise and equipment to share best practices to reduce emissions, transition to lower-GWP refrigerants, and improve energy efficiency throughout the refrigeration and air conditioning sector in Senegal.

Peru: Three training institutes are receiving CO_2 transcritical training units and associated training to prepare the refrigeration industry and technicians in the country in the use of this low-GWP technology across the commercial refrigeration sector in the country.

4.6 Capacity-building support provided under Article 11 of the Paris Agreement

The following section addresses paragraphs 128 and 129 of the MPGs.

Capacity-building is the critical foundation for implementing adaptation and mitigation measures, ensuring their success and longevity. Enhanced capacity of institutions, communities, and individuals, also helps create the necessary enabling environments that will attract investment and create the conditions for new technologies and systems to take hold for the long term.

This section provides an overview of the Government of Canada's capacity-building efforts in 2021 and 2022.

4.6.1 International Model Forest Network

The International Model Forest Network (IMFN) is a voluntary global community of practice whose members and supporters work toward the sustainable management of forest-based landscapes and natural resources through the Model Forest approach. The Government of Canada announced the development of an International Model Forest Network at the 1992 United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro, with a goal to scale up the lessons learned from Model Forests in Canada and provide a platform to share its experiences with international partners.

The primary goal of the IMFN is to establish a global network of Model Forests that represents the majority of the major forest ecosystems of the world. It also strives to ensure that all partners, regardless of political or economic status, can contribute to, and share in, the benefits of the Network as they work toward the sustainable management of forest-based landscapes.

Through the creation of this global network, the IMFN's vision is to support the management of the world's forest resources in a sustainable manner, reflecting environmental and socio-economic issues from the perspective of local needs and global concerns.

The IMFN Secretariat was officially established in 1995, and today continues to be hosted by the Government of Canada at Natural Resources Canada's Canadian Forest Service in Ottawa, Canada. The IMFN has over than 60 Model Forests in over 30 countries and includes several international capacity-building initiatives.

One such capacity-building initiative is RESTAURacción: Wildfire Restoration in Latin America, launched by the Government of Canada in 2020, in response to widespread wildland fires that occurred in Latin America in 2019 and 2020, to support collaborative forest landscape restoration across the Latin American Model Forest Network.

Delivering on Canada's commitment at the 2019 G7 Leaders' Summit, RESTAURacción aims to:

- Advance women's leadership in post-fire and degraded landscape ecosystem restoration;
- Plan and cost post-fire restoration; and
- Promote longer-term investments in sustainable land use.

Strong first year results in calendar year 2021 unlocked an additional investment by Canada in 2022 in the Latin American Model Forest Network. Besides its overarching objective of gender equity and inclusion, RESTAURacción continues to make use of our long standing, mature and proven partnerships within the IMFN.

RESTAURacción is financed by Global Affairs Canada and led by the Canadian Forest Service through the IMFN Secretariat. To enable lasting forest and landscape restoration after fires, communities must be meaningfully involved in planning and implementing initiatives that affect their lives. RESTAURacción's formula for success directly relates to the established governance platforms, the Model Forests, fostering close cooperation with local stakeholders, eager to contribute to the restoration of their landscapes.

From 2021 to 2022 inclusive, through the IMFN's RESTAURacción initiative, among many key achievements, Canada and its implementing partners trained over 3,000 people on topics including forest fire management and control, gender equity, leadership and governance, forest landscape restoration implementation and monitoring in degraded areas (47% were women and girls). Seventy-eight future restoration leaders were provided with university scholarships to study forest landscape restoration and monitoring in degraded areas (69% are women).

Annual key achievement reports of IMFN's RESTAURacción initiative are available in English, French and Spanish online.

4.6.2 Forest carbon accounting software training

There continues to be a global high demand for operational-scale forest carbon accounting software for national inventory reporting, Nationally Determined Contribution reporting, Reduce Emissions from Deforestation and Forest Degradation, Foster Conservation, Sustainable Management of Forests, and Enhancement of Forest Carbon Stocks (REDD+) projects, and assessment of mitigation and adaptation opportunities using forests, and the CBM-CFS3 and GCBM continue to serve these needs.

As a result of the COVID-19 pandemic, which began in 2020, self-guided video training for the CBM-CFS3 was developed and made freely available online to the international user community in English (2021) and French (2022).

Self-guided video training for the GCBM was also made available online to the international user community in English in 2021 (development of the French version began in 2022).

There are growing demands for carbon accounting tools to track the fate of carbon in harvested wood products (HWP), and ongoing development of the Abstract Network Simulation Engine (ANSE) and self-guided training to develop custom HWP models for use with ANSE will help in addressing these needs. Distribution of the ANSE and training in the development of HWP carbon models for use with it have been limited (not yet available online) mainly to researchers in Canada since 2011, however it has been applied in by researchers in Canada, the United States and Mexico. Software, user documentation and training remain under development.

As a result of capacity building, training, and technical support of the CBM-CFS3, GCBM, and ANSE, dozens of applications have occurred in and outside of Canada, leading to the generation of numerous publications:

- Publication of applications of the CBM-CFS3 are available for over 30 countries (Canada, China, Czech Republic, European Union (all countries), Ireland, Italy, Kazakhstan, Korea,

Mexico, Poland, Romania, Russia, Slovenia, Turkey, the United Kingdom, and the United States), which supports sharing of lessons learned and best practices.
- Publication of applications of the GCBM are available for three countries (Canada, Chile, Korea), which supports sharing of lessons learned and best practices.
- Publication of applications of the ANSE and custom HWP models are available for three countries (Canada, Mexico, United States), which support sharing of lessons learned and best practices.

4.6.3 Nuclear safety

The Canadian Nuclear Safety Commission (CNSC) collaborated with countries in support of helping build their nuclear program and capacity building, offering information and lessons learned on multiple regulatory topics.

CNSC capacity-building support is always planned based on needs and priorities expressed by the receiving country. CNSC has conducted capacity-building efforts that assist developing countries prepare for nuclear activities, with the goal of achieving a high level of nuclear safety that is consistent with the IAEA safety standards. CNSC shared information that would provide insights into what was needed to successfully develop a nuclear program in preparation for technology development (advanced reactors, SMRs, etc.).

In 2021 and 2022, CNSC had a strategic priority related to Global Influence. This priority included:

- influencing the development of international standards, guidance, and good practices in support of high levels of safety and security globally;
- promoting international cooperation, sharing and adoption of international best practices; and,
- deepening technical collaboration with priority international bilateral regulatory partners, influence harmonised international approaches to regulatory standards, and encourage continuous improvement and promotion of good practices for nuclear safety, security, and safeguards globally.

The CNSC's capacity-building activities focused on cooperation and information exchanges in support of sharing CNSC expertise. The goal was to promote CNSC regulatory principles, educate countries on international best practices, and provide insight into lessons learned in the support of high levels of safety and security.

During 2021 and 2022, the CNSC conducted technical exchanges with Ghana on licensing fees and borehole disposal, and a technical exchange with India on digital instrumentation and control equipment.

CNSC has participated in International Atomic Energy Agency (IAEA) review missions to provide technical expertise on assessing a country's regulatory framework and offer areas of improvement, activities included:

- the CNSC led an Integrated Regulatory Review Service (IRRS) follow up mission to India (2022) to review their regulatory infrastructure; and,
- CNSC staff participated in an IRRS mission to Morocco (2022) to assess reviewing areas of their regulatory framework.

The CNSC also participated in IAEA forums that directly offer support to emerging nuclear nations in developing regions, this includes:

- active member and provider of regulatory information as a member of the Regulatory Cooperation Forum in 2021 and 2022; and,
- CNSC took over as Chair of the Forum in September 2022, with the goal of delivering a new strategic plan, increasing interest in advanced technologies, building relationships with aspiring nuclear countries, promoting gender equity, and supporting emerging regulators' nuclear needs.

CNSC worked with Global Affairs Canada to establish treaty level agreements with nations interested in trading significant nuclear material, equipment, and information. Canada has had a Nuclear Cooperation Agreement (NCA) with the Philippines since 1983 which established this relationship. In 2022, the CNSC began engaging with the Philippines to establish an Administrative Arrangement (AA), as required per Article VI.2 of the NCA, that enabled the implementation and operationalization of the NCA, facilitating trade. Once in place, an AA allows for Canada and Canadian organizations to engage in the trade of nuclear material, equipment, and information, which enables the development of a nuclear energy and technology sector within the Philippines. Work to establish the Canada-Philippines AA is ongoing.

4.6.4 Greening government operations

Launched by the Governments of the United States and Canada in April 2021, the Greening Government Initiative (GGI) is a first-of-its-kind initiative that enables countries to exchange information, promote innovation, and share best practices to support global efforts to green national government operations and meet Paris Agreement commitments on climate change.

The GGI provides opportunities for countries to share ongoing efforts, present projects, discuss potential ways to work together, and help each other recognize and address challenges involved in greening national government operations. The GGI allows governments to demonstrate to the international community how they, through their own operations, are leading by example in climate resilience and sustainability.

At the end of 2022, approximately 44 countries from around the world had joined the Greening Government Initiative (GGI), about a third of which were developing countries. All countries can participate in the GGI by endorsing the GGI Concept Note. GGI participation does not require membership, financial commitments, or sector commitments.

Participants are responsible for suggesting topics for GGI meetings based on their needs and interests. Selected topics in 2021 and 2022 include sustainable public procurement, carbon-free electricity, climate adaptation and resilience, and net-zero emissions vehicle fleets.

At each convening of the GGI, co-chaired by the Governments of Canada and the US, two to three countries or organizations present on the chosen topic and often highlight challenges, lessons learned, and best practices related to capacity building.

On occasion, non-national governments such as the United Nations Development Programme and the World Bank have presented to the GGI community, offering outside perspectives, best practices, and resources to build the capacity of national government to green their operations.

All participants are encouraged to maximize the benefits of the GGI by sharing their knowledge, providing suggestions or feedback, connecting with the GGI network, participating in or offering to (co-)lead a working group, and by spreading the word.

Participants receive capacity-building support through the lessons learned and best practices shared by other governments. By adopting the successful capacity-building actions of other organizations or by implementing their own innovative approaches, developing countries are empowered to share their own progress, lessons, and successes.

4.6.5 Energy efficiency

4.6.5.1 Support through the IEA

As a member of the International Energy Agency (IEA), Canada works to advance the global energy efficiency agenda. As a longstanding member in the Energy Efficiency Working Party, Canada helps determine the IEA's energy efficiency analytical priorities and works to advance energy efficiency with international partners. For example, Canada shares input on the themes and priorities of the IEA's annual Energy Efficiency Market Report, providing guidance and comments on its draft iterations. Canada is also a founding member of the IEA-affiliated Energy Efficiency Hub (EE Hub), which is the primary mechanism for international collaboration on energy efficiency. The membership of the EE Hub is broader than the IEA, allowing Canada greater opportunities to engage on policy best practices with emerging economies within the EE Hub's membership.

4.6.5.2 SmartDriver Training

In 2022, a five-year Statement of Intent (SOI) under the SmartDriver program was signed between the Agencia Chilena De Eficiencia Energética of the Republic of Chile, the Department of Natural Resources of Canada (NRCan), the US Environmental Protection Agency and the International Council on Clean Transportation.

SmartDriver offers a series of free online courses, including in-classroom and on-road instructor resources, to help professional drivers of medium and heavy-duty commercial vehicles reduce fuel consumption, operating costs, and harmful vehicle emissions. Through this SOI NRCan helped to adapt the SmartDriver for Highway Trucking Curriculum for Chilean drivers. The SmartDriver adaptation involved translation to Spanish, including an in-depth review and edit/translation of the text to tailor it to the Chilean dialect, as well as adaptation to local circumstances such as removing elements related to winter driving behaviours and focusing on technologies like cab coolers over cab heaters.

4.6.6 Climate Technology Centre and Network

During the reporting period (2021 to 2022), the Government of Canada continued its long-standing support for the work of the UNFCCC's Climate Technology Centre and Network (CTCN).

Canada's financial contributions to the CTCN for this reporting period are captured under the climate finance portion of this report. During 2021 and 2022, Canada also continued its support for the Advisory Board to the CTCN by serving as a member on the Board. The Board provides strategic direction and budgetary oversight to the CTCN, approving its annual budget, annual reports to the UNFCCC COP, and operating plans. As a Board member Canada also promotes the work of the CTCN through various channels, increasing the CTCN's visibility and supporting fundraising efforts of the CTCN.

Canada's on-going support demonstrates the importance of CTCN's mandate to provide demand-driven technical assistance and capacity-building support for technology development and transfer to developing countries. The CTCN works with each country's focal point for climate technology to develop tailored solutions that match local needs based on the country's NDC.

The CTCN delivers support in three major areas of work: technical assistance; networking and collaboration; and capacity-building and knowledge-sharing.

The technical assistance is provided at no cost to developing countries through a network of over 800 organizations, including private companies, academic institutions, research organizations and multilateral organizations.

4.6.7 Support to the Climate Resilience Execution Agency of Dominica (CREAD)

Canadian support to the Climate Resilience Execution Agency for Dominica (CREAD) aims to contribute to Dominica's vision to be the world's "First Climate Resilient Nation." This has involved developing the Climate Resilience and Recovery Plan to operationalize the National Resilience Development Strategy. CREAD works to make Dominica's people, infrastructure and systems more resilient to climate-related and natural disasters so they can recover more quickly following disasters. Since 2019, Canada has provided support to CREAD for the implementation of key Government of Dominica recovery and reconstruction projects. An important mandate of CREAD is to assist in building the capacity of government ministries and other public sector agencies.

For example, between March and December 2022, CREAD began the capacity building programme for the public service when it held sessions on three topics (Project Management, Contract Administration, and Monitoring and Evaluation; Environmental and Social Safeguards; and Financial/Procurement). A total of 95 public officers (72 women and 23 men) attended the workshops.

In addition, through its Community Emergency Readiness Initiative, the project identified a demand for capacity building by communities throughout the country. In 2022, more than 120 community members received training in community disaster management, emergency response, and communication in disaster using ham radio. An additional 131 community members participated in capacity building in conflict management and leadership, as well as vulnerability assessment and hazard analysis. Moreover, in 2022, more than 70 individuals were trained in Damage Assessment and Needs Analysis.

The Disaster Management Committees of several communities in the eastern region of the country benefited from the increased capacity of its members when the area was affected by a destructive weather system in November 2022. After being isolated from the rest of the country, these committees and different aspects of their disaster management plans were put into operation to assist communities in search and rescue, damage assessment, relief, shelter management and transportation.

4.6.8 Creole Garden Revalorisation

Since 2019, Canada has supported the work of Agronomes & vétérinaires sans frontières (AVSF) in the South Department of Haiti to develop its agroforestry systems based on coffee and cocoa. This department is particularly vulnerable to climate change, thus aggravating environmental degradation and directly impacting agricultural activities and the entire value chain.

To ensure the sustainability of the agroforestry systems ("creole gardens"), the project seeks to improve the capacity of producers to adapt to climate change; encourage the creation of skills on agroforestry adaptation to climate change by improving training curricula; and strengthen the governance capacities of local and departmental authorities on adaptation to climate change.

Project activities include:

- installation and innovative and sustainable management of 250 hectares of new plantations by more than 800 families under the leadership of youth and women;
- strengthening the economic empowerment and social recognition of women involved in these agroforestry sectors by promoting their access to strategic roles and functions; and,

- improving the capacity of value chain actors in organizational management, commercialization, and marketing to ensure better access to niche markets by improving the quality of the commodities produced. The project expects to add value to the targeted agri-food chains, particularly for the benefit of women and youth in the targeted regions, while respecting the environment. The project also aims to make agri-food chains better adapted to climate change.

During 2021, three training workshops were held to explain the challenges and opportunities related to agroforestry systems to farming communities, as well as to the leaders from the coffee and cocoa cooperatives. As a result of the information received, 524 people participated in 12-day training programmes and the same number of agreements were signed to put into place either coffee or cocoa agroforestry systems. In the first two years of the project, 48,000 forest trees, 24,000 fruit trees, 192,000 banana trees, and 96,000 yam beds were planted in these agroforestry systems, which all contribute to carbon emissions reductions and the fight against climate change.

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[179] Government of Canada. (2024, March 18). *Canada's Climate finance Initiatives and Programs.* https://climate-change.canada.ca/finance/

[180] Government of Canada. (n.d.). *Project Browser.* https://w05.international.gc.ca/projectbrowser-banqueprojets/?lang=eng

[181] This methodological change was implemented in 2023 and, therefore, applies only to calendar year 2022 climate finance data in Common Tabular Format.

[182] Metz, B., Davidson, O. R., Martens, J. W., van Rooijen, S. N. M., & Van Wie McGrory, L. (Eds.). (2000). *Methodological and Technological Issues in Technology Transfer.* Intergovernmental Panel on Climate Change. Cambridge University Press. https://archive.ipcc.ch/ipccreports/sres/tectran/index.php?idp=0

[183] Anderson, S. O., Chandler, W., Christ, R., Davidson, O., Devotta, S., Grubb, M., Gupta, J., Heller, T. C., Iyer, M., Kammen, D. M., Klein, R. J. T., Kruger, D., Kumar, R., Levine, M., Erda, L., Iturregui, P., Hedger, M. M., McMichael, A., Mansley, M., … Worrell, E. (2000). Summary for Policymakers: Methodological and Technological Issues in Technology Transfer. In B. Metz, O. R. Davidson, J. W. Martens, S. N. M. van Rooijen, & L. Van Wie McGrory (Eds.), *Methodological and Technological Issues in Technology Transfer* (pp. 1-10). Intergovernmental Panel on Climate Change. Cambridge University Press. https://archive.ipcc.ch/ipccreports/sres/tectran/index.php?idp=507

[184] This core support captures funds disbursed to MDBs in the relevant calendar year, for example as part of replenishments to concessional windows or capital increases.

[185] Canada applies the OECD's imputed multilateral share for climate to the grant component of its support to the IMF RST and reports this amount as climate finance delivered through multilateral channels.

Chapter 5: Improvements in reporting over time

The following sections address paragraphs 7 and 8 of the MPGs.

As this is Canada's first BTR, there are no specific areas of improvement identified by the technical expert review team to be listed in this chapter. However, in line with paragraph 7 of the MPGs, there are areas of improvement that Canada has undertaken and is continuing to pursue. Continuous improvement is a cornerstone of Canada's climate change reporting.

5.1 National inventory

Environment and Climate Change Canada (ECCC) consults and works with key federal, provincial, and territorial partners, along with industry stakeholders, research centres and consultants, on an ongoing basis to improve the quality of the underlying variables and scientific information used to compile the national inventory. As new information and data become available and more accurate methods are developed, previous estimates are updated to provide a consistent and comparable trend in emissions and removals. The 2023 and 2024 National Inventory Reports (NIR) both included recalculations by sector, largely due to improved estimation methodologies as well as updated energy data. The 2024 NIR also included updated Global Warming Potentials (GWPs).

The 2023 edition of the GHG inventory incorporates methodological improvements in the estimations of waste landfills, and on-road and off-road transport emissions, among others. A new source was also included (post-meter fugitive emissions), which includes leaks from residential and commercial natural gas appliances, natural gas-fueled vehicles, and at power plants and industrial facilities that consume natural gas. The 2024 edition of the GHG inventory incorporates significant methodological improvements in the estimation of upstream oil and gas emissions, among others. Additionally, important changes were made to the managed forest land estimates, including new and updated data on historical harvest areas that impacted both the level of and the trend in emissions and removals from the land sector. The improved methods use Canadian-specific studies and knowledge, adopt the most up-to-date activity data, and better reflect evolving technologies and industry practices.

Canada's official GHG inventory identifies and tracks potential planned improvements to emissions estimates (including underlying activity data, EFs and methodologies). The planned improvements are based on recommendations from a variety of sources, including external review processes, collaborative work between inventory sector experts and industry, and other government departments and academia. Improvements to inventory estimates are anticipated in future NIRs. For example, and amongst several planned improvements, in the Energy sector for Transport, some revisions to the on-road activity data (e.g., vehicle population data) and the migration to the United States Environmental Protection Agency's (US EPA) MOtor Vehicle Emission Simulator 4 (MOVES4) model are planned. Also, in the Energy sector, work is underway to incorporate fugitive emissions estimates for natural gas transmission, distribution, and storage for the years 2016 to 2022. In the IPPU sector, the methanol production emission factor will be updated. Furthermore, land use and land-use change categories will be updated, and additional land-use change categories will be included in LULUCF reporting.

For a comprehensive description of the changes made to Canada's national inventory since Canada's *Eight National Communication and Fifth Biennial Report* submitted in December 2022, as well as planned inventory improvements, refer to Chapter 8 in Part 1 of the 2023 and 2024 NIRs. For additional detail on LULUCF planned improvements, refer to the Improvement Plan for Forest and Harvested Wood Products Greenhouse Gas Estimates.

5.2 Land Use, Land-Use Change and Forestry sector accounting review

In 2023-24, Canada conducted a review of its GHG accounting approach for the Land Use, Land-Use Change and Forestry (LULUCF) sector, with specific focus on Forest Land remaining Forest Land (FLFL) and associated harvested wood products (HWP) accounting. As part of this process, Natural Resources Canada (NRCan) and Environment and Climate Change Canada (ECCC) sought input from experts and stakeholders to inform Canada's decision on its LULUCF accounting approach. Based on internal analysis and on feedback received from stakeholders and experts, the Government of Canada made the decision to maintain the current approach that applies reference level accounting to FLFL and the associated HWP and net-net accounting to all other land categories, while continuing to monitor developments related to LULUCF accounting.

5.3 Estimation of mitigation impacts

As per paragraph 86 in the MPGs, each Party shall describe the methodologies and assumptions used to estimate the GHG emissions reductions or removals by each action, policy, and measure, to the extent available.

The estimates of mitigation impacts for individual policies and measures rely on information provided by the entities developing and implementing those policies and measures.

Emissions reduction estimates associated with provincial/territorial measures are provided by the province or territory. Information on how the estimates were derived is not available in all cases. Where the information is available, it is provided. The Government of Canada commits to continuing to work with provinces and territories to ensure robust and transparent reporting.

For federal measures, estimates for individual policies and measures are determined by the lead department according to their own established methodology. In many cases, the estimated impacts were based on the regulatory impact analysis undertaken prior to the implementation of the respective measure. The Government of Canada commits to continuing to work across departments to ensure robust and transparent reporting of emissions associated with federal measures.

The Government of Canada has developed a “climate lens” that takes into account climate and economic considerations to inform key federal government decisions. The Integrated Climate Lens was launched in the fall of 2021 and was piloted in several departments to ensure that climate-related and economic considerations informed major policy, program, and funding decisions. Building on the lessons from the pilot, work is ongoing to ensure that climate, biodiversity, and other key environmental considerations are assessed in a consistent manner across federal departments and agencies. As of April 1, 2024, the Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals was replaced by the new Cabinet Directive on Strategic Environmental and Economic Assessment (SEEA). SEEA modernizes environmental and economic analysis in the development of strategic policies, programs, and regulations submitted to Cabinet and funding requests submitted to the Prime Minister and the Minister of Finance. Specifically, this applies to Memoranda to Cabinet, Treasury Board submissions, funding proposals, and regulatory proposals from federal departments and agencies. The application of the SEEA includes a standardized template, the Climate, Nature and Economy Lens (CNEL), for federal public servants to complete when conducting proposal assessments. The lens requires consideration of climate change (mitigation, adaptation, resilience), biodiversity, other environmental effects, and economic impacts when developing such proposals. Among the questions that must be asked for the CNEL are if aspects of the proposal increase or decrease GHG emissions, contribute to existing federal climate commitments or related goals, and include any quantified GHG emissions increases or decreases. This important tool will help inform the consideration of climate impacts in a rigorous, consistent, and measurable manner.

5.4 Emissions projections

ECCC has committed to implement a series of improvements to increase the transparency of its modelling and emissions projections reporting. A first update to these efforts was provided in Canada's *2023 Greenhouse Gas and Air Pollutant Emissions Projections* report.

Areas of improvement include:

- Increasing the transparency of ECCC's modelling framework and GHG projections. Action areas include model structures and model assumptions, including enhancing the level of detail published on underlying assumptions and the modelling approach. Additional efforts are also being taken to report the impact of key individual measures or packages of measures, where possible, acknowledging the challenges associated with attributing emissions reductions to individual policies, largely due to the interactions between the various policies.
- Engagement activities with action areas including both internal to the federal government as well as external engagement, cross-referencing results, and establishing a modelling forum.
- Consideration of changes to the ECCC suite of models that support internal policy and regulatory analysis. Action areas include ensuring modelling structure is state-of-the-art and an enhanced consultation process.
- Actions for net-zero analysis, to ensure ECCC's modelling structure is appropriate to conduct the kind of longer-term analysis required for planning for net-zero 2050. Action areas include potential modelling enhancements and enhanced engagement on net-zero modelling.

See Annex 8 in the *2023 Greenhouse Gas and Air Pollutant Emissions Projections* report for the detailed action plan for continuous improvement.

The projections presented in this report continue to address items identified in this action plan. In particular, this report provides additional details regarding modelling assumptions, provincial-level data for emissions from the LULUCF sector, additional sensitivity analysis in the form of a technology scenario and an uncertainty analysis. Finally, a Multi-Model Comparison Forum was set up under the umbrella of the Energy Modelling Hub (EMH). The inaugural session of the Forum established foundational workflows that are poised to enhance collaboration and future comparisons across Canadian models. More details about the results of the Multi-Model Comparison Forum can be found on the EMH website.

Chapter 6: Other information

Canada has opted to share other information the Party considers relevant to the achievement of the objective of the Paris Agreement, and suitable for inclusion in its Biennial Transparency Report.

6.1 Climate science

The scientific consensus on anthropogenic climate change is clear, as is the need for urgent action to reach net-zero to avoid the most severe impacts. However, scientific capacity must be focused to bring evidence to where it is most needed to guide action, to identify new opportunities to reduce GHG emissions, to develop adaptation responses, and to measure progress. Science and knowledge play an essential role in helping us navigate the complex intersections, synergies, and trade-offs inherent in building a thriving, climate-resilient, net-zero Canada that is just and equitable.

In December 2020, the Government of Canada published *Climate Science 2050: Advancing Science and Knowledge on Climate Change*. This was an important step for Canada, taking stock for the first time of the breadth of collaborative and transdisciplinary knowledge required to inform climate action.

In 2024, the Government of Canada published *Climate Science 2050: National Priorities for Climate Change Science and Knowledge Report*. This report is the next step, identifying the most pressing science activities to enable evolution of climate action consistent with our best understanding of the challenge. Beyond guiding science investments, the process to develop this report involved ongoing dialogue on climate change science policy to improve delivery of science results that inform both mitigation and adaptation. Creating this national multi-, inter-, and transdisciplinary science and knowledge report brings strategic science planning into broader planning for climate action, aligning Canada with other international approaches.

The 2024 report was developed under the leadership of Environment and Climate Change Canada. It is a “what we heard” report, summarizing the results of two years of extensive engagement with more than 500 climate program leaders across federal departments and agencies and provincial and territorial governments, as well as academics and experts from the Canadian community of climate change science, and Indigenous organizations and scholars.

The report identifies science priorities across various disciplines, from carbon cycle and Earth system science to impacts on health, infrastructure, and biodiversity, to inform science investments needed now for science results to 2030 and to guide ongoing science coordination.

The priorities outlined in this report reflect the information needs of those developing climate policy and programs across all levels of government. The priorities also reflect expert opinion on new lines of scientific inquiry that will enable decision makers to use emerging knowledge, data, tools, and information. In all instances, the science priorities will help advance ongoing efforts to mitigate GHG emissions and adapt to climate change, including setting emissions reduction targets, refining existing policy approaches, and evaluating progress to date.

Both Western and Indigenous science contributed to the report through science expert roundtables, stakeholder surveys, webinars, and numerous discussions with partners, experts, and stakeholders.

Annex 1: Definitions

A1.1 Glossary

Adaptation: The adjustments in ecological, social, or economic systems in response to actual or expected climatic effects. Usually done so to moderate potential damages.

Article 6: As a part of the Paris Agreement, Article 6 allows countries to voluntarily cooperate with each other to achieve emissions reduction targets as set out in their respective Nationally Determined Contributions. It does so by establishing a mechanism for trading GHG emissions reductions between countries under the supervision of the Conference of the Parties. Under Article 6, emissions reductions can be authorized to be sold by one country's government to another country, with the receiving counting it towards their emissions reduction total.

Atlantic Loop Initiative: The development of electricity infrastructure to facilitate cross-jurisdictional electricity transportation in the provinces of Québec, Newfoundland and Labrador, Nova Scotia, and New Brunswick.

Backcasting: An illustrative scenario which is based on all policies and measures included in the "Bottom-Up Approach" and is calibrated to achieve the established target level. The results from the backcasting scenario should not be construed as signaling policy intentions, but rather as an illustration of what the modelling framework suggests are economically efficient opportunities to reach predetermined emissions reductions.

Backstop provinces or territories: Those jurisdictions in which the federal carbon pollution pricing system applies in whole or in part.

Bank of Canada: Canada's central bank, separate from the political process, which influences and controls monetary policy including the supply of money and key interest rates.

Beneficial Management Practices (BMPs), sometimes also referred to as **Best Management Practices**: Any management practice that reduces environmental risk, usually in an agricultural setting. "Beneficial" is the preferred term in agricultural systems rather than "best" as "beneficial" allows for multiple complimentary practices that can be used to address specific operational needs and environmental goals. Conversely, "best" implies that there is only one practice that is acceptable and does not take into diverse operations, productions systems, landscapes, and climates.

Biennial Report (BR): A report that each participating country provides to the UNFCCC. It is submitted every two years and includes a national inventory of emissions, description of steps taken to implement the Convention, and other relevant information.

Biennial Transparency Report (BTR): A report that will be submitted in accordance with the UNFCCC's Enhanced Transparency Framework. Will provide information on emissions reduction actions.

Border Carbon Adjustments (BCAs): Account for differing carbon costs incurred in the production of goods across borders. Forms and designs may vary, but the general goal is to maintain a level of carbon pricing on goods being imported and exported, such as through import charges and export rebates.

Bottom-up Modelling: An approach that uses a detailed bottom-up simulation model where energy data is allocated to economic sectors. This approach provides a floor for projected emissions reductions achievable from existing climate measures.

Canada Energy Regulator: A governmental body that reviews energy development projects, shares energy information, and enforces safety and environmental standards.

***Canada Gazette* (CG)**: The official newspaper of the Government of Canada. Reports on new statutes, regulations, administrative board decisions, and public notes.

Canada Infrastructure Bank (CIB): Is a Crown corporation that invests in revenue-generating infrastructure projects in the public interest, and seeks to attract private and institutional capital. Investments include clean power, green infrastructure, public transit, trade and transportation, and broadband infrastructure.

Canadian Council of Ministers of the Environment (CCME): The CCME is a body composed of the environment ministers from the Government of Canada, and provincial and territorial governments. The CCME is designed to discuss and set national environmental priorities as well as increase collaboration in accomplishing specific goals.

Canadian Environmental Sustainability Indicators (CESI): This program provides data and information to track Canada's performance on key environmental sustainability issues including climate change and air quality, water quality and availability, and protecting nature.

***Canadian Net-Zero Emissions Accountability Act* (CNZEAA)**: Passed in June 2021, enshrines in legislation the Government of Canada's commitment to achieving net-zero emissions by 2050 and to a process of open and transparent planning and reporting on the road to 2050. This includes setting targets for milestone years and developing associated Emissions Reduction Plans, Progress Reports and Assessment Reports. The Act also includes provisions related to annual financial reporting, to regular reporting by the Commissioner of Environment and Sustainable Development, and establishes the Net-Zero Advisory Body as a Governor in Council appointed advisory body.

Carbon Capture Utilization and Storage (CCUS): The process of capturing carbon dioxide emissions from fuel combustion, industrial processes or directly from the atmosphere. Captured CO_2 emissions can be stored in underground geological formations, onshore or offshore, or used as an input or feedstock in manufacturing.

Carbon management: Carbon management refers to an ecosystem of technologies and approaches that help to reduce and remove CO_2 emissions. It encompasses any activities that capture, utilize, or store CO_2, or that connect these activities. It includes, but is not limited to:

- CCUS technologies that mitigate point-source emissions; and,
- Carbon dioxide removal approaches like direct air capture to carbon storage (DACCS), biomass carbon removal and storage (BiCRS), and enhanced carbon mineralization.

Climate Change: Refers to long-term shifts in temperatures and weather patterns.

Commissioner of the Environment and Sustainable Development (CESD): Provides parliamentarians and Canadians with objective, independent analysis, and recommendations on the Government of Canada's efforts to lower emissions.

Conference of the Parties (COP): The COP is the decision-making body of the UNFCCC. All states that are Parties to the UNFCCC are represented, at which they review the implementation of the UNFCCC and any other legal instruments that the COP adopts. COP sessions are held in order to facilitate international discussion.

Constitution Act, 1867: An act of the Constitution of Canada that laid out the governance systems and structure that persist today. This includes the Parliament of Canada, as well as the role and jurisdiction held by the Government of Canada, as well as the provinces and territories.

Emissions Intensity: Compares the amount of greenhouse gas emissions emitted per unit of activity or any other specific metric. Often reported as greenhouse gas emissions per unit of GDP.

Emissions Reduction Plan (ERP): A long-term strategic document built to transparently communicate the policies, actions, developments, regulations, programs, and incentives that the Government of Canada is implementing to reduce greenhouse gas emissions.

Federal-Provincial-Territorial (FPT): A term to recognize the relationship between the Government of Canada, and provincial and territorial governments.

Federal Sustainable Development Strategy (FSDS): The federal government's primary vehicle for sustainable development planning and reporting. It sets out federal sustainable development priorities, establishes goals and targets, and identifies actions to achieve them.

Fugitive Sources Category: Emissions from unintentional or intentional release of greenhouse gases to the atmosphere. Such as venting and leaks from oil and natural gas production and processing.

Greenhouse Gas (GHG) Emissions (also known as carbon emissions): The quantifiable gases produced by human actions and released into the atmosphere. These gases are the main contributor to the increase in average global temperature.

- Source: A GHG source is any action or part of Canada's built or natural environment that releases GHGs.
- Sink: Any source, natural or built, that absorbs GHGs.

Gross Domestic Product (GDP): Gross Domestic Product is the total market value of all finished goods and services produced within a country during a specific period of time. Often used as a measure of economic performance.

Group of Seven (G7): A forum of seven of the world's advanced economies, including: Canada, France, Germany, Italy, Japan, the United Kingdom, and the United States of America.

Group of Twenty (G20): The G20 is a forum for international cooperation among world leading developed and emerging economies. It includes: Argentina, Australia, Brazil, Canada, China, the EU, Germany, France, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, South Korea, Turkiye, the United Kingdom, and the United States of America.

Hydrofluorocarbons (HFCs): A group of synthetic gases primarily used for cooling and refrigeration. Many HFCs are very powerful, short-lived climate pollutants.

Hydrogen:

- Grey Hydrogen: Uses an industrial process called steam methane reforming which uses high temperature steam to separate hydrogen from methane (the main component of natural gas). This process releases emissions.
- Blue Hydrogen: Uses the same method as grey hydrogen, except it captures and stores the emissions generated from the steam methane reforming process. Can also use other methods to separate hydrogen from methane, namely autothermal reforming.
- Green Hydrogen: Utilizes renewable electricity and a process called electrolysis to separate and extract hydrogen molecules from water, a non-emitting method of hydrogen production, assuming electricity used came from non-emitting generation.
- Low-carbon/clean hydrogen: Encompasses any hydrogen production pathway that is low-carbon, including "green", "blue", hydrogen derived from biomass with carbon capture and storage, methane pyrolysis, or other innovative production methods.

Indigenous Science: Indigenous science is a distinct, time-tested, and methodological knowledge system that can enhance and complement western science. Indigenous science is about the knowledge of the environment and knowledge of the ecosystem held by Indigenous Peoples. It is the knowledge of survival since time immemorial and includes multiple systems of knowledge(s) such as the knowledge of plants, the weather, animal behavior and patterns, birds, and water among others. It is of great importance to *bridge*, *braid*, and *weave* Indigenous science with western science approaches to inform and enhance decision-making at the federal, provincial, and territorial levels.

Internationally Transferred Mitigation Outcomes (ITMOs): Represent real, verified, and additional GHG emissions reductions or removals that are authorized and transferred between Parties participating in a voluntary cooperative approach under Article 6 of the Paris Agreement or authorized by a host country for other international mitigation purposes.

Interties: Transmission lines that connect separate electric grids, enabling the trade of electricity between jurisdictions.

Job-years: A way to describe employment effects of a program. A job year means one job for one year.

Light-Duty Vehicle (LDV): Vehicles primarily used to transport passengers and some cargo, including cars, vans, SUVs, and pickup trucks. In Canada, these vehicles have a gross vehicle weight rating of less than 8,500 pounds.

Livestock (Enteric Fermentation): Digestive process in ruminant animals like cattle where carbohydrates are broken down by microorganisms into simple molecules to support animal growth, development and energy needs. A by-product of this process is methane.

Medium- and Heavy-Duty Vehicles (MHDV): Vehicles with a gross vehicle weight rating of greater than 8,500 pounds used across a wide range of activities, including parcel delivery, garbage trucks, buses, long-haul tractor-trailers, and more.

Megatonne of carbon dioxide equivalent (Mt CO_2 eq): The amount of a greenhouse gas that has the same warming potential as one million tonnes (a megatonne) of carbon dioxide over a specified period of time.

Mitigation: The implementation of measures that avoid or reduce greenhouse gases with the aim of preventing climate change.

National Communication (NC): Reports that were submitted to the UNFCCC every four years to communicate actions undertaken by the country to reduce emissions.

National Inventory Report (NIR): Canada's official national greenhouse gas inventory submission to the United Nations Framework Convention on Climate Change. It includes an inventory of human-induced emission by source, and removals by sink, of seven greenhouse gases.

Nationally Determined Contribution (NDC): Articulates the ambition and effort of each country to reduce national emissions and adapt to the impacts of climate change. It does so by submitting the respective country's emissions reduction target, how to monitor progress, and how to reach it.

Net Zero (also known as carbon neutrality): Refers to an economy or other organization that balances the emission of greenhouse gases going into the atmosphere against the greenhouse gases removed from the atmosphere.

Net-Zero Advisory Body (NZAB): Launched in 2021 and is comprised of up to 15 experts from across Canada that provide independent advice on how Canada can achieve net-zero emissions by 2050.

Output-Based Pricing System (OBPS): A regulatory emissions trading system for industry. It is designed to provide industry with a monetary incentive to reduce industrial emissions, and spur innovation. It is one of two parts to Canada's price on carbon pollution.

Pan-Canadian Framework on Clean Growth and Climate Change (PCF): A plan developed collaboratively with the provinces and territories, and in consultation with Indigenous Peoples, to meet Canada's emissions reduction targets.

Paris Agreement: International treaty on climate change adopted at COP 21 in Paris. Set an overarching goal to limit the increase in the global average temperature to below 2°C. Since 2020, countries have been submitting increasingly ambitious climate plans known as nationally determined contributions.

Research, Development and Demonstration (RD&D): Research and experimental development comprise creative and systematic work undertaken in order to increase the stock of knowledge, including knowledge of humankind, culture and society, and to devise new applications of available knowledge. Demonstration refers to the design, construction, and operation of a prototype of a technology at or near commercial scale with the purpose of providing technical, economic, and environmental information to industrialists, financiers, regulators and policy makers.

Residential Stationary Combustion Sources Category: Residential sources that combust fuel for the purpose of producing heat and other uses.

Small Modular Reactors (SMR): Nuclear reactors that are smaller than traditional nuclear power plants. They can vary in size, design, and cooling types.

Stationary Combustion Sources Category: Sources that combust solid, liquid, gaseous, or waste fuel for the purpose of producing useful heat or work.

Sustainable Development Technology Canada (SDTC): An organization, supported by the Government of Canada, that funds and assists small and medium sized enterprises engaging in innovative emissions reductions and other climate related technologies.

Synthetic Gases: Man-made chemicals, commonly used in refrigeration, foam production, aerosols, and more. They include gases such as HFCs, PFCs, SF_6, and NF_3.

United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP): Establishes a universal framework of minimum standards for the survival, dignity, and well-being of the Indigenous Peoples of the world and it elaborates on existing human rights standards and fundamental freedoms as they apply to the specific situation of Indigenous Peoples.

United Nations Framework Convention on Climate Change (UNFCCC): The United Nations Framework Convention on Climate Change entered into force in 1994, with the ultimate goal of preventing anthropogenic (human-induced) interference with the climate system. Participating countries submit documents such as Nationally Determined Contributions, to illustrate their role in reducing emissions.

United Nations Sustainable Development Goals (UN SDGs): A set of 17 calls for action that the United Nations has set forward for countries to work towards. Broad themes include ending poverty, improving health and education, and tackling climate change.

Zero-Emissions Vehicle (ZEV): Vehicles that can operate without producing tailpipe emissions. In Canada this includes battery electric, plug-in hybrid electric, and hydrogen fuel cell vehicles.

A1.2 Instrument type definitions

To support transparency and consistency in reporting, detailed guidance has been prepared to support the classification of policies and measures according to instrument type.

Economic: Instruments that are economic incentives or disincentives to incorporate the costs and benefits of GHG emissions reductions into households' and enterprises' budgets. They modify the economic environment by influencing costs or benefits that lead to a reduction in aggregate emissions. Examples include carbon pricing, fuel taxes, tradeable allowance or permit systems, and fiscal incentives (e.g., tax credits, rebates and grant funding).

Fiscal: Instruments that encompass government taxation or spending to achieve emissions reductions, climate mitigation and/or related objectives. Examples include investments in infrastructure and capacity building, as well as the purchase/procurement of low-carbon goods that reduce GHG emissions. Fiscal instruments may also be economic instruments (e.g., carbon pricing, investment supports for renewable energy, retrofit support and rebates related to low carbon technology uptake) but can also be government investments that are not

economic instruments (e.g., investments in transit, utility infrastructure). For many policies and measures, government spending is inherently involved, however, fiscal is only applied if the fiscal element is a primary feature of the measure (e.g., a funding program to support research would be both fiscal and research, but research activities undertaken as part of regular government operations would only be research and not fiscal, even if there are ancillary fiscal implications).

Education: Instruments that provide organized training or instruction designed to impart knowledge and/or skills related to climate change, adaptation, GHG emissions/reductions, and related topics to targeted groups (e.g., students, skilled workers). Examples include training in the skills/tools needed in the green economy and student funding supports to strengthen science capacity for achieving GHG emissions reductions.

Enabling: Instruments that help achieve climate mitigation objectives by supporting an enabling environment for climate action, and where emissions reductions may be indirect or not readily attributable to the measure. Examples include measures that reduce barriers to emissions-reducing alternatives, support workers to attain the education and training needed to build skills required for a low-carbon economy, provide incentives for low-carbon technology development and deployment, and address information gaps.

Information: Instruments that address the importance of good quality information to inform the public or private sector on issues of consumption and production related to GHG emissions and climate change. Examples include public statistics, indicator tracking, product labelling, and information campaigns that raise awareness about consumption and production choices.

Planning: Instruments that encompass plans, strategies, and frameworks that outline a government's rationale, intended actions, and/or goals for achieving GHG emissions reductions, climate adaptation, and/or related objectives, as well as the processes through which these products are developed. Examples include federal and provincial climate action plans and strategies, such as Canada's Carbon Management Strategy, and advisory board processes.

Regulatory: Instruments that establish a rule and/or objective that must be fulfilled by the target actor(s), who would face a penalty in case of non-compliance. These measures can be in the form of legislation and/or regulation. Examples include mandatory emissions/performance standards, technology standards (e.g., mandated pollution abatement technologies, production methods), product standards (e.g., that define characteristics of polluting products), mandated product labelling, environmental capacity constraints, equitable access requirements (e.g., to the electricity grid), building codes, land-use zoning, and reporting/monitoring requirements.

Research: Instruments that provide for systematic inquiry, investigation, and/or experimental development to produce novel information, tools, and processes, and/or to advance/improve knowledge and strategies related to GHG emissions and reductions, climate adaptation, and related topics. Examples include research on innovative green technologies and investigation into opportunities that mitigate GHG emissions, and can include research undertaken directly by government or supported through funding or other supports to a third party.

Voluntary Agreement: Instruments that encompass voluntary actions and commitments taken by governments, firms, non-governmental organizations, and others that are outside of regulatory requirements. Agreements/commitments may be between/among governments, the public and/or private parties. Examples include industry agreements, self-certification, environmental management systems, and self-imposed targets.

A1.3 Status of implementation definitions

In accordance with the Enhanced Transparency Framework's MPG 82(e), Canada has used "Planned", "Adopted", and "Implemented" as its status of implementation labels.

Planned: Options under discussion or announced, with a realistic chance of being adopted and implemented in the future by governments at the national, provincial, regional, and/or local levels, as applicable.

Adopted: Policies or measures for which an official government decision has been made and there is a clear commitment to proceed with implementation.

Implemented: Policies or measures for which legislation is in force; one or more voluntary agreements have been established; financial resources have been allocated, and/or human resources have been mobilized.

These labels do not provide the same level of nuance as Canada's domestic reporting in the *2023 Progress Report on the 2030 Emissions Reduction Plan*. Canada intends to continue using its own set of implementation status definitions in its domestic reporting under the *Canadian Net-Zero Emissions Accountability Act* and will use the Enhanced Transparency Framework definitions for Biennial Transparency Reports.

A1.4 IPCC sector definitions

In accordance with the Enhanced Transparency Framework's MPG 81, Canada has, to the extent possible, organized the reporting of actions by sector (energy, transport, industrial processes and product use, agriculture, LULUCF, and waste management). Canada also uses "cross-cutting" as a supplementary categorization for measures that have impacts across multiple sectors.

Cross-cutting: The policy or measure pertains to GHG emissions and/or reductions across two or more sectors, with no clear primary sector. Example: Carbon pricing, which has impacts on virtually every sector in Canada.

Energy: Emissions from the combustion of fossil fuels, including from the exploration and exploitation of primary energy sources; conversion of primary energy sources into more useable energy forms in refineries and power plants; transmission and distribution of fuels; and use of fuels in stationary applications.

Transport: Emissions from the combustion and evaporation of fuel for all transport activity, regardless of sector, including civil aviation, road transportation, railways, water-borne navigation, and other off-road transportation.

Industrial Processes and Product Use: Emissions from non-energy-related industrial processes and activities that chemically or physically transform materials; the use of greenhouse gases in products (such as refrigerators, foams, or aerosol cans); and non-energy uses of fossil fuel (such as lubricants, paraffin wax, and solvents).

Agriculture: Emissions from enteric fermentation; manure management and field burning of agricultural residues; agricultural soils, including direct emissions, indirect emissions, and animal manure emissions on pasture, range, and paddock; and agricultural use of lime and urea. Carbon dioxide emissions and sequestrations from agricultural soils are reported in the Land Use, Land-Use Change and Forestry Sector.

Land Use, Land-Use Change and Forestry Sector (LULUCF): Emissions and removals of greenhouse gases resulting from direct human-induced land use, land-use change, and forestry activities excluding agricultural emissions.

Waste Management: Emissions from solid waste disposal (landfills); biological treatment of solid waste; incineration and open burning of waste; and wastewater treatment and discharge.

A1.5 Canadian economic sector definitions

Canada often reports on its policies, measures and emissions projections based on its economic sectors. The definitions of these sectors are provided below. A cross-walk between Canada's economic sectors and IPCC sectors is provided in Annex 3.

Economy-wide: Economy-wide is not a Canadian economic sector for emissions reporting purposes. Economy-wide measures are those that cut across sectors. Using economy-wide strategies to reduce emissions allows for maximum flexibility at the lowest overall cost. Some of the foundational components of Canada's climate plan are economy-wide measures, such as putting a price on carbon pollution. Policies with

long-term targets and price trajectories provide policy certainty, allowing Canadians and businesses to make informed investment decisions.

Buildings: The Buildings sector is comprised of residential, commercial, and institutional buildings. The Buildings sector includes stationary and process (i.e., air conditioning) emissions from residential and service industry buildings. Buildings sector measures aim to reduce emissions from space and water heating (the primary source of emissions from the sector), as well as from other sources including appliances, lighting, and auxiliary equipment. Energy efficiency measures are also important to reducing building sector emissions. The emissions attributed to the Buildings sector do not take into account embodied carbon—the energy and emissions from the manufacture, transport, and installation of construction materials, along with end-of-life. Embodied carbon, especially the emissions associated with the production of materials such as steel and concrete, which are accounted for in the heavy industry sector, is an example of the linkages between sectors.

Electricity: The Electricity sector is comprised of combustion and process emissions from utility electricity generation, steam production for sale, and transmission. Measures to reduce emissions from the Electricity sector will also contribute to emissions reductions in other sectors, such as Transportation, Buildings, and Heavy industry, as those sectors electrify.

Heavy Industry: The Heavy Industry sector includes stationary combustion, onsite transportation, electricity and steam production, and process emissions from: metal and non-metal mines, stone quarries, and gravel pits; smelting and refining of non-ferrous metals like aluminum and magnesium; pulp and paper; iron and steel; cement and other non-metallic mineral production; lime and gypsum product manufacturing; and, chemical and fertilizer manufacturing. Given the multiple linkages between this sector and others, economy-wide measures and measures in other sectors are important for how emissions can be reduced in the Heavy Industry sector.

Oil and Gas: The Oil and Gas sector includes emissions from stationary combustion, onsite transportation, electricity and stream production, and fugitive and process emissions for both upstream and downstream operations. Upstream includes: natural gas production and processing; conventional oil production; oil sands mining, in-situ extraction, and upgrading; and transport and storage of crude oil and natural gas. Downstream includes: petroleum refining industries; and, local distribution of natural gas up to and including the natural gas meter. Oil and Gas sector measures aim to reduce the emissions intensity of production and facilitate the transition to non-emitting products and services.

Transportation: The Transportation sector includes emissions from passenger transport, freight transport, and other (recreational, commercial, and residential). Passenger transport includes mobile-related combustion, process, and refrigerant emissions from cars, light trucks, motorcycles, buses, and the passenger component of rail and aviation. Freight transport includes mobile-related combustion, process, and refrigerant emissions from heavy-duty trucks, marine, and the freight components of rail and aviation. Combustion emissions from the non-industrial use of off-road engines (e.g., ATVs, snowmobiles, personal watercraft), including portable engines (e.g., generators, lawn mowers, chain saws), are included under the Transportation sector as recreational, commercial, and residential. Transportation sector measures aim to reduce emissions from passenger and freight transport through electrification and clean fuels, as well as enable active and public transportation.

Agriculture: The Agriculture sector includes emissions from: on-farm fuel use (stationary combustion, onsite transportation, and process emissions from the agricultural, hunting and trapping industry); crop production (application of biosolids and inorganic nitrogen fertilizers, decomposition of crop residues, loss of soil organic carbon, cultivation of organic soils, indirect emissions from leaching and volatilization, field burning of agricultural residues, liming, and urea application); and, animal production (animal housing, manure storage, manure deposited by grazing animals, and application of manure to managed soils). Agriculture sector measures aim to reduce emissions from biological sources (such as livestock production), fertilizer application, and on-farm fuel use. Agriculture sector measures may also seek to increase carbon sequestration, including through linkages to nature-based solutions.

Note: The IPCC Agriculture sector does not reflect the full impact of agriculture on net Canadian GHG emissions or the sector's important contribution to emissions removals. For emissions accounting purposes under the IPCC, the Agriculture sector includes non-energy GHG emissions related to the production of crops and livestock. Emissions from the production of machinery and fertilizer are accounted for under the Industrial Processes and Product Use sector and emissions from electricity use are reported in the Energy sector. For the purposes of analyzing economic trends and policies, it is useful to allocate emissions to the economic sector from which they originate. Therefore, the Canadian economic sector reporting adds emissions from the use of fuel in farm machinery and on-farm transportation to the Agriculture sector. Emissions and sequestration from agricultural soils are reported under the LULUCF sector. When considering emissions from agriculture and opportunities for emissions reductions, it is therefore important to include not only those emissions related to production of crops and livestock including related fuel use, but also emissions from on-farm fuel use and emissions and removals from agricultural soils.

Waste: Emissions in the Waste sector result from solid waste (municipal solid waste management sites (landfills), dedicated wood waste landfills, and other treatment of municipal solid waste), municipal and industrial wastewater treatment, and waste incineration (municipal solid, hazardous and clinical waste, and sewage sludge incineration). Waste sector measures aim to increase waste diversion and reduce emissions from waste management sites (in particular, methane from municipal landfills, the sector's primary source of emissions). Emissions from the Waste sector are often grouped with "other" emissions (i.e., in a Waste Management category), with the Others comprised of emissions from coal production and light manufacturing, construction and forest resources.

Nature-based solutions: Nature-based solutions is not a Canadian economic sector for emissions reporting purposes. Nature-based solutions can help address the twin crises of climate change and biodiversity loss, while delivering multiple other benefits. Canada's ecosystems, including oceans, agricultural lands, wetlands, settlements, and forests, act as both a source and a sink of GHG emissions. Nature-based solutions are actions that protect, sustainably manage, and restore ecosystems to contribute to climate change mitigation and deliver important co-benefits for society. Co-benefits can include helping to reduce the impacts of heat waves and floods, increasing nature-based recreation amenities, building or reinforcing community capacity for inclusive planning and enduring stewardship or guardianship, and supporting reconciliation and inherent and treaty rights of Indigenous Peoples. An important consideration with many nature-based solutions is that it can take years, if not decades, to realize the full mitigation results.

Land Use, Land-Use Change and Forestry (LULUCF): LULUCF is an IPCC sector that reports anthropogenic GHG fluxes between the atmosphere and Canada's managed lands, including those associated with land-use change and emissions from Harvested Wood Products, which are closely linked to Forest Land. The LULUCF sector is made up of six land categories: forests, cropland, grassland, wetlands, settlements, other land, as well as a seventh category for harvested wood products derived from those lands. LULUCF is not considered an 'economic' sector, but is included with the list of sectors within Canada's economic sectors for completeness.

Enabling measures: Enabling measures is not a Canadian economic sector for emissions reporting purposes. Enabling measures are an additional category of measures that are not expected to generate emissions reductions directly but will support emissions reductions in indirect ways; or are expected to generate emissions reductions, but those reductions are accounted for in one or more of the Canadian economic sectors. Enabling measures include: clean technology and climate innovation; sustainable finance; and, sustainable jobs, skills, and communities.

A1.6 Crosswalk of IPCC and Canadian economic sectors

Canadian Economic Sector	Energy							Industrial Processes and Product Use						Agriculture			Waste					LULUCF
	Energy: Fuel Combustion				Energy: Fugitive			Mineral Products	Chemical Industry	Metal Production	Consumption of Halocarbons, SF_6 and NF_3	Non-Energy Products from Fuels and Solvent Use	Other Product Manufacture and Use	Manure Management	Enteric Fermentation	Agricultural Soils	Solid Waste Disposal	Biological Treatment of Solid Waste	Wastewater Treatment and Discharge	Incineration and Wood Waste Landfills	Industrial Wood Waste Landfills	
	Stationary Combustion			Transport	Fugitive (Unintentional)	Flaring	Venting															
	Stationary	Industrial Cogeneration																				
		Electricity	Steam for Sale																			
Oil and Gas	X	X	X	X	X	X	X					X										
Upstream Oil and Gas	X	X		X	X	X	X					X										
Natural Gas Production and Processing	X	X		X	X	X	X					X										
Conventional Oil Production	X	X		X	X	X	X					X										
Conventional Light Oil Production	X			X	X	X	X					X										
Conventional Heavy Oil Production	X			X	X	X	X															
Frontier Oil Production	X	X		X	X	X	X					X										
Oil Sands (Mining, In-Situ, Upgrading)	X	X		X	X	X	X					X										
Mining and Extraction	X	X		X	X	X	X					X										
In-Situ	X	X		X	X	X	X															
Upgrading	X	X		X	X	X	X															
Oil, Natural Gas and CO_2 Transmission				X	X	X	X															
Downstream Oil and Gas	X	X	X	X	X	X	X					X										
Petroleum Refining	X	X	X		X	X	X					X										
Natural Gas Distribution				X	X	X	X															
Electricity	X		X		X								X									
Transport				X	X						X	X										
Passenger Transport				X	X						X	X										
Cars, Light Trucks and Motorcycles				X	X						X	X										
Bus, Rail and Aviation				X	X						X	X										
Freight Transport				X	X						X	X										
Heavy Duty Trucks, Rail				X	X						X	X										
Aviation and Marine				X							X	X										
Other: Recreational, Commercial and Residential				X																		
Heavy Industry	X	X	X	X	X			X	X	X	X	X										
Mining	X	X		X	X						X	X										
Smelting and Refining (Non-Ferrous Metals)	X		X	X	X			X		X		X										
Pulp and Paper	X	X	X	X	X			X				X										
Iron and Steel	X	X		X	X					X		X										
Cement	X			X	X			X				X										
Lime and Gypsum	X			X	X			X				X										
Chemicals and Fertilizers	X	X	X	X	X			X	X		X	X										
Buildings	X	X	X		X						X	X	X									
Service Industry	X	X	X		X						X	X	X									
Residential	X				X						X											
Agriculture	X	X		X	X							X		X	X	X						
On Farm Fuel Use	X	X		X	X							X										
Crop Production																X						
Animal Production														X	X	X						
Waste											X						X	X	X	X	X	
Solid Waste											X						X	X			X	
Wastewater																			X			
Waste Incineration																				X		
Coal Production	X			X	X																	
Light Manufacturing, Construction, and Forest Resources	X	X	X	X	X			X			X	X	X	X								
Light Manufacturing	X	X	X	X	X			X			X	X	X	X								
Construction	X	X		X	X							X		X								
Forest Resources	X			X								X		X								

Annex 2: Structured summary common tabular format (CTF) tables

A2.1 Indicator for tracking progress towards Canada's NDC

Table A2-1: Structured summary: indicator for tracking progress towards Canada's NDC (CTF Table 1)

Indicator selected to track progress	Description
National GHG Emissions	National total GHG emissions (excluding LULUCF sector) plus the LULUCF accounting contribution
Information for the reference point(s), level(s), baseline(s), base year(s) or starting point(s), as appropriate	Base year: 2005 Reference level: National total GHG emissions (excluding LULUCF)
Updates in accordance with any recalculation of the GHG inventory, as appropriate	Canada will continue to publish a GHG inventory annually in accordance with decision 1/CP.21, paragraph 31. Canada will use accounting guidance adopted by the CMA, and the reporting guidance for GHG inventories contained in 18/CMA.1. The national total GHG emissions in 2005 may be updated and recalculated due to continuous methodological improvements. Final accounting towards Canada's 2030 target will take place by 2032, after publication of Canada's NIR for 2030.
Relation to NDC	The indicator is defined in the same unit and metric as the target of the NDC. Hence it can be used directly for tracking progress in implementing and achieving the NDC target.

A2.2 Definitions needed to understand Canada's NDC

Table A2-2: Structured summary: definitions needed to understand Canada's NDC (CTF Table 2)

Definition	Description
National total GHG emissions (excluding LULUCF)	The emissions from the Agriculture, Energy, Industrial Processes and Product Use, and Waste sectors, as defined according to IPCC guidelines and reported in Canada's national inventory.
LULUCF Accounting Contribution	For most LULUCF subsectors, the accounting contribution is calculated as the difference between the net GHG flux (net emissions and removals) in the reporting year and the net GHG flux in 2005 ("net-net" approach). For the managed forest subsector and the associated harvested wood products, the accounting contribution is the difference between the net GHG flux in the reporting year, and the net GHG flux of the reference level (RL). The RL is a modelled counterfactual scenario in which average historical harvest rates are held constant.

A2.3 Methodologies and accounting approaches

Table A2-3: Structured summary: methodologies and accounting approaches (CTF Table 3)

Reporting requirement	Description or reference to the relevant section of the BTR
For the first NDC under Article 4:	
Accounting approach, including how it is consistent with Article 4, paragraphs 13–14, of the Paris Agreement (para. 71 of the MPGs)	Canada will continue to publish a GHG inventory annually in accordance with decision 1/CP.21, paragraph 31 and report on progress towards its NDC. Canada will use accounting guidance adopted by the CMA, and the reporting guidance for GHG inventories contained in 18/CMA.1. For IPCC methodologies and metrics: Methodologies: 2006 IPCC Guidelines for National Greenhouse Gas Inventories; 2013 Supplement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Wetlands; and 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

Reporting requirement	Description or reference to the relevant section of the BTR
	Metrics: Global warming potential (GWP) values on a 100-year timescale in accordance with IPCC's Fifth Assessment Report will be used to calculate CO_2 equivalents. Canada may adjust GWP values in accordance with future IPCC Assessment Reports. Canada estimates the emissions and subsequent removals from natural disturbances on managed forest land in the LULUCF sector according to a Tier 3 country-specific method. Reported estimates for the net GHG emissions from managed forest land exclude the impacts (both emissions and subsequent removals) of non-anthropogenic natural disturbances (e.g., wildfires, windthrow and those insect infestations that cause significant (>20%) tree mortality). Canada estimates emissions and removals for harvested wood products using the Simple Decay Approach consistent with the IPCC 2006 Guidelines and using country-specific data. Canada's carbon modeling to estimate and report emissions and removals from forest land is based on forest inventory information that includes forest ages and age-dependent growth rates. Changes in forest age-class structures due to management, conservation actions, or natural disturbances are reflected in the estimates of emissions and removals. Final accounting towards Canada's 2030 target will take place by 2032 after publication of Canada's NIR for 2030. Any use of internationally transferred mitigation outcomes will be included in Canada's final accounting.
For the second and subsequent NDC under Article 4, and optionally for the first NDC under Article 4:	
Information on how the accounting approach used is consistent with paragraphs 13–17 and annex II of decision 4/CMA.1 (para. 72 of the MPGs)	NA
Explain how the accounting for anthropogenic emissions and removals is in accordance with methodologies and common metrics assessed by the IPCC and in accordance with decision 18/CMA.1 (para. 1(a) of annex II to decision 4/CMA.1)	NA
Explain how consistency has been maintained between any GHG data and estimation methodologies used for accounting and the Party's GHG inventory, pursuant to Article 13, paragraph 7(a), of the Paris Agreement, if applicable (para. 2(b) of annex II to decision 4/CMA.1)	NA
Explain how overestimation or underestimation has been avoided for any projected emissions and removals used for accounting (para. 2(c) of annex II to decision 4/CMA.1)	NA
For each NDC under Article 4:	
Accounting for anthropogenic emissions and removals in accordance with methodologies and common metrics assessed by the IPCC and adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (para. 12(a) of decision 4/CMA.1 and para 1 of its annex II):	
Each methodology and/or accounting approach used to assess the implementation and achievement of the target(s), as applicable (para. 74(a) of the MPGs)	Canada reports on the implementation and achievement of the target using the indicator of Canada's historical GHG emissions. For the base year, this is Canada's national total GHG emissions (excluding LULUCF). For all subsequent years, including the

Reporting requirement	Description or reference to the relevant section of the BTR
	target year, this is Canada's national total GHG emissions (excluding LULUCF) plus the LULUCF accounting contribution. Canada's national total GHG emissions (excluding LULUCF) are the emissions from the Agriculture, Energy, Industrial Processes and Product Use, and Waste sectors, as defined according to IPCC guidelines and reported in Canada's national inventory. For all LULUCF subsectors except the managed forest and associated harvested wood products, Canada's accounting approach compares net emissions in the reporting year with net emissions in 2005 ("net-net" approach) to determine the accounting contribution. For the managed forest subsector and the harvested wood products obtained from it, a reference level (RL) approach is used to calculate the accounting contribution. This approach first involves defining the RL, which is a projection of emissions from the managed forest and associated HWP that reflects a continuation of historical forest management policies and practices and harvested wood uses. Accounting then involves calculating the difference between emissions in 2030 and the pre-defined RL value for 2030. As a result, the accounting contribution reflects the impact of recent changes in management and wood uses on emissions relative to the impact of the historic management and wood uses assumed in the RL. For more information on LULUCF accounting contribution data and methodology, see section 2.3.1 and/or Annex 4 of this report.
Each methodology and/or accounting approach used for the construction of any baseline, to the extent possible (para. 74(b) of the MPGs)	Progress is tracked by comparing emissions in the reporting year with emissions in the base year. No baseline is constructed.
If the methodology or accounting approach used for the indicator(s) in table 1 differ from those used to assess the implementation and achievement the target, describe each methodology or accounting approach used to generate the information generated for each indicator in table 4 (para. 74(c) of the MPGs)	Not applicable. The methodology and accounting approach for the indicator in table 1 is the same as the indicator used to assess implementation and achievement of the target.
Any conditions and assumptions relevant to the achievement of the NDC under Article 4, as applicable and available (para. 75(i) of the MPGs)	Not applicable. The NDC is unconditional.
Key parameters, assumptions, definitions, data sources and models used, as applicable and available (para. 75(a) of the MPGs)	Net GHG emissions are the key parameter used for tracking progress in implementing and achieving the NDC. Canada's GHG inventory is the primary data source used. Details on assumptions, definitions and models used for determining net GHG emissions can be found in Canada's National Inventory Document. <u>Forest Sector Emission and Accounting Projections</u> Projecting Forest Land remaining Forest Land (FLFL) and the harvested wood products (HWP) accounting contributions requires projecting 2023 to 2040 emissions using assumptions and methodologies consistent with historical emission estimates for 1990 to 2022, as well as developing a reference level (RL). Projected emissions are developed using the methodology used for the historical period (as reported in NIR2024), the most recent industrial harvest projections available, and other assumptions. Provincial and territorial (PT) experts on the National Forest Sinks Committee have provided the industrial harvest projections, and for the current analysis, several PTs (including BC, AB, SK, MB, ON, NL, NB, and NT) provided updated projections. For more information on the approach for the LULUCF accounting contribution, see section 2.3.1 and for data and methodology, annex 4 of this report.
IPCC Guidelines used, as applicable and available (para. 75(b) of the MPGs)	2006 IPCC Guidelines; and 2019 refinement to the 2006 IPCC Guidelines for some source categories.

Reporting requirement	Description or reference to the relevant section of the BTR
Report the metrics used, as applicable and available (para. 75(c) of the MPGs)	100-year time-horizon global warming potential (GWP) values from the IPCC Fifth Assessment Report.
For Parties whose NDC cannot be accounted for using methodologies covered by IPCC guidelines, provide information on their own methodology used, including for NDCs, pursuant to Article 4, paragraph 6, of the Paris Agreement, if applicable (para. 1(b) of annex II to decision 4/CMA.1)	Not Applicable.
Provide information on methodologies used to track progress arising from the implementation of policies and measures, as appropriate (para. 1(d) of annex II to decision 4/CMA.1)	Progress arising from the implementation of policies and measures is expressed in a reduction of GHG emissions or increase of GHG removals. The methodology used to assess such progress is based on the estimation of GHG emissions and removals in Canada's GHG inventory.
Where applicable to its NDC, any sector-, category or activity-specific assumptions, methodologies and approaches consistent with IPCC guidance, taking into account any relevant decision under the Convention, as applicable (para. 75(d) of the MPGs):	
For Parties that address emissions and subsequent removals from natural disturbances on managed lands, provide detailed information on the approach used and how it is consistent with relevant IPCC guidance, as appropriate, or indicate the relevant section of the national GHG inventory report containing that information (para. 1(e) of annex II to decision 4/CMA.1, para. 75(d)(i) of the MPGs)	Consistent with the 2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories, emissions and removals from forest stands recovering from natural disturbances beyond the control of human intervention are tracked separately from those stands that are tracked in the anthropogenic component. For more information, see section 6.3.1.2 of Canada's NIR.
For Parties that account for emissions and removals from harvested wood products, provide detailed information on which IPCC approach has been used to estimate emissions and removals (para. 1(f) of annex II to decision 4/CMA.1, para. 75(d)(ii) of the MPGs)	Canada estimates emissions and removals for harvested wood products using the Simple Decay Approach consistent with the IPCC 2006 Guidelines and using country-specific data. For more information, see section 6.4 of Canada's NIR.
For Parties that address the effects of age-class structure in forests, provide detailed information on the approach used and how this is consistent with relevant IPCC guidance, as appropriate (para. 1(g) of annex II to decision 4/CMA.1, para. 75(d)(iii) of the MPGs)	Canada's carbon modelling to estimate and report emissions and removals from forest land is based on forest inventory information that includes forest ages and age-dependent growth rates. Changes in forest age-class structures due to management, conservation actions, or natural disturbances are reflected in the estimates of emissions and removals. For the managed forest subsector and the harvested wood products obtained from it, a reference level (RL) approach is used to address the effects of age-class structure in forests and calculate the accounting contribution. This approach first involves defining the RL, which is a projection of emissions from the managed forest and associated HWP that reflects a continuation of historical forest management policies and practices and harvested wood uses. Accounting then involves calculating the difference between emissions in 2030 and the pre-defined RL value for 2030. As a result, the accounting contribution reflects the impact of recent changes in management and wood uses on emissions relative to the impact of the historic management and wood uses assumed in the RL. For more information on the approach for the LULUCF accounting contribution, see section 2.3.1 and for data and methodology, annex 4 of this report.
How the Party has drawn on existing methods and guidance established under the Convention and its related legal instruments, as appropriate, if applicable (para. 1(c) of annex II to decision 4/CMA.1)	Canada has drawn on existing methods and guidance established under the Convention by using an NDC target which is an advancement of the quantified economy-wide emission reduction target for 2020, which was communicated and tracked under the Convention.
Any methodologies used to account for mitigation benefits of adaptation actions	Not applicable. The NDC does not consist of mitigation co-benefits of adaptation actions and/or economic diversification plans. Any mitigation co-benefits of Canada's national adaptation

Reporting requirement	Description or reference to the relevant section of the BTR
and/or economic diversification plans (para. 75(e) of the MPGs)	actions and/or economic diversification plans are reflected in Canada's national inventory and thus covered by its economy-wide emissions reduction target. Hence these co-benefits were not accounted for separately, and no related methodologies were used.
Describe how double counting of net GHG emission reductions has been avoided, including in accordance with guidance developed related to Article 6 if relevant (para. 76(d) of the MPGs)	GHG emissions and removals from Canada's GHG inventory are used for tracking the net GHG emission reductions. Emissions and removals are reported in line with IPCC guidelines, with the aim of neither over- nor underestimating GHG emissions.
Any other methodologies related to the NDC under Article 4 (para. 75(h) of the MPGs)	Not applicable.
Ensuring methodological consistency, including on baselines, between the communication and implementation of NDCs (para. 12(b) of the decision 4/CMA.1 and para 1 of its annex II):	
Explain how consistency has been maintained in scope and coverage, definitions, data sources, metrics, assumptions, and methodological approaches including on baselines, between the communication and implementation of NDCs (para. 2(a) of annex II to decision 4/CMA.1)	The scope, coverage, definitions, data sources, metrics and approaches are consistent between the communicated NDC and its implementation, as described in the BTR.
Explain how consistency has been maintained between any GHG data and estimation methodologies used for accounting and the Party's GHG inventory, pursuant to Article 13, paragraph 7(a), of the Paris Agreement, if applicable (para. 2(b) of annex II to decision 4/CMA.1) and explain methodological inconsistencies with the Party's most recent national inventory report, if applicable (para. 76(c) of the MPGs)	Canada's GHG inventory is the primary source for the GHG data used for accounting. For the reference level approach used for managed forests and associated harvested wood products, Canada's RL scenario is recalculated annually to ensure consistency with the historical data used in Canada's latest available GHG inventory and uses methodologies and assumptions consistent with IPCC guidance and UNFCCC decisions. There are no methodological inconsistencies with the most recent national inventory report.
For Parties that apply technical changes to update reference points, reference levels or projections, the changes should reflect either of the following (para. 2(d) of annex II to decision 4/CMA.1):	
Technical changes related to technical corrections to the Party's inventory (para. 2(d)(i) of annex II to decision 4/CMA.1)	No technical changes related to technical corrections to the GHG inventory were applied to update reference points, reference levels or projections.
Technical changes related to improvements in accuracy that maintain methodological consistency (para. 2(d)(ii) of annex II to decision 4/CMA.1)	No technical changes related to improvements in accuracy were applied to update reference points, reference levels or projections.
Explain how any methodological changes and technical updates made during the implementation of their NDC were transparently reported (para. 2(e) of annex II to decision 4/CMA.1)	Methodological changes and technical updates are reported in Chapter 8: Recalculations and Improvements of Canada's National Inventory Report. The LULUCF accounting contribution data and methodology are reported in this BTR (see Annex 4).
Striving to include all categories of anthropogenic emissions or removals in the NDC and, once a source, sink or activity is included, continuing to include it (para. 12 (c) of decision 4/CMA.1 and para. 3 of annex II to decision 4/CMA.1):	
Explain how all categories of anthropogenic emissions and removals corresponding to their NDC were accounted for (para. 3(a) of annex II to decision 4/CMA.1)	The indicator used for tracking progress towards implementing and achieving the NDC target comprises all categories of anthropogenic emissions and removals corresponding to the NDC.

Reporting requirement	Description or reference to the relevant section of the BTR
Explain how Party is striving to include all categories of anthropogenic emissions and removals in its NDC, and, once a source, sink or activity is included, continue to include it (para. 3(b) of annex II to decision 4/CMA.1)	The scope of Canada's NDC covers all categories of emissions and removals reported in the GHG inventory, in line with IPCC guidelines. Some specific source categories are reported as 'not estimated' when the estimates would be insignificant as defined in paragraph 32 of the annex to decision 18/CMA.1. Information on these categories is provided in Common Reporting Table 9 of Canada's GHG inventory submission.
Provide an explanation of why any categories of anthropogenic emissions or removals are excluded (para. 12 (c) of decision 4/CMA.1 and para. 4 of annex II to decision 4/CMA.1)	All categories of anthropogenic emissions and removals reported in the national total of Canada's GHG inventory are included in the NDC.

A2.4 Progress towards implementing and achieving Canada's NDC

Table A2.4: Structured summary: progress towards implementing and achieving Canada's NDC (CTF Table 4.1)

Indicator	Unit, as applicable	Base Year	Implementation period of the NDC		Target level	Target year	Progress made towards the NDC
		2005	2021	2022			
National GHG Emissions*	kt CO_2 eq	761,491.62	669,459.83	719,755.92	456,894.97	2030	The most recent (2022) level of total national GHG emissions excluding LULUCF reported in the NIR is 708 Mt or 7.1% below the 2005 base year level. With the addition of the LULUCF accounting contribution, as per Canada's NDC, the level is 5.5% below 2005, reflecting the fact that the LULUCF accounting contribution was a debit (source) in 2022. In 2021, the level of total national GHG emissions excluding LULUCF reported in the NIR is 698 Mt or 8.3% below the 2005 base year level. With the addition of the LULUCF accounting contribution, as per Canada's NDC, the level is 12.1% below 2005, reflecting the fact that the LULUCF accounting contribution was a credit (sink) of 29Mt in 2021. Preliminary data for 2023 indicates that total national GHG emissions excluding LULUCF will be about 8.5% lower than the base year. For 2023, the LULUCF accounting contribution is expected to be a credit (sink), and contribute about 40 additional Mt reductions, contributing about 5% additional reductions, to put 2023 emissions reductions between 13% and 14% below 2005 levels. Final values for 2023 will be confirmed in 2025 and reported in the next Biennial Transparency Report, alongside values for 2024.
Total GHG emissions and removals consistent with the coverage of the NDC	kt CO_2 eq		669,459.83	719,755.92			
Contribution from the LULUCF sector for each year of the target period or target year, if not included in the inventory time series of total net GHG emissions and removals	kt CO_2 eq		-28,981.29	11,989.33			

Note:

*Canada's NDC specifies that the target for 2030 is 40 to 45% below the 2005 national GHG emissions excluding LULUCF and that for 2030, emissions are the national GHG emissions excluding LULUCF sector and with the LULUCF accounting contribution (i.e., national economic sector emissions plus LULUCF accounting contribution). The national economic sector emissions are reported as part of the national inventory time series. The LULUCF sector is reported as part of the national inventory time series. The LULUCF accounting contribution builds from the LULUCF sector emissions and is reported separate from the national inventory report.

Annex 3: Mitigation policies and measures

This table provides information on core mitigation measures planned or already implemented by federal, provincial, and territorial governments. Federal policies and measures presented below are the same as those tracked by Canada's progress reporting under the *Canadian Net-Zero Emissions Accountability Act* (the Act). Canada's domestic emissions reduction target under the Act was established as Canada's 2030 NDC, and Canada's 2030 Emissions Reduction Plan sets out an ambitious and achievable roadmap with a sector-by-sector path to achieve that target. By streamlining our domestic reporting under the Act and our international reporting under the Paris Agreement, Canada will consistently and transparently provide updates on the same set of climate action policies and measures that support the implementation and achievement of Canada's NDC, focusing on those that have the most significant impact on GHG emissions and those impacting key sectors.

Policies and measures are presented in accordance with IPCC sector categories, with cross-cutting measures appearing first. Within the sectoral groupings, federal measures appear first, followed by provincial and territorial measures from west to east. Priority has been given to those policies and measures that have the most significant impact on sectoral GHG emissions. As much as possible, direct mitigation impacts have been estimated for key policies, provided by the implementing entity. Where mitigation estimates were not provided, Canada has indicated the reason why they were not included (see notation legend). For example, mitigation estimates were not provided for measures that are still under development, and/or for measures where it is difficult to estimate the direct mitigation impact. The methods for estimating expected emissions reductions from individual measures may vary by implementing entity and have been included on an as-provided basis.

Table A3-1: Notation key for estimated emission reductions

Notation	Description
NE	Not estimated
NA	Not applicable
TBD	To be determined

A3.1 Cross-cutting policies and measures

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
ECW-01	Price on carbon pollution*	The Government of Canada's approach to pricing carbon pollution gives provinces and territories the flexibility to implement the type of system that makes sense for their circumstances as long as they align with minimum national stringency requirements ("federal benchmark"). The federal "backstop" carbon pricing system consists of the federal fuel charge and the federal Output-Based Pricing System (OBPS) for industrial facilities and applies in jurisdictions that requested it or whose systems do not meet the benchmark.	Reduce GHG emissions, stimulate investments in low-carbon innovation, create a sustainable clean growth economy, and encourage behaviour shift towards more sustainable practices.	Regulatory Economic Fiscal Enabling	Implemented	Cross-cutting	CH_4, CO_2, N_2O, HFCs, PFCs, SF_6, NF_3	2019	Environment and Climate Change Canada Finance Canada	NE[a]	NE[a]
ECW-01.1	Increasing certainty regarding the future price of carbon* *Referred to as Guarantee the future price of carbon pollution in the 2023 Progress Report*	The Government of Canada will explore measures that help provide longer-term certainty of the future price of carbon pollution. The carbon pollution price trajectory is set out to 2030, increasing by $15 per year to $170 in 2030. The updated minimum	Provide predictability to businesses to de-risk important emissions reducing projects.	Economic Enabling	Implemented	Cross-cutting	CO_2, CH_4, N_2O	2022	Finance Canada Environment and Climate Change Canada	NA[b]	NE[a]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		national stringency requirements (“federal benchmark”) for carbon pollution pricing systems in Canada (2023 to 2030) require carbon markets to maintain a strong price signal in line with the minimum national carbon pollution price across all covered emissions. The Government of Canada is also reinforcing the investment signals created by Canada’s carbon pollution pricing systems with other tools, such as carbon contracts for difference through the Canada Growth Fund (see ECW-16).									
ECW-01.2	Canada Carbon Rebate (CCR)**, [i] *Previously referred to as Climate Action Incentive (CAI) payments* *Part of the return of federal carbon pollution proceeds*	All direct proceeds from the federal carbon pricing system remain in the jurisdiction where they were collected. Provinces and territories that have their own carbon pricing systems use the proceeds as they see fit, including by supporting families to take further action to cut pollution in a practical and affordable way.	Putting a price on products that are more polluting and returning the bulk of direct proceeds to individuals through the CCR, enables households to make cleaner and more environmentally sustainable choices.	Economic Fiscal Enabling	Implemented	Cross-cutting	CO_2	2022	Finance Canada Canada Revenue Agency	NA[b]	NE[a]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		In the provinces where the federal price on carbon pollution is in effect, the Government of Canada uses over 90% of fuel charge proceeds to directly support individuals and families through the CCR. The remaining proceeds are used to support small- and medium-sized businesses and Indigenous governments (see ECW-01.4 through ECW-01.6b for more details).									
ECW-01.3	Canada Carbon Rebate for Small Businesses**, [i] *Previously referred to as Fuel Charge Proceeds Return Programs (FCPRP)* *Part of the return of federal carbon pollution proceeds*	This initiative is part of the federal government's approach to returning fuel charge proceeds that have been collected under the *Greenhouse Gas Pollution Pricing Act*. A portion of proceeds from 2019-20 through 2023-24 will be returned to an estimated 600,000 businesses, with 499 or fewer employees through the Canada Carbon Rebate for Small Businesses. Proceeds will be returned to eligible	Return a portion of proceeds from the price of pollution directly to small and medium-sized businesses in provinces where the federal fuel charge applies.	Economic Fiscal Enabling	Adopted	Cross-cutting	CO_2	2024	Canada Revenue Agency Finance Canada	NA[b]	NE[a]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		corporations automatically through direct payments from the CRA, separately from tax refunds. Proceeds for future fuel charge years, including 2024-25, will be returned in a similar manner each year.									
ECW-01.4	Returning a portion of net fuel charge proceeds to Indigenous Governments *Previously referred to as Returning 1% of net fuel charge proceeds to Indigenous Governments* *Part of the return of federal carbon pollution proceeds*	Part of the federal government's approach to returning fuel charge proceeds collected under the *Greenhouse Gas Pollution Pricing Act*. As of 2020-21, the Government of Canada committed to return 1% of federal fuel charge proceeds to Indigenous governments through a co-developed approach in jurisdictions where federal fuel charge programming is in effect. Starting in 2024-25, the share of fuel charge proceeds returned to Indigenous governments increased from 1% to 2%, in recognition of the impacts of climate change on Indigenous communities. Engagement with First Nations, Inuit, and Métis partners on the	Establish a grant program for returning fuel charge proceeds to Indigenous governments.	Economic Fiscal Enabling	Implemented	Cross-cutting	CO_2	2024	Environment and Climate Change Canada	NA[b]	NE[a]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		mechanism and approach to returning proceeds is ongoing.									
ECW-01.5	Return of Fuel Charge Proceeds to Farmers* *Part of the return of federal carbon pollution proceeds*	This initiative is part of the federal government's approach to returning fuel charge proceeds that have been collected under the *Greenhouse Gas Pollution Pricing Act*. Proceeds relating specifically to the use of natural gas and propane by farmers are returned to farming businesses via a refundable tax credit.	Recognizing that many farmers use natural gas and propane in their operations, a refundable tax credit is provided to return fuel charge proceeds to farming businesses that operate in provinces where the federal fuel charge applies.	Economic Fiscal Enabling	Implemented	Cross-cutting Energy	CO_2	2021	Finance Canada Canada Revenue Agency	NE[d]	NE[d]
ECW-01.6	Output-Based Pricing System (OBPS) Proceeds Fund**, [i] *Part of the return of federal carbon pollution proceeds*	The OBPS Proceeds Fund returns collected proceeds to the jurisdiction of origin under the federal OBPS through the Decarbonization Incentive Program (DIP) and Future Electricity Fund (FEF).	1. GHG emissions reduction in sectors and jurisdictions where the federal Output-Based Pricing System applies. 2. Support *Greenhouse Gas Pollution Pricing Act* obligation to return carbon pricing revenues to jurisdiction of origin.	Economic Fiscal	Implemented	Cross-cutting Energy Transport Industrial Processes and Product Use	CH_4, CO_2, N_2O, HFCs, PFCs, SF_6, NF_3	2022	Environment and Climate Change Canada	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
ECW-01.6a	Output-Based Pricing System (OBPS) Proceeds Fund: Decarbonization Incentive Program (DIP)**, [i] *Part of the return of federal carbon pollution proceeds*	DIP is a merit-based program, funded by proceeds collected under the federal OBPS, that supports clean technology implementation projects that reduce GHG emissions in OBPS regulated facilities.	1. GHG emissions reduction in sectors and jurisdictions where the federal Output-Based Pricing System applies. 2. Support *Greenhouse Gas Pollution Pricing Act* obligation to return carbon pricing revenues to jurisdiction of origin.	Economic Fiscal	Implemented	Cross-cutting Energy Transport Industrial Processes and Product Use	CH_4, CO_2, N_2O, HFCs, PFCs, SF_6, NF_3	2022	Environment and Climate Change Canada	NA[b]	800.00
ECW-01.6b	Output-Based Pricing System (OBPS) Proceeds Fund: Future Electricity Fund (FEF)**, [iv] *Part of the return of federal carbon pollution proceeds*	FEF, funded by proceeds collected under the federal OBPS, is administered via bilateral agreements with provinces where the federal OBPS has been applied and supports large scale clean energy and decarbonization projects.	1. GHG emissions reduction in sectors and jurisdictions where the federal Output-Based Pricing System applies. 2. Support *Greenhouse Gas Pollution Pricing Act* obligation to return carbon pricing revenues to jurisdiction of origin.	Economic Fiscal	Implemented	Cross-cutting Energy	CH_4, CO_2, N_2O, HFCs, PFCs, SF_6, NF_3	2022	Environment and Climate Change Canada	NA[b]	200.00
ECW-02	Canada's Greenhouse Gas (GHG) Offset Credit System	Canada's GHG Offset Credit System encourages municipalities, Indigenous communities, foresters,	Reduce GHG emissions.	Regulatory Economic Enabling	Implemented	Cross-cutting	CH_4, CO_2, N_2O, HFCs	2022	Environment and Climate Change Canada	NA[b]	NE[c]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		farmers, and other project developers to undertake innovative projects that reduce GHG emissions. The System does so by allowing project proponents to generate federal offset credits if they implement projects meeting requirements in the *Canadian GHG Offset Credit System Regulations* and the applicable federal offset protocol. These credits can be sold and used for compliance by facilities covered in the federal OBPS or sold and used by others looking to meet voluntary climate targets.									
ECW-05	Low Carbon Economy Fund (LCEF)*,**, [i]	The LCEF provides funding to projects that generate clean growth and reduce GHG emissions, helping Canada to meet or exceed its commitments under the Paris Agreement. As of 2024, LCEF consists of 4 funding envelopes: • Leadership Fund; • Challenge Fund;	Leverages climate actions from provinces and territories, municipalities, universities, colleges, schools, hospitals, businesses, not-for-profit organizations, and Indigenous communities and organizations.	Economic Fiscal	Implemented	Cross-cutting Energy	CO_2, CH_4, N_2O, HFCs	2017	Environment and Climate Change Canada	NE[f]	4,900.00

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		• Indigenous Leadership Fund; and, • Implementation Readiness Fund.									
ECW-05.1	Leadership Fund*,** *Part of the Low Carbon Economy Fund (LCEF) (ECW-05)*	The Leadership Fund provides funding directly to provinces and territories to help them reduce carbon pollution, meet Canada's 2030 climate target, and support the goal of net-zero emissions by 2050.	Support provinces and territories reduce carbon pollution by providing direct funding.	Economic Fiscal	Implemented	Cross-cutting Energy	CO_2, CH_4, N_2O, HFCs	2017	Environment and Climate Change Canada	NE[f]	3,200.00
ECW-05.2	Challenge Fund*,**, [i] *Part of the Low Carbon Economy Fund (LCEF) (ECW-05)*	The Challenge Fund provides funding to a wide range of recipients to implement projects that deploy proven, low-carbon technologies resulting in material GHG emissions reductions across sectors, focusing on its cost-effectiveness objective to maximize GHG emissions reductions.	Provide funding for implementation projects that deploy proven, low-carbon technologies resulting in material GHG emissions reductions.	Economic Fiscal	Implemented	Cross-cutting	CO_2, CH_4, N_2O, HFCs	2017	Environment and Climate Change Canada	NE[f]	1,600.00
ECW-05.3	Indigenous Leadership Fund (ILF) *Part of the Low Carbon Economy Fund (LCEF) (ECW-05)*	The ILF provides funding for renewable energy, energy efficiency and low-carbon heating projects led by Indigenous governments, communities, and organizations. Recognizing the unique rights, interests, and circumstances of	Provide funding for renewable energy, energy efficiency and low-carbon heating projects led and owned by Indigenous governments.	Economic Fiscal	Implemented	Cross-cutting Energy	CO_2, CH_4, N_2O	2022	Environment and Climate Change Canada	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		First Nations, Inuit, and Métis governments, communities, and organizations, the ILF uses a distinctions-based approach to deliver funding to support projects.									
ECW-05.4	Implementation Readiness Fund (IRF) *Part of the Low Carbon Economy Fund (LCEF) (ECW-05)*	The IRF provides funding for activities and investments that remove barriers to low-carbon technology adoption and 2030 climate mitigation action.	Provide funding for activities and investments removing barriers to low-carbon technology.	Economic Fiscal Education	Implemented	Cross-cutting	NA	2022	Environment and Climate Change Canada	NA[b]	NA[f]
ECW-08	Border Carbon Adjustments (BCAs)	The Government of Canada is exploring the potential of BCAs in the Canadian context. Generally, BCAs apply import charges and potentially export rebates to account for differences between countries in carbon costs incurred in producing emissions-intensive and trade-exposed goods. Such a policy can support ambitious carbon pollution pricing by leveling the playing field between domestic producers and their international competitors. Currently, Canada's domestic carbon pricing systems	Explore the potential of implementing BCAs to complement domestic carbon pricing.	Economic Research Enabling	Planned	Cross-cutting	TBD	TBD	Finance Canada Environment and Climate Change Canada Global Affairs Canada	NA[b]	NE[e]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		are designed to mitigate the risk of carbon leakage by reducing average costs for emissions-intensive and trade-exposed industrial sectors.									
ECW-09	Canada Infrastructure Bank (CIB)[iv]	The Canada Infrastructure Bank (CIB) is an impact investor focused on accelerating infrastructure investments to create benefits for Canadians. Parliament has authorized funding of $35B to the CIB and the authority to invest in infrastructure transactions. The CIB has long-term investment targets to invest $25B in the areas of Green Infrastructure, Clean Power, and Public Transit. The CIB catalyzes infrastructure projects that would otherwise not proceed. The CIB's investments are repayable loans while the Bank's approach to crowding-in private and institutional capital maximizes impact through getting more	The CIB has a long-term target to achieve estimated annual emissions reductions of 15 Mt CO_2 eq. The CIB's investments in Clean Power, Green Infrastructure, and Public Transit contribute to this target.	Fiscal	Implemented	Cross-cutting Energy Transport Waste Management	CO_2	2017	Canada Infrastructure Bank	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		infrastructure built faster.									
ECW-10	Indigenous Climate Leadership	As announced in the 2030 Emissions Reduction Plan, Budget 2022 committed $29.6M over three years (2022-23 to 2024-25) to Crown–Indigenous Relations and Northern Affairs Canada (CIRNAC) to support the co-development of an Indigenous Climate Leadership (ICL) Agenda. The ICL Agenda will provide a distinctions-based roadmap for how to improve federal–Indigenous partnerships on climate in a way that better supports Indigenous self-determined climate action. The initiative is co-led by ECCC and CIRNAC on the federal side, however it is a whole-of-government initiative.	Establish a process to enable Indigenous Peoples' meaningful participation in climate governance and policy.	Fiscal Planning Enabling	Planned	Cross-cutting	NA	2025	Crown–Indigenous Relations and Northern Affairs Canada Environment and Climate Change Canada	NA[e]	NA[e]
ECW-12	Plan to Reduce Methane Emissions**	A plan to reduce methane emissions across the broader economy, including through regulations that reduce methane emissions from oil and gas (see OIG-02), and landfills (see WST-06).	Reduce methane emissions across the broader economy through various emissions reduction regulations.	Economic Regulatory Enabling	Planned	Cross-cutting Energy Waste Management Agriculture	CH_4, CO_2, N_2O	2022	Environment and Climate Change Canada	NA[b]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
ECW-14	Canada's Carbon Management Strategy *Previously referred to as Carbon Capture, Utilization, and Storage (CCUS) Strategy*	The strategy articulates the role of carbon management in Canada's path to a prosperous net-zero economy and the federal actions that are being taken to support the development and deployment of carbon management technologies in Canada. The Strategy specifically outlines five key priority areas for the Government of Canada to promote a competitive and robust carbon management industry: • accelerating innovation and research, development, and demonstration; • advancing predictable policies and regulations, including Canada's economy-wide carbon pricing system; • attracting investment and trade opportunities; • scaling up carbon management projects and infrastructure; and • building partnerships and growing inclusive workforces.	Set vision and key priorities for development of a globally competitive carbon management industry.	Planning Enabling	Adopted	Cross-cutting Energy Transport Industrial Processes and Product Use Agriculture Waste Management	CO_2	2023	Natural Resources Canada	NA[b]	NA[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
ECW-15	Investment Tax Credit for Carbon Capture, Utilization, and Storage (CCUS)*	Budget 2021 proposed the introduction of an investment tax credit for capital invested in CCUS projects, with the details announced in Budget 2022. The investment tax credit is available to CCUS projects that permanently store captured CO_2 in dedicated geological storage or in concrete. From 2022 through 2030, the investment tax credit rates are set at: • 60% for investment in equipment to capture CO_2 in direct air capture projects; • 50% for investment in equipment to capture CO_2 in other CCUS projects; and • 37.5% for investment in equipment for transportation, storage, and use.	De-risk CCUS investments, drive down costs and encourage wider market adoption of CCUS in Canada to increase sequestration of CO_2.	Economic Enabling	Implemented	Cross-cutting	CO_2	2022	Finance Canada Canada Revenue Agency Natural Resources Canada	NA[b]	NE[d]
ECW-16	Canada Growth Fund**, [i]	The Canada Growth Fund aims to help attract private capital to build Canada's clean economy by using investment instruments that absorb certain risks in order to encourage private investment in low	Reduce emissions and achieve Canada's climate targets through the deployment of key technologies, such as low-carbon hydrogen and carbon	Economic Enabling	Implemented	Cross-cutting	CO_2, CH_4, N_2O	2022	Finance Canada	NA[b]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		carbon projects, technologies, businesses, and supply chains. The Fund will be the principal federal entity to issue Carbon Contracts for Difference (CCfDs), including allocating, on a priority basis, up to $7B to issue all forms of contracts for difference and offtake agreements. The government is also evaluating options to enhance the Canada Growth Fund's capacity to offer CCfDs, including by exploring the possibility of a government backstop of certain CCfD liabilities of the Canada Growth Fund.	capture, utilization, and storage.								
ENB-01	Clean Growth Hub	A whole-of-government focal point for clean technology. The Hub helps clean tech innovators and adopters navigate the federal system of funding and services while enhancing coordination on federal clean tech programs.	Help cleantech stakeholders navigate federal programs to advance their cleantech projects, advance clean technology innovation and adoption, and support the transition to a low-carbon economy.	Enabling Information	Implemented	Cross-cutting Energy Industrial Processes and Product Use Transport Waste Management	NA	2018	Natural Resources Canada Innovation, Science and Economic Development Canada	NA[d]	NA[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
ENB-03	Federal support to clean technology innovations *Previously referred to as Federal support to Sustainable Development Technology Canada (SDTC)*	To support start-ups and to scale up companies to enable pre-commercial clean technologies to successfully demonstrate feasibility and enable early commercialization efforts.	Support pre-commercial development and demonstration of clean technology projects.	Economic Fiscal Enabling	Implemented	Cross-cutting Energy Industrial Processes and Product Use Transport Agriculture LULUCF Waste Management	NA	2001	Innovation, Science and Economic Development Canada *In transition to the National Research Council Canada*	NA[d]	NA[d]
ENB-05	*Canadian Sustainable Jobs Act* and comprehensive action *Previously referred to as Sustainable Jobs legislation (Bill C-50) and comprehensive action*	Support the future and livelihood of workers and their communities in the shift to a low-carbon economy.	Support workers and communities in the shift to a low-carbon economy.	Economic Fiscal Education Regulatory Enabling	Implemented	Cross-cutting	NA	2024	Natural Resources Canada Employment and Social Development Canada	NA[b]	NA[b]
ENB-06	Green Bonds	Canada's Green Bond program supports a well-functioning sustainable finance market. The framework improves market transparency by providing investors a risk-free benchmark against which private sector green investments can be assessed, as well as	Mobilize capital in support of Canada's climate and environmental objectives and support the development of the Canadian sustainable finance market.	Economic Enabling	Implemented	Cross-cutting	NA	2022	Finance Canada Environment and Climate Change Canada	NA[b]	NA[b]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		highly rated assets that support Government of Canada investments that pursue environmental objectives benefitting all Canadians. Such programs, which could include, but are not limited to, projects that support climate mitigation, adaptation, biodiversity and conservation, and pollution prevention and control.									
ENB-07	Climate Action and Awareness Fund (CAAF)	To support projects that help build capacity and raise awareness in an effort to reduce Canada's GHG emissions. The CAAF has three main priorities: • Support youth awareness and community-based climate action; • Support climate research at Canadian think tanks and in academia; and, • Advance climate change science and technology.	Raise awareness of climate change and build capacity to increase climate actions.	Fiscal Economic Education Information Research Enabling	Implemented	Cross-cutting	NA	2020	Environment and Climate Change Canada	NA[d]	NA[d]
ENB-07.1	Community-based climate action *Part of the Climate Action and*	The CAAF Community-based climate action stream provides funding to support projects that provide	Raise awareness of climate change and build capacity to	Fiscal Economic Education	Implemented	Cross-cutting	NA	2020	Environment and Climate Change Canada	NA[d]	NA[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
	Awareness Fund (CAAF) (ENB-07)	knowledge, tools and/or skills that lead to or engage communities in climate action.	increase climate actions.	Information Enabling							
ENB-07.2	Climate research at Canadian think tanks and in academia *Part of the Climate Action and Awareness Fund (CAAF) (ENB-07)*	The CAAF Climate research at Canadian think tanks and in academia stream provides funding to support projects focused on identifying, accelerating, and evaluating climate mitigation solutions and strategies that will contribute to achieving net-zero GHG emissions in Canada.	Raise awareness of climate change and build capacity to increase climate actions.	Fiscal Economic Research Enabling	Implemented	Cross-cutting	NA	2020	Environment and Climate Change Canada	NA[d]	NA[d]
ENB-07.3	Climate science and technology *Part of the Climate Action and Awareness Fund (CAAF) (ENB-07)*	The CAAF Climate science and technology stream provides funding for advancing climate change science and technology projects that strengthen Canada's science capacity to identify, accelerate, and evaluate mitigation actions towards achieving net-zero GHG emissions by 2050 in Canada.	Raise awareness of climate change and build capacity to increase climate actions.	Fiscal Economic Education Information Research Enabling	Implemented	Cross-cutting	NA	2020	Environment and Climate Change Canada	NA[d]	NA[d]
ENB-08	Clean Technology Manufacturing Investment Tax Credit*	Budget 2023 announced a refundable tax credit equal to 30% of the cost of investments in new machinery and equipment used all or	Encourage the manufacturing and processing of clean technologies; and the processing, extraction, and	Economic Fiscal Enabling	Implemented	Cross-cutting Energy Industrial Processes	CO_2, CH_4, N_2O	2024	Finance Canada Canada Revenue Agency	NA[b]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		substantially all to manufacture or process key clean technologies, or extract, process, or recycle key critical minerals. The credit is available for investments made after 2023 and is scheduled to be phased out from 2032 to 2034. Budget 2024 announced an expansion of eligible investments to include new machinery and equipment used primarily to extract or process key critical minerals at mine or well sites.	recycling of key critical minerals.			and Product Use Transport					
ENB-10	Clean Technology Data Strategy (CTDS)	The Clean Technology Data Strategy supports the collection of data and reporting on progress of Canada's cleantech and clean economy.	Support the collection of data and regular reporting on clean technology activity.	Information Enabling	Implemented	Cross-cutting	NA	2017	Natural Resources Canada Innovation, Science and Economic Development Canada	NA[d]	NA[d]
ENB-11	Clean Technology and Climate Innovation Strategy	In the 2030 ERP, the Government of Canada committed to strengthening federal coordination on clean technology and climate innovation with a particular focus on innovation support, investment in deployment, regulatory	Strengthen federal coordination on clean technology and climate innovation.	Economic Fiscal Planning Enabling	Implemented	Cross-cutting	CO_2, CH_4, N_2O	2023	Environment and Climate Change Canada Natural Resources Canada Innovation, Science and Economic	NA[b]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		signals, tax incentives, and procurement.							Development Canada		
BDG-07	National Housing Strategy (NHS)	The Strategy provides funding to help reduce homelessness and improve the affordability, availability, and quality of housing for Canadians in need.	Reduce homelessness and improve the affordability and quality of housing for Canadians in need.	Fiscal Economic Regulatory Planning Research Enabling	Implemented	Cross-cutting	NA	2017	Housing, Infrastructure and Communities Canada Canada Mortgage and Housing Corporation	NA[d]	NA[d]
HVI-03	Strategic Innovation Fund – Net Zero Accelerator (SIF-NZA)*, **, [i]	Invests in projects to support Canada's largest industrial GHG emitting sectors to reduce emissions, help position key industrial sectors to be successful in the net-zero global economy of 2050, and assist in establishing Canada as a clean technology leader capitalizing on new growth opportunities, including a domestic battery ecosystem.	Promote innovation including to reduce GHGs and other environmental impacts; support the transformation of industries towards the net-zero economy; and develop clean technologies.	Economic Fiscal Education Research	Implemented	Cross-cutting Energy Industrial Processes and Product Use Transport	CO_2, CH_4, HFCs, N_2O, NF_3, PFCs, SF_6	2020	Innovation, Science and Economic Development Canada	NE[f]	11,160.00
HVI-04	Cutting corporate taxes for manufacturers and producers of zero-emissions technologies	Budget 2021 announced general corporate and small business income tax rates reduced by half for businesses that manufacture and process zero-emission technologies. The reduced tax rates are available for taxation years beginning after	Encourage the manufacturing and processing of clean technologies.	Economic Fiscal Enabling	Implemented	Cross-cutting Energy Industrial Processes and Product Use Transport	CO_2, CH_4, N_2O	2022	Finance Canada Canada Revenue Agency	NA[b]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		2021 and were scheduled to be phased out from 2029 to 2031. Budget 2022 announced expansions to eligible activities to include the production of air-source heat pumps. Budget 2023 announced expansions to eligible activities to include nuclear energy equipment, nuclear fuels, and heavy water. Budget 2023 also announced an extension to the reduced tax rates, such that they would be phased out from 2032 to 2034.									
HVI-05	Net-Zero Challenge (NZC)	The Government of Canada launched the Net-Zero Challenge in August 2022. It is a program that encourages and supports businesses with operations in Canada to develop and implement credible and effective plans to transition their facilities and operations to net -zero emissions by 2050. The goals of the Net-Zero Challenge are to reduce GHG emissions from industrial and other	Encourage companies operating in Canada to reduce their GHG emissions to net -zero by 2050 or earlier.	Voluntary Agreement Enabling	Implemented	Cross-cutting Energy Industrial Processes and Product Use Transport	CO_2, N_2O, SF_6, HFCs, PCFs, Other – CH_2	2022	Environment and Climate Change Canada	NA[b]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		sectors, normalize net -zero planning so that it becomes a default business practice, and build momentum through guidance and collaboration.									
GRG-01	Greening Government Strategy updated targets and policies	Outlines how the Government of Canada will transition to net-zero carbon and climate-resilient operations, and reduce environmental impacts on waste, water, and biodiversity. Targets include net-zero emissions and climate resilience requirements for new federal buildings and major existing building retrofits; reduced embodied carbon of major construction projects; and, leasing domestic office floor space in net-zero carbon climate resilient buildings. Green procurement is used to motivate suppliers of goods and services to address GHG emissions reduction, waste reduction and broader environmental benefits. 100% of the light-duty fleet will be comprised of zero-	The Government of Canada's operations will be net-zero emissions by 2050 including: government-owned and leased real property; fleets, business travel and commuting; procurement of goods and services; and national safety and security operations.	Fiscal Information Education Economic Research Voluntary Agreement	Implemented	Cross-cutting Energy Transport Waste Management	CO_2, CH_4, N_2O	2017	Treasury Board of Canada Secretariat	NA[f]	900.00

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		emission vehicles by 2030.									
BC-CRC-01	Carbon Neutral Government Program – Province of British Columbia	Under British Colombia's Carbon Neutral Government program, legislated under the *Climate Change Accountability Act*, all provincial public sector organizations must be carbon neutral in their operations (buildings, fleet, paper, travel) every year, and to make public an annual report detailing actions taken towards carbon neutrality. Carbon offsets for the program come from BC-based projects, including the Great Bear Rainforest. The provincial government's Carbon Neutral Capital Program (CNCP) helps schools, hospitals, colleges and universities with projects and initiatives to cut carbon emissions and energy costs.	Achieve carbon neutrality in government operations.	Regulatory Economic	Implemented	Cross-cutting Energy Transport	CO_2, CH_4, N_2O, SF_6, HFCs, PFCs	2007	British Columbia	150.00	NE[f]
BC-CRC-02	British Columbia's Carbon Tax*	This tax applies to virtually all fossil fuels, including gasoline, diesel, natural gas, coal, propane, and home heating fuel. The carbon tax started at a rate based on	Reduce GHG emissions from fossil fuel use.	Economic Fiscal	Implemented	Cross-cutting Energy Transport	CO_2, CH_4, N_2O	2008	British Columbia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		$10/tonne of associated carbon or carbon-equivalent emissions and is currently set at $80/tonne CO_2 eq. British Columbia's carbon tax will continue to meet or exceed any federal carbon price requirements for 2024 and beyond.									
BC-CRC-03	British Columbia *Emission Offset Project Regulation**	The *Emission Offset Project Regulation* replaced the *Greenhouse Gas Emission Control Regulation* in 2024 and establishes requirements for emission offset projects authorized under the *Greenhouse Gas Industrial Reporting and Control Act*. The *Emission Offset Project Regulation* introduced stronger measures to address reversal events in offset projects. The *Greenhouse Gas Emission Control Regulation* was also split into the *BC Carbon Registry Regulation*, which regulates the administration of the BC Carbon Registry	Reduce GHG emissions.	Regulatory	Implemented	Cross-cutting Energy Industrial Processes and Product Use	CO_2, CH_4	2024	British Columbia	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		and its accounts and transactions.									
BC-CRC-04	CleanBC* and Clean BC Roadmap to 2030 / *Climate Change Accountability Act*	CleanBC is the Province's plan to lower climate-changing emissions by 40% by 2030. The CleanBC Roadmap to 2030 includes a range of accelerated and expanded actions to reduce emissions across low carbon energy; transportation; buildings; communities; industry, including oil and gas; forest bioeconomy; agriculture, aquaculture and fisheries; and negative emissions technologies. Through the *Climate Change Accountability Act*, BC has legislated targets for reducing GHG emissions 40% below 2007 levels by 2030, 60% by 2040, and 80% by 2050.	Reduce emissions in British Columbia.	Regulatory Economic Fiscal Planning Research Voluntary Agreement	Implemented	Cross-cutting Energy Industrial Processes and Product Use Transport Agriculture LULUCF Waste Management	CO_2, CH_4, N_2O, NF_3, HFCs, PFCs, SF_6	2018	British Columbia	NE[f]	27,900.00
BC-CRC-05	CleanBC Communities Fund	CleanBC Communities Fund (funded through Investing in Canada Infrastructure Program bilateral agreement) has had three application intakes, with the final intake closing in May 2022. Projects must be	Reduce emissions in British Columbia and contribute to a national 10 Mt CO_2 eq reduction.	Fiscal	Implemented	Cross-cutting Energy Transport	CO_2, CH_4	2018	British Columbia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		completed by March 31, 2033. 1st intake: allocated up to $49.7M in provincial-federal funding. 2nd intake: allocated up to $46M in provincial-federal funding. 3rd intake: allocated up to $153M in provincial-federal funding.									
BC-CRC-06	BC Output-Based Pricing System (OBPS)*	On April 1, 2024, a newly designed BC Output-Based Pricing System (BC OBPS) replaces the CleanBC Industrial Incentive Program (CIIP) and will be mandatory for large industry. The BC OBPS ensures there is a price incentive for industrial emitters to reduce GHG emissions while promoting innovation and protecting competitiveness. The CleanBC Industry Fund (CIF) continues to support industrial emissions projects, through four funding streams: industrial electrification, emissions performance,	Reduce GHG emissions from industry.	Economic Regulatory	Implemented	Cross-cutting Energy Industrial Processes and Product Use	CH_4, N_2O, CO_2	2024	British Columbia	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		innovation accelerator, and feasibility studies.									
BC-CRC-07	British Columbia Forest Carbon Offset Protocol	The updated forest carbon offset protocol (2024) will enable new projects to be developed in BC under updated methodology. Offsets are purchased by the province as part of the Carbon Neutral Government Program and will be purchased by regulated operations under the OBPS to satisfy a portion of their compliance obligation.	Increase carbon stocks through sustainable forest management and conservation.	Regulatory Economic	Implemented	Cross-cutting LULUCF	CO_2	2017	British Columbia	1,100.00	NE[f]
AB-CRC-01	Alberta Carbon Capture, Storage and Utilization*	The Large Emitter legislation (SGER, CCIR and now TIER) has enabled Alberta to administer funding to support large-scale carbon capture, utilization and storage (CCUS) projects. Two large-scale CCUS projects currently receive funding from the Government of Alberta: The Quest CCS project and the Alberta Carbon Trunk Line (ACTL) Enhanced Oil Recovery (EOR) project. These emission reductions are not listed to avoid double counting since these CCUS projects' emission reductions	Enable government support for carbon capture and storage projects.	Economic Fiscal	Implemented	Cross-cutting Energy Industrial Processes and Product Use	CO_2	2008	Alberta	NE[c]	NE[c]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		are listed by the federal government (reported under the Energy Innovation Program).									
AB-CRC-02	Alberta Emission Offset System*	Alberta continues to support the generation of voluntary emission offsets in various sectors such as agriculture, renewable energy, waste management, and oil and gas. Emission offsets are available as a regulatory compliance option for large industrial emitters under the TIER Regulation.	Enhance removals and reduce emissions.	Economic	Implemented	Cross-cutting Energy Industrial Processes and Product Use Transport Agriculture Waste Management	CO_2, CH_4, N_2O	2018	Alberta	NE[f,1]	4,500.00
SK-CRC-01	Prairie Resilience: A Made-in-Saskatchewan Climate Change Strategy	Prairie Resilience is a strategy that takes a system-wide approach and includes more than 40 commitments designed to make Saskatchewan more resilient to the effects of a changing climate. The commitments, which go beyond emissions reductions alone, span Saskatchewan's natural systems and resources, infrastructure for electricity, transportation, homes and buildings, and	Enhance the ability to cope with, adapt to, and recover from stress and change.	Economic Education Fiscal Information Research Planning Voluntary Agreement Enabling	Implemented	Cross-cutting Energy Industrial Processes and Product Use Transport Agriculture LULUCF Waste Management	CO_2, CH_4, HFCs, N_2O, PFCs, SF_6	2017	Saskatchewan	NE[f]	NE[f]

[1] Emissions reduction estimate for 2020 was 4,500 kt.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		community preparedness.									
SK-CRC-02	Saskatchewan *Management and Reduction of Greenhouse Gases Act*	The *Management and Reduction of Greenhouse Gases Act* (MRGHG Act) provides the legal framework for Saskatchewan's GHG regulations, including the provincial Output-Based Performance Standards (OBPS) Program, reporting regulations, and electricity regulations.	Enable the implementation of emissions management.	Regulatory	Implemented	Cross-cutting Energy Industrial Processes and Product Use	CO_2, CH_4, HFCs, N_2O, PFCs, SF_6	2018	Saskatchewan	NE[f]	NE[f]
SK-CRC-03	Saskatchewan Technology Fund	The Saskatchewan Technology Fund is a compliance option for regulated emitters that do not meet their emissions intensity reduction requirements under the province's Output-Based Performance Standards (OBPS) Program. The fund re-invests OBPS Program compliance payments in industry-driven projects that reduce GHG emissions intensity at regulated facilities. Projects are selected through a competitive application process.	Invest in GHG-reducing innovation and technologies.	Economic Fiscal	Implemented	Cross-cutting Energy Industrial Processes and Product Use	CO_2, CH_4, HFCs, N_2O, PFCs, SF_6	2022	Saskatchewan	NA[b]	NE[f]
SK-CRC-04	Saskatchewan's Climate Resilience Measurement Framework	The Climate Resilience Measurement Framework tracks annual progress on 22 resilience measures	Track and annually report across all areas of focus to convey progress	Information Education Enabling	Implemented	Cross-cutting Energy LULUCF	CO_2, CH_4, HFCs, N_2O, PFCs, SF_6	2018	Saskatchewan	NE[d]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		across five key areas: natural systems, physical infrastructure, economic sustainability, community preparedness and human well-being. Annual reporting on all measures provides a better understanding of Saskatchewan's incremental resilience to climate change. It may also help identify where, in future years, alternative or additional policies and programs may enhance resilience.	in making the province more resilient to climate change.								
MB-CRC-01	Conservation and Climate Fund	The purpose of the Conservation and Climate Fund is to support projects occurring in Manitoba that incorporate actions to combat and adapt to climate change and protect the environment.	Reduce GHG emissions.	Voluntary Agreement Fiscal Economic	Implemented	Cross-cutting Energy LULUCF	CO_2, CH_4, HFCs, N_2O, NF_3, SF_6	2020	Manitoba	NE[f]	NE[f]
MB-CRC-02	Manitoba's Emissions Target (Carbon Savings Account)	Manitoba's Emissions Target (Carbon Savings Account) is a strategy to drive emissions reductions in a timely and sustained manner. After achieving the first 1 Mt goal for the 2018–2022 period, Manitoba set a new Emissions Target at 5.6 Mt for the 2023–	Reduce GHG emissions.	Voluntary Agreement	Implemented	Cross-cutting	CO_2, CH_4, HFCs, N_2O, NF_3, SF_6	2018	Manitoba	2,400.00	5,600.00

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		2027 period based on the recommendations of the independent recommendations of the Expert Advisory Council.									
MB-CRC-03	Merit-Based Program	The Merit-based program, part of Canada's Low Carbon Economy Fund (LCEF), is a collaborative funding initiative between the Government of Canada and the Manitoba government. The program provides funding to support projects across Manitoba that reduce GHG emissions and support Manitoba's transition to the green economy. The program has benefited projects across Manitoba, working with a wide range of sectors to support projects that will lower emissions from agriculture, small business, municipalities, as well as not-for-profit and government housing projects.	Reduce GHG emissions, help improve affordability.	Fiscal Economic Voluntary Agreement	Implemented	Cross-cutting Energy Agriculture	CO_2	2023	Manitoba	NA[b]	3.60
ON-CRC-01	Green Bond Program	Ontario has issued $20.25B worth of green bonds to capitalize on the province's ability to raise funds at low interest rates and help	Fund projects that have environmental benefits.	Fiscal Enabling	Implemented	Cross-cutting Energy Transport	CO_2, CH_4, HFCs, N_2O, NF_3, PFCs, SF_6	2014	Ontario	NE[d]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		finance public transit initiatives, extreme-weather resistant infrastructure, and energy efficiency and conservation projects. In January 2024, Ontario released its Sustainable Bond Framework ("The Framework") replacing the Province of Ontario's Green Bond Framework developed in 2014. The Framework allows the Province to issue any Green Bonds, Social Bonds, or Sustainability Bonds (collectively "Sustainable Bonds") when projects include both Green and Social objectives.				LULUCF					
ON-CRC-02	Ontario Greenhouse Gas Emissions Performance Standards Regulation*	Ontario's Emissions Performance Standards (EPS) program regulates GHG emissions from large industrial facilities. The program is an alternative to the federal output-based pricing system (OBPS) and helps Ontario	Reduce GHG emissions from large industrial emitters.	Regulatory	Implemented	Cross-cutting Energy Industrial Processes and Product Use	CO_2, CH_4, HFCs, N_2O, NF_3, PFCs, SF_6	2022	Ontario	NA[b]	5,350.00[2]

[2] The emissions reductions estimates include reductions associated with Ontario's Cleaner Transportation Fuels Regulation.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		achieve GHG emissions reductions.									
ON-CRC-03	Supporting the development of geologic carbon storage	Ontario is developing a discussion paper on geologic carbon storage that explores legislative amendments to support the development of innovative technology in Ontario, including carbon storage.	Support development of geologic carbon storage in Ontario	Information Planning Research Enabling	Planned	Cross-cutting LULUCF	CO_2	TBD	Ontario	NA[d]	NE[d]
QC-CRC-01	Québec Technoclimat Program *(link in French only)*	The objective of Technoclimat is to encourage the development of technological innovation in the areas of energy efficiency, renewable energies, bioenergies and GHG emission reductions by offering financial assistance to project promoters who wish to demonstrate the potential of technological innovation. It also promotes the testing in Québec of technologies that are either unavailable or not widely available in the Québec market. The program received additional funding under the 2024–2029 Implementation Plan. Total funding of $207M in 2024–2029, an	Develop new innovative technologies or processes in the area of energy efficiency.	Fiscal Economic	Implemented	Cross-cutting Energy Industrial Processes and Product Use	CH_4, CO_2, HFCs, N_2O, NF_3, PFCs, SF_6	2013	Québec	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		increase of $25M over the previous 5-year period.									
QC-CRC-02	Québec's Cap-and-Trade System for Greenhouse Gas Emission Allowances*	The Québec government's Cap-and-Trade System for GHG emission allowances covers industry, electricity production and imports, as well as fuel distribution. Offset protocols are also in place in sectors not covered by the system. Québec's Cap-and-Trade System for GHG emission allowances has been linked to California's system for 10 years. It is the cornerstone of climate action funding in Québec thanks to revenues generated by the sale of emission allowances. The two governments are currently engaged in a joint assessment of certain operating parameters of Québec's Cap-and-Trade System. In autumn 2023, they held public pre-consultations on possible adjustments. The approach, which aims to maximize	Reduce GHG emissions across the economy.	Economic	Implemented	Cross-cutting	CH_4, CO_2, HFCs, N_2O, NF_3, PFCs, SF_6	2013	Québec	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		market efficiency so that it contributes even more to achieving the 2030 GHG emissions reduction target and carbon neutrality by 2050, is likely to see regulatory changes in 2024-25.									
QC-CRC-03	Decarbonization roadmap*	Over the next few years, the Québec government plans to implement a number of initiatives to further reduce GHG emissions in Québec. These initiatives could include: • measures to optimize and decarbonize heavy transportation (such as optimizing logistics to reduce empty runs), in addition to the development of a ZEV standard for heavy-duty trucks; • investments aimed at introducing new cattle additives to reduce GHG emissions from animal husbandry; • incentives for the adoption of sustainable mobility practices in businesses; • reviewing the requirements for	Reduce GHG emissions.	Economic Fiscal Regulatory	Planned	Cross-cutting Transport Agriculture Industrial Processes and Product Use Waste Management	CO_2, HFCs	2023	Québec	NA[b]	22,500.00

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		the integration of low-carbon fuels to extend, for example, their application to other industries such as marine or aviation; • implementation of decarbonization plans for cement plants; • reform of regulatory requirements surrounding the capture and reclamation of methane at landfill sites. Taken together, and according to the best available projections, the measures under review could achieve between 73% and 77% of the 2030 target.									
NB-CRC-01	New Brunswick 2022 Climate Change Action Plan	The 2022 plan (updated every 5 years) includes 30 new and incremental measures, keeping the province on the path to meet its 2030 target and commitment to becoming net-zero by 2050. The renewed Action Plan (2023) falls	Reduce GHG emissions.	Regulatory Economic Fiscal Planning	Implemented	Cross-cutting Energy Industrial Processes and Product Use Transport	CH_4, CO_2, HFCs, N_2O, NF_3, PFCs, SF_6	2022	New Brunswick	NA[b]	2,350.00[3]

[3] Estimate of mitigation impact for 2030 is 2,350.00 kt to 3,160.00 kt.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		under three key pillars: government leadership and accountability, reducing GHG emissions, and preparing for climate change. Beginning April 1, 2024, progress on GHG reduction plan development and implementation will be reported each year. As of 2021, NB has seen a 39% reduction in emissions from 2005 levels, and estimated total provincial GHG emissions of around 8.73 Mt–9.54 Mt in 2030.				Agriculture LULUCF Waste Management					
NB-CRC-02	New Brunswick *Climate Change Act*	New Brunswick's *Climate Change Act* brought the province's 2020, 2030, and 2050 GHG emission reductions targets into law. The *Climate Change Act* declares New Brunswick's commitment to addressing climate change mitigation and adaptation; provides the authority to implement a carbon pricing mechanism; establishes a climate change fund with authority to spend proceeds; establishes	Reduce GHG emissions.	Regulatory	Implemented	Cross-cutting	CH_4, CO_2, HFCs, N_2O, NF_3, PFCs, SF_6	2018	New Brunswick	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		industrial emissions limits; and provides transparency, accountability, and reporting.									
NB-CRC-03	New Brunswick Climate Change Fund*	The Climate Change Fund was established under the *Climate Change Act* in 2018. It supports climate change adaptation, greenhouse gas mitigation, and education initiatives in New Brunswick. The provincial government announced a $47M investment to the Climate Change Fund from Budget 2024-25 to continue strategic investments in alignment with the provincial Climate Change Action Plan.	Reduce GHG emissions.	Regulatory Economic Fiscal Education Enabling	Implemented	Cross-cutting Energy Transport Agriculture LULUCF Waste Management	CH_4, CO_2, HFCs, N_2O, NF_3, PFCs, SF_6	2018	New Brunswick	NE[f]	NE[f]
NB-CRC-04	New Brunswick Innovation Foundation (NBIF)	Opportunities New Brunswick (ONB) has partnered with the New Brunswick Innovation Foundation to develop a pipeline of clean technology innovation in the province. The initiative has developed momentum for applied climate research and cleantech innovation in New Brunswick through four main program streams: Climate Impact Research Fund;	Clean Technology acceleration and commercialization	Research Economic Fiscal Enabling	Implemented	Cross-cutting	NA	2021	New Brunswick	NA[d]	NA[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Cleantech Startup Investment Fund; Corporate Cleantech Innovation Fund; and Climate Early Stage Commercialization Fund.									
NB-CRC-05	New Brunswick Output Based Pricing System (OBPS) for Industry and Electricity*	Under the New Brunswick Output Based Pricing System, large industrial emitters are required to reduce their GHG emissions intensity (stringency) to 2030 and electricity generators are required to meet performance standards that have been designed to reduce GHG emissions while minimizing rate impacts on New Brunswickers. Any revenue generated under the Output-Based Pricing System is directed to the New Brunswick Climate Change Fund.	Improve the carbon intensity of large industry and electricity generation.	Regulatory	Implemented	Cross-cutting Energy Industrial Processes and Product Use	CH_4, CO_2, HFCs, N_2O, NF_3, PFCs, SF_6	2020	New Brunswick	NA[f]	900.00
NB-CRC-06	NB Output-Based Pricing System (OBPS) Industry Fund	The OBPS Industry Fund returns proceeds collected from fund credit transactions to New Brunswick OBPS participants to support GHG emission reduction projects.	Reduce emissions and improve the carbon intensity of large industry and electricity generation.	Economic Fiscal	Implemented	Cross-cutting Energy Industrial Processes and Product Use	CH_4, CO_2, N_2O, HFCs, PFCs, SF_6, NF_3	2023	New Brunswick	NA[b]	NE[f]
NB-CRC-07	Community Planning Statements of Public Interest	The Statement of Public Interest Regulation was developed under the	Protecting the public interest in land use planning.	Regulatory Enabling	Implemented	Cross-cutting	CH_4, CO_2, HFCs, N_2O, NF_3, PFCs, SF_6	2022	New Brunswick	NA[b]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Community Planning Act covering Climate Change, Settlement Patterns, Agriculture, Flood/Natural Hazards, Natural Resources.									
NB-CRC-08	Green Procurement	On January 1, 2022, the Government of New Brunswick (GNB) implemented a Green Procurement Policy. The policy derives from *GNB's Climate Change Action Plan: Transitioning to a Low-Carbon Economy*, and supports GNB's efforts to address challenges and opportunities presented by a changing climate.	Reduce the adverse environmental impacts of purchased goods and services.	Fiscal Voluntary Agreement Education Planning	Implemented	Cross-cutting	CH_4, CO_2, HFCs, N_2O, NF_3, PFCs, SF_6	2021	New Brunswick	NA[f]	NE[f]
NB-CRC-09	Clean Technology Innovation	NB Innovation Foundation established a $1.8M dollar fund to accelerate innovation in CleanTech and emissions reduction technologies.	Accelerate innovation in clean technology, reduce emissions.	Fiscal Research Economic Enabling	Implemented	Cross-cutting	CH_4, CO_2, HFCs, N_2O, NF_3, PFCs, SF_6	2024	New Brunswick	NA[b]	NE[d]
NS-CRC-01	*Environmental Goals and Climate Change Reduction Act* (EGCCRA)*	It aims to reduce GHG emissions to 53% below 2005 levels and achieve net zero by 2050. By 2030, commits to phasing out coal-fired electricity in NS, supplying 80% energy from renewable sources, having 30% of new vehicle sales be zero-emissions vehicles, and reducing solid waste disposal	Reduce GHG emissions, conserve land and water.	Regulatory	Implemented	Cross-cutting Energy Transport Agriculture LULUCF Waste Management	CO_2, CH_4, HFCs, N_2O, NF_3, PFCs, SF_6	2021	Nova Scotia	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		rates to 300 kilograms or less per person per year. It commits to conserving 20% of total land and water mass. As of 2023, the Government completed the largest-ever procurement for renewable electricity in the province. When completed, it will result in about 70% of electricity coming from renewable sources.									
NS-CRC-02	Nova Scotia's Output-based Pricing System for Industry (OBPS)*	Nova Scotia has transitioned to a new, effective carbon pricing system for large industries and the electricity sector called the OBPS. This new system better reduces GHG emissions and provides more benefits to Nova Scotians. Facilities registered under the OBPS ("regulated facilities") are exempt from the federal fuel charge. Instead, registered facilities must meet a performance standard for GHG emissions released. Under the OBPS, a regulated facility is motivated to meet or exceed its annual performance standard and has options for compliance.	Reduce GHG emissions across Nova Scotia's economy.	Regulatory	Implemented	Cross-cutting Energy Industrial Processes and Product Use	CO_2, CH_4, HFCs, N_2O, PFCs, SF_6	2023	Nova Scotia	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
NS-CRC-03	Nova Scotia's Climate Change Plan for Clean Growth – Our Climate, Our Future	Outlines specific actions to carry out the mandated commitments set in the *Environmental Goals and Climate Change Reduction Act*. This includes reducing GHG emissions by at least 53% below 2005 levels by 2030. The plan also focuses on responding to climate impacts, achieving net zero by 2050, capitalizing on opportunities for a cleaner, sustainable economy, and monitoring and evaluating progress.	Reduce GHG emissions, conserve land and water.	Regulatory Planning	Implemented	Cross-cutting	CO_2, CH_4, HFCs, N_2O, NF_3, PFCs, SF_6	2022	Nova Scotia	NA[b]	NE[f]
PE-CRC-01	PEI Climate Challenge Fund	$3M over 3 years to support innovative solutions to climate change. $100K to support projects that reduce GHG emissions, help communities and the economy adapt to climate change, and address inequities and discrimination that are generated from the negative impacts of climate change. PEI has also supported clean technology projects through its Climate Challenge Fund (e.g., hydrogen fuel systems).	Support innovative solutions to climate change.	Fiscal Economic Research Education Information	Implemented	Cross-cutting	CO_2	2020	Prince Edward Island	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
PE-CRC-02	Prince Edward Island 2040 Net Zero Framework	Prince Edward Island's 2040 Net Zero Framework aims to achieve the goals and targets required to become Canada's first net-zero province. The priorities included in this framework will be supported by the development and implementation of a series of five-year action plans that will include interim emission reduction targets and reporting of progress made to date.	Achieve net-zero GHG emissions by 2040.	Voluntary Agreement Planning Education Enabling	Implemented	Cross-cutting	CO_2	2022	Prince Edward Island	NA[b]	NE[d]
PE-CRC-03	Prince Edward Island *Climate Leadership Act*	Prince Edward Island administered a provincial carbon tax through the *Climate Leadership Act*. Gasoline and diesel for agriculture and fisheries, light fuel oil for heating, and propane are exempt from the carbon tax. The revenue is returned to PEI citizens through rebates for income qualified households, tax or fee reductions, and several emissions reduction programs. PEI has voluntarily adopted the federal backstop for large emitters.	Reduce the use of fossil fuels for heating and transportation.	Regulatory Economic Fiscal	Implemented	Cross-cutting	CO_2	2019	Prince Edward Island	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
NL-CRC-01	Newfoundland and Labrador carbon pricing*	Carbon pricing in Newfoundland and Labrador covers over 90% of provincial GHG emissions. This includes 35% through the provincial carbon pricing plan for large industry and over 55% through federal carbon pricing.	Implement a carbon pricing system to reduce GHG emissions from all sectors of the economy.	Regulatory Economic	Implemented	Cross-cutting	CH_4, CO_2, N_2O, HFCs, PFCs, SF_6, NF_3	2019	Newfoundland and Labrador	NE[f]	NE[f]
NL-CRC-02	Newfoundland and Labrador Climate Change Challenge Fund	Newfoundland and Labrador is delivering a Climate Change Challenge Fund which can help enhance efficiency and promote forestation. This program is supported by the Low Carbon Economy Leadership Fund.	Reduce industrial GHG emissions in multi-unit residential buildings, municipalities, commercial, non-profit and industrial sectors.	Fiscal Economic	Implemented	Cross-cutting	CO_2, CH_4, N_2O	2019	Newfoundland and Labrador	0.00	40.30
NL-CRC-03	Newfoundland and Labrador *Management of Greenhouse Gas Act* and Regulations*	Newfoundland and Labrador is implementing its made-in-Newfoundland and Labrador carbon pricing system through the provincial *Management of Greenhouse Gas Act* and Regulations.	Reduce GHG emissions.	Regulatory Economic	Implemented	Cross-cutting	CO_2, CH_4, N_2O, NF_3, SF_6, HFCs, PFCs	2019	Newfoundland and Labrador	1,290.00	NE[f]
NL-CRC-04	The Way Forward on Climate Change in Newfoundland and Labrador: 2019-2024 Climate Change Action Plan	The implementation of a made-in-Newfoundland and Labrador carbon pricing system and GHG emission reductions made under the Low Carbon Economy Leadership Fund are key actions.	Reduce GHG emissions.	Regulatory Economic Fiscal Education Information	Implemented	Cross-cutting Energy Industrial Processes and Product Use Transport	CO_2, CH_4, N_2O, NF_3, SF_6, HFCs, PFCs	2019	Newfoundland and Labrador	NE[d]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		The action plan contains commitments related to every sector of the economy, from businesses and large industry to households and transportation, and government. The Government of Newfoundland and Labrador is developing a new Climate Change Mitigation Action Plan (2025-2030) to reduce greenhouse gas emissions.		Planning Enabling		Agriculture LULUCF Waste Management					
NL-CRC-05	Newfoundland and Labrador Green Transition Fund	10-year, $100M Fund was implemented in 2023. The Fund provides financial support to businesses, organizations, post-secondary institutions, and industry associations to assist with the transition to a green economy.	Reduce GHG emissions.	Fiscal Economic Education Enabling	Implemented	Cross-cutting	CO_2, CH_4, N_2O, NF_3, SF_6, HFCs, PFCs	2023	Newfoundland and Labrador	NA[d]	NE[d]
NL-CRC-06	Newfoundland and Labrador Greenhouse Gas Reduction Fund	The *Management of Greenhouse Gas Act* established this Fund. The value as of March 31, 2024, was about $429,000. Available funding is projected to be disbursed in 2024-25.	Reduce GHG emissions.	Fiscal Economic	Implemented	Cross-cutting Energy Industrial Processes and Product Use	CO_2, CH_4, N_2O, NF_3, SF_6, HFCs, PFCs	2019	Newfoundland and Labrador	NE[f]	5
YT-CRC-01	*Our Clean Future: A Yukon strategy for climate change, energy and a green economy**	*Our Clean Future: A Yukon strategy for climate change, energy and a green economy*, is the Yukon's 10-year climate change	Reduce GHG emissions, ensure access to renewable energy, adapt to climate change,	Economic Education Fiscal	Implemented	Cross-cutting Energy Industrial Processes	CH_4, CO_2, N_2O	2020	Yukon	NE[f]	121.00

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		strategy. The Strategy is designed to reduce GHG emissions; ensure Yukoners have access to reliable, affordable, and renewable energy; adapt to the impacts of climate change; and build a green economy.	build a green economy.	Information Research Regulatory Voluntary Agreement Planning		and Product Use Transport Agriculture LULUCF Waste Management					
YT-CRC-02	*Yukon Government Carbon Price Rebate Act*	Aligns with commitments specified in the Pan-Canadian Framework on Clean Growth and Climate Change. The Act was amended in 2022 to replace the previous mining rebate with a revenue-neutral Mining Business Rebate consistent with the existing Business Rebate.	Reduce GHG emissions.	Regulatory Economic Fiscal	Implemented	Cross-cutting	CH_4, CO_2, N_2O	2019	Yukon	0.00	12.00
NT-CRC-01	2030 NWT Climate Change Strategic Framework (CCSF)	The 2030 NWT Climate Change Strategic Framework (CCSF) provides a roadmap to transition the Territory to a lower carbon economy, build a sustainable energy system, and strengthen our understanding of the effects of climate change, while implementing solutions that increase our resiliency and adaptability to a changing climate. The	The CCSF has three goals: 1) Transition to a strong, healthy economy that uses less fossil fuel, thereby reducing GHG emissions by 30% below 2005 levels by 2030; 2) Improve knowledge of the climate change	Economic Education Fiscal Information Research Voluntary Agreement Planning Enabling	Implemented	Cross-cutting Energy Industrial Processes and Product Use Transport Agriculture LULUCF Waste Management	CO_2, CH_4	2019	Northwest Territories	NE[d]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		CCSF is implemented in conjunction with the GNWT's 2030 Energy Strategy and Carbon Tax, and involves partnerships with Indigenous, municipal, and federal governments, along with non-government and industry stakeholders.	impacts occurring in the NWT; and 3) Build resilience and adapt to a changing climate.								
NT-CRC-02	NWT Carbon Tax*	The NWT Carbon Tax was introduced on September 1, 2019. The carbon tax rate increased from $65 to $80 per tonne of GHG emissions on April 1, 2024, and will continue to grow by $15 per tonne annually until the rates reach $170 per tonne in April 2030. Increased revenue from carbon pricing will be recycled to the NWT.	Reduce GHG emissions.	Regulatory Economic Fiscal	Implemented	Cross-cutting	CO_2	2019	Northwest Territories	NE[f]	NE[f]
NT-CRC-03	Other initiatives funded by the Low Carbon Economy Leadership Fund	Through three streams derived from the Low Carbon Economy Leadership Fund (LCELF): Forestry, Marine Transportation, and Housing, the GNWT was able to target specific sectors of its economy to decarbonize. Through this support, those hard-to-support sectors were able to meet	Supporting energy and heating efficiency and fuel switching, carbon sequestration through forest management, and decarbonising marine transportation within the NWT.	Economic Fiscal	Implemented	Cross-cutting Energy Transport LULUCF	CO_2	2018	Northwest Territories	0.90	1.80

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		stated goals and move the GNWT's strategy forward for a low-carbon economy by 2030.									

A3.2 Energy Sector policies and measures

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
ECW-03	Clean Fuel Regulations*	Require liquid fuel suppliers to gradually reduce the lifecycle carbon intensity of the gasoline and diesel they supply for use in Canada.	Reduce GHG emissions by reducing the lifecycle carbon intensity of gasoline and diesel used in Canada as well as incentivizing the use of clean technologies and fuels.	Regulatory	Implemented	Energy Transport	CO_2, CH_4	2023[4]	Environment and Climate Change Canada	NA[b]	26,600.00
ECW-04	Clean Fuels Fund	The Clean Fuels Fund de-risks the capital investment for building new or retrofitting or expanding existing clean fuel production facilities. Budget 2024 announced the re-tooling of the program, and its extension until 2030. The program portal is set to launch before the end of the calendar	Increase domestic clean fuel production capacity.	Economic Fiscal Enabling	Implemented	Energy	CO_2	2021	Natural Resources Canada	NA[d]	NA[d]

[4] Regulations published and early credit creation started in 2022. Regulatory obligations started in 2023.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		year (2025). The intake for Indigenous-led clean fuel projects remains open.									
ECW-06	Hydrogen Strategy	Call to action that lays out an ambitious framework to position hydrogen as a key contributor to Canada's climate objectives and positions Canada as a global leader on clean renewable fuels.	Support role of hydrogen in decarbonization.	Education Information Planning Research Voluntary Agreement Enabling	Implemented	Energy Transport	NA	2020	Natural Resources Canada	NA[d]	NA[d]
ECW-07	Clean Hydrogen Investment Tax Credit*	In the 2022 Fall Economic Statement, the Government of Canada announced a refundable investment tax credit for investments made in clean hydrogen production based on the lifecycle carbon intensity of hydrogen. Following consultation with stakeholders, Budget 2023 announced key design details of this measure. The 2023 Fall Economic Statement provided additional design details of the investment tax credit. The investment tax credit rates vary between 15% and 40% of eligible project costs, with the projects that	Incentivize companies to invest in the production of clean hydrogen and clean ammonia in Canada.	Economic Fiscal	Implemented	Energy Transport	CO_2, CH_4, N_2O	2023	Finance Canada Canada Revenue Agency Natural Resources Canada	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		produce the cleanest hydrogen receiving the highest levels of support.									
ECW-09.1	Clean Power priority investment area *Part of Canada Infrastructure Bank (CIB) (ECW-09)*	The CIB invests in clean power projects including zero-emission generation, small modular reactors, renewables, district energy, storage, interties, and transmission. These investments contribute to decarbonization efforts while ensuring energy resiliency through grid connectivity and energy security in remote communities. Budget 2023 identified the CIB as "the government's primary financing tool for supporting clean electricity, transmission, and storage projects" while increasing the long-term investment target to $10B.	The CIB has a long-term investment target of $10B in the Clean Power priority sector. Clean Power investments contribute to the CIB's overall portfolio target of emissions reductions of 15 Mt CO_2 eq.	Fiscal	Implemented	Energy	CO_2	2019	Canada Infrastructure Bank	NE[f]	NE[f]
ECW-09.2	Green infrastructure priority investment area *Part of Canada Infrastructure Bank (CIB) (ECW-09)*	The CIB invests in green infrastructure to support Canada's clean growth economy in areas such as energy efficiency retrofits, industrial decarbonization	The CIB has a long-term investment target of $10B in the Green Infrastructure priority sector. Green	Fiscal	Implemented	Energy Transport Waste Management	CO_2	2017	Canada Infrastructure Bank	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		retrofits, water and wastewater management, and projects that contribute to the transition to a low-carbon future such as carbon capture, clean fuels, hydrogen, and zero emission vehicle charging. Zero emission vehicle (ZEV) charging was added as a new subsector in Green Infrastructure as communicated in Budget 2022, while Budget 2024 added biofuels production as a new subsector.	Infrastructure investments contribute to the CIB's overall portfolio target of emissions reductions of 15 Mt CO_2 eq.								
ECW-11	Regional Energy and Resource Tables (Regional Tables) *Previously referred to as Regional Strategic Initiatives*	The Regional Tables is a collaborative initiative that brings the federal government together with individual provinces and territories, in collaboration with Indigenous partners and with the input of key stakeholders, to advance the top economic priorities in the energy and resource sectors in each of Canada's regions.	Accelerate economic activity and leverage regional growth opportunities emerging from the shift to a low carbon future.	Economic Voluntary Agreement Enabling	Implemented	Energy	NA	2022	Natural Resources Canada	NA[b]	NA[d]
ECW-13	Indigenous Natural Resource Partnerships (INRP) Program	Increase the economic participation of Indigenous communities and	Support the development of critical minerals.	Fiscal Education	Implemented	Energy Industrial Processes	CO_2	2022	Natural Resources Canada	NA[b]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
	Part of the Canadian Critical Minerals Strategy (HVI-06)	organizations in the development of natural resource projects that support the transition to a clean energy future. The INRP program has $80M in contributions funding over five years, with at least $25M dedicated for Indigenous communities' capacity building to engage in critical mineral projects and to support Indigenous-led projects along the critical minerals value chain.		Enabling		and Product Use					
ENB-02	Energy Innovation Program (EIP)*	The EIP has core annual funding of $116M to support research, development and demonstration (RD&D), and other related scientific activities to advance decarbonization of energy-intensive sectors: industry, transportation, and communities. Additionally, the EIP received targeted time-limited funding to advance key priority areas (see ENB-02.1 and ENB-02.2).	Advance clean energy technologies that will help Canada meet its climate change targets while supporting the transition to a low-carbon economy.	Fiscal Research Education Enabling	Implemented	Energy Industrial Processes and Product Use Transport	CO_2, CH_4, N_2O	2016	Natural Resources Canada	2,700.00	4,250.00

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
ENB-02.1	EIP Carbon Capture, Utilization, and Storage (CCUS) Stream* *Part of the Energy Innovation Program (ENB-02)*	Budget 2021 invested $319M over seven years to fund RD&D to advance the commercial viability of CCUS technologies under the EIP. These funds will support businesses, academia, non-profits, governments, and federal laboratories on the path to net-zero emissions by 2050. CCUS provides an important pathway to emissions reductions for energy and industrial activities under conditions where neither electrification nor low-carbon fuels are able to provide technically or economically feasible low-carbon solutions. The stream is currently supporting 18 projects.	Invest in research, development, and demonstrations (RD&D) to advance the commercial viability of CCUS technologies.	Fiscal Research Enabling	Implemented	Energy Industrial Processes and Product Use	NA	2021	Natural Resources Canada	NA[d]	NA[d,5]
ENB-02.2	EIP Smart Grid Stream *Part of the Energy Innovation Program (ENB-02)*	Budget 2023 provided $45.6M over three years to provide support to the key technology, market, and regulatory innovations that address barriers in order to scale pilot projects into grid-wide deployments.	Enhance grid reliability, resiliency, and flexibility; improve energy affordability; enable GHG emission reductions; and make market conditions more	Fiscal Research Enabling	Implemented	Energy	CO_2	2023	Natural Resources Canada	NA[b]	NA[d]

[5] EIP-CCUS plays an enabling role in reducing emission as reductions will accrue indirectly and in the long term as a result of the commercialization, scale-up and adoption of CCUS technologies.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
			favourable to scaling successful innovations.								
ENB-09	Clean Technology Investment Tax Credit*	In the 2022 Fall Economic Statement, the Government introduced a 30% refundable investment tax credit for business investments in certain low-emitting electricity generation equipment, stationary electricity storage, low-carbon heating, and non-road zero-emission vehicles and related charging and refueling infrastructure. The tax credit would be available to taxable corporations and real estate investment trusts. Budget 2023 expanded eligibility to include certain geothermal energy equipment. The 2023 Fall Economic Statement proposed a further expansion of eligibility to include certain systems that generate electricity or heat from waste biomass.	Encourage business investment in the adoption of certain clean technologies.	Economic Enabling	Implemented	Energy Transport	CO_2, CH_4, N_2O	2023	Finance Canada Canada Revenue Agency Natural Resources Canada	NA[b]	NE[d]
BDG-01	Develop net-zero energy ready model building code and	Energy performance tiers with increasing performance toward net-zero energy were	Development of increasingly stringent, performance-bas	Research	Implemented	Energy Industrial Processes	CO_2	2022	National Research Council Canada	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
	code for retrofits by 2022**	introduced in both the 2020 National Energy Code of Canada for Buildings and the 2020 National Building Code, published in 2022. These codes apply to new buildings and to alterations to existing buildings (retrofits).	ed model building codes, including to introduce net-zero energy-ready model codes for new construction and the code for alterations to existing buildings.			and Product Use			Natural Resources Canada		
BDG-02	Develop national model code requirements for energy efficiency alterations to existing buildings and requirements for GHG emissions for new buildings	Development of specific requirements for alterations to existing buildings with a focus on energy efficiency were prioritized for the 2025 code development cycle along with development of provisions to mitigate GHG emissions from the operation of new buildings. Requirements developed and available for PTs to adopt in their jurisdictions.	Development of new provisions for national model codes that support increased energy efficiency when alterations are made to existing buildings. Development of new provisions for new construction that address GHG emissions associated with building operations.	Research Regulatory	Adopted	Energy	CO_2	2024	National Research Council Canada Natural Resources Canada	NA[b]	NE[f]
BDG-04	Canada Greener Homes Initiative	A multi-stream initiative to fight climate change, create new energy advisor jobs across Canada, and help homeowners save money.	Create new energy advisor jobs across Canada and help save homeowners money.	Economic Fiscal Education	Implemented	Energy	CO_2	2021	Natural Resources Canada	NA[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
BDG-04.1	Canada Greener Homes Grant* *Part of the Canada Greener Homes Initiative (BDG-04)*	Provide grants of up to $5,000 to help homeowners make energy-efficient home improvements, reimburse up to $600 for energy assessments, and support the training and recruitment of energy auditors.	Up to 510,000 grants for homeowners across Canada.	Fiscal Education	Implemented	Energy	CO_2	2021	Natural Resources Canada	NA[f]	490.00[6]
BDG-04.2	Canada Greener Homes Loan** *Part of the Canada Greener Homes Initiative (BDG-04)*	This program helps homeowners complete deep home retrofits through interest-free loans worth up to $40,000 that are repayable over 10 years.	Support homeowners through interest-free financing to make deeper, more costly energy retrofits to their homes.	Fiscal Economic	Implemented	Energy	CO_2	2022	Canada Mortgage and Housing Corporation	NA[b]	NE[f]
BDG-04.3	Canada Greener Affordable Housing (CGAH) *Part of the Canada Greener Homes Initiative (BDG-04)*	This program offers low-interest repayable and forgivable loans to help affordable housing providers complete deep energy retrofits on multi-unit residential buildings. It also provides contributions for completing the pre-retrofit activities needed to plan, prepare, and apply for the retrofit funding.	Help affordable housing providers finance deep energy retrofits on residential rental buildings.	Fiscal Economic	Implemented	Energy	CO_2	2023	Canada Mortgage and Housing Corporation	NA[b]	NE[f]
BDG-04.4	Oil to Heat Pump Affordability (OHPA) Program*	The OHPA Program supports low- to median-income Canadian	Provide upfront grants to low- to median-income households	Fiscal Economic	Implemented	Energy	CO_2	2023	Natural Resources Canada	NA[b]	125.00[7]

[6] Estimated emissions reductions are 490 kt CO_2 eq per year by 2030.
[7] Estimated emissions reductions are 125 kt CO_2 eq per year by 2030.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
	Part of the Canada Greener Homes Initiative (BDG-04)	homeowners' transition away from oil heating to electric heat pumps. Funding of up to $10,000 per eligible household is available, with up to an additional $5,000 to match provincial and territorial contributions via co delivery arrangements. This program will help homeowners save thousands of dollars on heating bills every year and reduce GHG emissions associated with the combustion of heating oil.	across Canada to support the transition from oil to eligible electric heat pumps.								
BDG-05	Green and Inclusive Community Buildings (GICB)	Funding to support green and accessible retrofits, repairs, or upgrades to existing public community buildings and construction of new publicly accessible community buildings that serve high-needs communities across Canada. At least 10% of funding for this program is reserved for Indigenous projects and recipients.	Support green and accessible retrofits, repairs, and upgrades of existing publicly accessible community buildings and the construction of new publicly accessible community buildings that serve underserved and high-needs communities across Canada.	Fiscal	Implemented	Energy	CO_2	2020	Housing, Infrastructure, and Communities Canada	NA[f]	NA[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
BDG-06	Energy Efficient Buildings Research, Development & Demonstration (EEB RD&D) Program	Inform the development of national building energy codes for both new and existing net-zero energy-ready buildings through provincial/territorial collaborations, R&D, and real-world demonstration projects in all Canadian climate zones.	Accelerate and enhance the promotion of energy efficiency in the buildings sector.	Information Research Fiscal Enabling	Implemented	Energy Industrial Processes and Product Use	CO_2	2017	Natural Resources Canada	NE[d]	NE[d,8]
BDG-09	Canada Green Buildings Strategy**	Working with partners, the strategy will build off existing initiatives and set out new policy, programs, incentives, and standards needed to drive a massive retrofit of the existing building stock, while helping to ensure newly constructed buildings support a net-zero future.	Drive a massive retrofit of existing building stock and low-carbon new construction for greener, more energy efficient, climate resilient, and affordable homes and buildings.	Economic Education Fiscal Information Planning Regulatory Research Enabling	Adopted	Energy Industrial Processes and Product Use	CO_2	2022	Natural Resources Canada	NA[b]	NE[f]
BDG-09.2	Transition off fossil fuels for heating systems *Part of the Canada Green Buildings Strategy (BDG-09)*	Exploring regulatory standards and an incentive framework to support the transition off fossil fuels for heating systems.	Reduce emissions caused by the combustion of carbon-emitting fuels for space and water heating in buildings.	Economic Fiscal Research Education	Planned	Energy	CO_2	2022	Natural Resources Canada	NA[b]	NE[e]

[8] The Energy Efficient Buildings Research, Development and Demonstration Stream of the program primarily plays an enabling role, as most emission reductions will accrue indirectly and in the long term as a result of the commercialization, scale up and adoption of energy efficient building technologies and solutions.

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BDG-09.3	National Approach to Home Labelling** *Referred to as EnerGuide home labelling in the 2023 Progress Report* *Part of the Canada Green Buildings Strategy (BDG-09)*	The Government of Canada will build on its existing EnerGuide Rating System for homes by working closely with provinces, territories, municipalities, Indigenous communities, and other housing sector stakeholders to develop a suite of common labelling standards, tools, and guidelines which will support home labelling initiatives across Canada. This National Approach will empower homeowners and prospective home buyers with consistent information about home energy performance which will support smart decision making and lower energy bills. This approach will help Canadians improve the resiliency of their homes by sharing resiliency information and recommendations through new EnerGuide tools and standards.	Support the adoption and implementation of home energy labelling initiatives by partners and stakeholders, ultimately increasing the energy efficiency of Canadian homes.	Education Information Enabling	Planned	Energy	NA	2022	Natural Resources Canada	NA[b]	NA[e]
BDG-09.4	Codes Acceleration Fund (CAF)	The CAF will help jurisdictions and other stakeholders to build capacity and support	Build capacity to accelerate the adoption and implementation of	Fiscal Education	Implemented	Energy Industrial Processes	CO_2	2022	Natural Resources Canada	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
	Part of the Canada Green Buildings Strategy (BDG-09)	market preparedness for the accelerated adoption and implementation of the higher performance tiers of the 2020 national model energy codes, or other high-performance codes, and promote higher rates of compliance with adopted codes.	high energy performing and GHG reducing building code requirements.	Enabling Regulatory		and Product Use					
BDG-09.6	Deep Retrofit Accelerator Initiative (DRAI) *Part of the Canada Green Buildings Strategy (BDG-09)*	The DRAI will help to transform Canada's deep retrofit market by increasing capacity for project development and implementation activities. Funding to accelerator organizations and other stakeholders will help to identify and aggregate deep retrofit projects and guide building owners in the development of their projects. The initiative will also support other capacity-building activities, such as the development of tools, resources, and standardized approaches. Funding does not cover capital costs.	Build capacity in the market to support deep retrofit planning and project development for large buildings.	Economic Fiscal Education Research Enabling	Implemented	Energy Industrial Processes and Product Use	CO_2	2022	Natural Resources Canada	NA[b]	NE[f]
BDG-10	Greener Neighbourhoods Pilot Program (GNPP)	Focusing on clusters of low-rise housing, the Greener Neighbourhoods Pilot	Pilot aggregated deep energy building retrofits	Fiscal Economic	Implemented	Energy Industrial Processes	CO_2	2022	Natural Resources Canada	NA[b]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Program will pilot the Energiesprong aggregated deep energy retrofit model in the Canadian market. This model accelerates the pace and scale of retrofits by aggregating similar homes and buildings in an entire neighbourhood to create mass demand for deep energy retrofits. GNPP primarily plays an enabling role, as most emission reductions will accrue indirectly and in the long term as a result of the commercialization, scale up, and adoption of retrofits.	at neighbourhood scale.	Research Education Enabling		and Product Use					
ELE-01	Phase out of conventional coal-fired power plants by 2030*	Amend existing coal-fired electricity regulations to accelerate the phase out of traditional coal-fired electricity by 2030.	Reduce GHG emissions from coal-fired electricity generation.	Regulatory	Implemented	Energy	CO_2	2015	Environment and Climate Change Canada	NE[f]	NE[f]
ELE-02	Regulatory performance standards for new natural gas units and converted coal-to-gas units*	Set performance standards for natural gas-fired electricity generation.	Limit GHG emissions from natural gas-fired electricity.	Regulatory	Implemented	Energy	CO_2	2019	Environment and Climate Change Canada	NE[f]	NE[f]
ELE-03	Emerging Renewable Power Program (ERPP)*	Support deployment of emerging renewables not yet established commercially in Canada, such as	Support deployment of emerging renewable power projects.	Fiscal Economic	Implemented	Energy	CO_2	2018	Natural Resources Canada	27.98	45.80

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		geothermal, tidal, and offshore wind.									
ELE-04	Smart Renewables and Electrification Pathways Program (SREPs)**	Launched in 2021, the Smart Renewables and Electrification Pathways Program (SREPs) will provide approximately $4.5B until 2035 to support the deployment of clean electricity infrastructure and other technologies necessary for maintaining a reliable, affordable, and decarbonized electricity system. This includes a nearly $3B recapitalization announced in Budget 2023, to support critical regional priorities, Indigenous-led clean energy projects, and to add transmission to the Program's eligibility criteria. All SREPs funds announced in Budgets 2021 and 2022 ($1.56B) are fully allocated to approved projects and regional priorities.	Support renewable energy deployment projects, which can provide grid services and grid modernization projects, as well as Capacity Building projects to support the equitable transition to a cleaner electrical grid.	Economic Fiscal Research	Implemented	Energy	CO_2	2021	Natural Resources Canada	24.01	4,671.59
ELE-05	Wah-ila-toos: Reducing diesel in Indigenous, rural and remote communities	An interdepartmental single-window initiative that aims to streamline access to federal funding programs for Indigenous, rural, and remote communities looking to transition	Reduce consumption of diesel fossil fuels.	Fiscal Information Education Enabling	Implemented	Energy	NA	2021	Natural Resources Canada Crown-Indigenous Relations and	NA[d]	NA[d]

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		from using diesel for heat and power towards efficient, clean, and renewable energy options.							Northern Affairs Canada Indigenous Services Canada Environment and Climate Change Canada		
ELE-05.1	Indigenous Off-Diesel Initiative (IODI)* *Part of Wah-ila-toos (ELE-05)*	The Indigenous Off-Diesel Initiative (IODI) is a clean energy training and funding program that supports Indigenous-led climate solutions in remote Indigenous communities that currently use diesel or fossil fuels for heat and power. IODI supports participants, called Energy Champions, in their journey from training through to project implementation. Projects supported under IODI are Indigenous-led, community-driven and focused on supporting local capacity building, community energy planning, and development of clean	A clean energy training and funding program that supports Indigenous-led climate solutions in remote Indigenous communities that currently use diesel or fossil fuels for heat and power.	Education Fiscal Enabling	Implemented	Energy	NA	2019	Natural Resources Canada	NA[d]	NA[d,9]

[9] The Indigenous Off-Diesel Initiative is an emissions enabling measure (not a direct emission reduction program) that provides renewable energy training to support Indigenous-led climate solutions in remote Indigenous communities that use diesel or fossil fuels for heat and power.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		energy projects. IODI plays a key enabling role in supporting the transition to clean energy and emission reductions by supporting renewable energy training, community capacity building, and the development of community-led energy plans.									
ELE-05.2	Clean Energy for Rural and Remote Communities (CERRC)* *Part of Wah-ila-toos (ELE-05)*	The Clean Energy for Rural and Remote Communities (CERRC) program supports the reduction of diesel and fossil fuels used for heat and power in Indigenous, rural, and remote communities by supporting communities in deploying and demonstrating renewable energy projects, building skills and capacity. The program prioritizes Indigenous-led projects and the participation of women and youth. The program's four streams include capacity building, demonstration, deployment, and BioHeat.	Support the reduction of diesel and fossil fuels used for heat and power in Indigenous, rural, and remote communities.	Fiscal Education Enabling	Implemented	Energy	CO_2	2017	Natural Resources Canada	NE[f]	115.00
ELE-05.3	Northern Responsible Energy Approach	Funding to support Indigenous and northern communities	Support clean energy projects and related	Fiscal Research	Implemented	Energy	CO_2	2016	Crown-Indigenous Relations and	NE[f]	23.00

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	for Community Heat and Electricity (REACHE) *Part of Wah-ila-toos (ELE-05)*	in their transition to renewable, sustainable, and affordable sources of energy. Budget 2021 provided $60M over seven years.	capacity-building initiatives in the North with the aim of reducing reliance on diesel.	Information Education					Northern Affairs Canada		
ELE-06	Indigenous Clean Energy Program	Investments, starting in 2021-22, through the Strategic Partnerships Initiative (SPI) to build capacity for local, economically sustainable clean energy projects in First Nations, Inuit, and Métis communities and support economic development opportunities. Budget 2024 renewed SPI Clean Energy's investment, $36M, over 3 years.	Support Indigenous communities' capacity and readiness to develop economically sustainable clean energy projects.	Economic Fiscal Enabling	Implemented	Energy	NA	2021	Indigenous Services Canada	NA[d]	NA[d]
ELE-08	Strategic Interties Predevelopment Program (SIPP)*	The $25M Strategic Interties Predevelopment Program is targeted at supporting the predevelopment of interprovincial transmission in Atlantic Canada and as of July 2024 has approved funding for four predevelopment projects with $21M in funding committed.	Provide funding for interprovincial electricity transmission infrastructure projects.	Fiscal Information Research Enabling	Implemented	Energy	CO_2	2021	Natural Resources Canada	NE[d]	NE[d]
ELE-09	Small Modular Reactor (SMR) Action Plan	Canada's SMR Action Plan, released in 2020, was a platform for Canada's nuclear	Advance efforts towards the design, development,	Voluntary Agreement Fiscal	Implemented	Energy	NA	2020	Natural Resources Canada	NA[d]	NA[d]

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		industry participants to articulate their ambitions and efforts for supporting the design, development, demonstration, and deployment of SMRs for multiple applications both domestically and abroad. As one of the 27 federal actions under the plan, the Government of Canada committed to convening an SMR Leadership table, including senior representatives from the federal government, interested provincial and territorial governments, Indigenous communities, utilities, industry, and non-governmental organizations.	demonstration, and deployment of SMRs, particularly in areas currently reliant and higher-emissions energy sources, including heavy industry and in remote communities.	Research Education Information Planning Enabling							
ELE-09.1	Enabling Small Modular Reactors (ESMR) Program *Part of the Small Modular Reactor (SMR) Action Plan (ELE-09)*	In 2023, NRCan launched the $30M Enabling SMR program to support domestic small modular reactor research and development. The Program aims to support the conditions and enabling frameworks necessary for SMRs to displace fossil fuels and contribute to climate	Fund research and development (R&D) to support provinces and territories as they work to develop and deploy SMRs as part of their respective decarbonization and economic development plans.	Fiscal Research Education Enabling	Implemented	Energy	NA	2023	Natural Resources Canada	NA[b]	NA[d]

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		change mitigation while enhancing gender-equality, diversity, and inclusion in the nuclear sector.									
ELE-10	Clean Electricity Regulations**	Set an annual emissions limit for fossil fuel-fired electricity generating units over 25 MW.	Reduce GHG emissions from electricity generation while maintaining reliable and affordable electricity.	Regulatory	Planned	Energy	CO_2	2025	Environment and Climate Change Canada	NA[b]	NE[e]
ELE-11	Electricity Predevelopment Program (EPP)	The Electricity Predevelopment Program (EPP) is a $250M program to support predevelopment activities associated with nationally and regionally significant, large-scale non-emitting clean electricity infrastructure projects (generation projects, transmission, and grid infrastructure) with significant predevelopment requirements (e.g., community engagement, and environmental and regulatory studies). As of July 2024, the program has signed seven contribution agreements, with $127M in funding committed.	Support predevelopment activities for clean electricity projects of regional and national significance.	Fiscal Enabling	Implemented	Energy	NA	2022	Natural Resources Canada	NA[b]	NA[d]

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ELE-13	Atlantic Loop Initiative*	The Governments of Canada, New Brunswick, and Nova Scotia are working to advance two tracks of collaborative work to support the phase out of coal-fired electricity generation by 2030 and a net-zero economy by 2050. The first phase of the Atlantic Loop, the Point Lepreau–Salisbury–Onslow Transmission Line connecting NS and NB was identified as a near-term 2030 priority.	Lead engagement across Atlantic Canada to shape a clear path forward for the Atlantic Loop initiative.	Voluntary Agreement Research Planning Enabling	Implemented	Energy	NA	2022	Natural Resources Canada	NA[b]	NA[d]
ELE-14	Clean Electricity Investment Tax Credit*	Budget 2024 announced the design and implementation details of the proposed 15% refundable tax credit for eligible investments in: certain low-emitting electricity generation systems; stationary electricity storage systems; and transmission of electricity between provinces and territories. The tax credit would be available to certain taxable and non-taxable corporations. Provided that a provincial and territorial government satisfies additional conditions,	Encourage adoption of certain clean electricity technologies and accelerate progress towards a Canada-wide net-zero electricity grid.	Economic Fiscal	Adopted	Energy	CO_2, CH_4, N_2O	2024	Finance Canada Canada Revenue Agency	NA[b]	NE[f]

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		the tax credit would be available to provincial and territorial Crown corporations investing in that province or territory.									
HVI-06	Enhancing Canada's supply of critical minerals	Create a Critical Minerals Centre of Excellence to lead the development and coordination of Canada's policies and programs on critical minerals, in collaboration with industry, provincial, territorial, Indigenous, non-governmental, international partners, and other government departments.	Support development of critical minerals.	Fiscal Economic Education Planning Research Enabling	Adopted	Energy Industrial Processes and Product Use Transport	NA	2024	Natural Resources Canada National Research Council Canada	NA[b]	NA[d]
HVI-06.1	Critical Minerals Geoscience and Data (CMGD) Initiative *Part of Enhancing Canada's Supply of Critical Minerals (HVI-06)*	$79.2M over 4 years to accelerate public geoscience for critical minerals. The program provides funding to advance the availability of valuable data and insights on the location, quality, and economic feasibility of critical minerals resources.	Support development of critical minerals.	Fiscal Economic Research Enabling	Adopted	Energy Industrial Processes and Product Use	NA	2024	Natural Resources Canada	NA[b]	NA[d]
HVI-06.2	Critical Minerals Research, Development and Demonstration (CMRDD) Program *Part of Enhancing Canada's Supply of*	The program aims to provide funding to critical mineral projects to improve the feasibility of producing or commercializing their novel technologies and innovative process	Support development of critical minerals.	Fiscal Research Enabling	Adopted	Energy Industrial Processes and Product Use	NA	2024	Natural Resources Canada National Research Council Canada	NA[b]	NA[d]

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	Critical Minerals (HVI-06)	designs and support the enhanced environmental and social performance of their production methods.									
HVI-06.3	Critical minerals target, Strategic Innovation Fund (SIF) *Part of Enhancing Canada's Supply of Critical Minerals (HVI-06)*	Increase the supply of responsibly sourced critical minerals and support the development of domestic and global value chains for the green and digital economy. $1.5B in funding is projected for critical mineral projects from 2023-24 to 2029-30.	Expand Canada's capacity for responsible production, processing, recycling, and manufacturing of critical minerals, supporting clean technologies, advanced manufacturing, and supply chain security.	Fiscal Economic Education Research Enabling	Implemented	Energy Industrial Processes and Product Use	NA	2022	Innovation, Science and Economic Development Canada	NA[b]	NA[d]
HVI-06.4	Critical mineral concierge service *Part of Enhancing Canada's Supply of Critical Minerals (HVI-06)*	$21.5M to support the Critical Minerals Centre of Excellence (CMCE) to develop federal policies and programs on critical minerals and to assist project developers in navigating regulatory processes and federal support measures.	Support development of critical minerals.	Fiscal Enabling	Adopted	Energy Industrial Processes and Product Use	NA	2024	Natural Resources Canada	NA[b]	NA[d]
HVI-06.5	Global partnerships *Part of Enhancing Canada's Supply of Critical Minerals (HVI-06)*	Support Canada's international commitments and engagements in critical minerals related to geoscience, R&D, trade and investment attraction, and transparency and sustainability initiatives.	Support development of critical minerals.	Fiscal Research Enabling	Adopted	Energy Industrial Processes and Product Use	NA	2024	Natural Resources Canada	NA[b]	NA[d]

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HVI-06.6	Northern Regulatory Initiative *Referred to as "Northern regulatory affairs" in the 2023 Progress Report* *Part of Enhancing Canada's Supply of Critical Minerals (HVI-06)*	$40M to advance Canada's northern and territorial critical minerals agenda by supporting regulatory dialogue, regional studies, land-use planning, impact assessments and Indigenous consultation. The program aims to reduce uncertainty and risk associated with incomplete or unsupported elements of northern regulatory systems, increase confidence and efficiencies, and further support meaningful Indigenous participation in northern resource management processes.	Improve management of and Indigenous participation in northern regulatory processes.	Fiscal Research Planning Enabling	Adopted	Energy Industrial Processes and Product Use	NA	2023	Crown-Indigenous Relations and Northern Affairs Canada Natural Resources Canada	NA[b]	NA[d]
HVI-06.7	Critical Mineral Infrastructure Fund (CMIF) *Part of Enhancing Canada's Supply of Critical Minerals (HVI-06)*	The CMIF will support clean energy and transportation infrastructure projects necessary to develop and expand Canada's critical mineral production.	Support development of critical minerals.	Fiscal Research Enabling	Adopted	Energy Industrial Processes and Product Use Transport	CO_2	2024	Natural Resources Canada	NA[b]	NA[d]
HVI-08	Buy Clean policy approach *Referred to as Buy Clean Strategy in the 2023 Progress Report*	The Government introduced a Buy Clean policy approach in July 2024, as part of the Canada Green Buildings Strategy, to support and prioritize	Support a shift to low-carbon materials and design through federal construction procurement and	Fiscal Research Information Planning	Implemented	Energy	CO_2	2024	Natural Resources Canada Housing, Infrastructure, and	NA[b]	NE[f]

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	Part of the Canada Green Buildings Strategy (BDG-09)	the use of made-in-Canada low-carbon products in Canadian infrastructure projects.	public infrastructure asset investments, which reduces the full life cycle of emissions from building materials and projects, fosters manufacturing competitiveness, and creates jobs.						Communities Canada Public Services and Procurement Canada Treasury Board of Canada Secretariat National Research Council Canada		
OIG-02	Oil and gas methane regulations*	Current federal oil and gas methane regulations are in place with the objective to reduce Oil and Gas sector methane emissions by 40% to 45% below 2012 levels by 2025. In 2021, the Government committed to develop measures to further reduce methane emissions from the Oil and Gas sector by at least 75% relative to 2012 levels by 2030. Towards this strengthened target, Amendments to the oil and gas methane regulations are expected to be published in winter 2024-25. Strengthened requirements under the	Reduce methane emissions from the Oil and Gas sector in Canada.	Regulatory	Implemented	Energy	CH_4	2020	Environment and Climate Change Canada	4,000.00	20,000.00

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		Amendments will be phased in beginning in 2027, with full implementation by 2030.									
OIG-03	Oil and Gas Emissions Cap**	Cap and reduce Oil and Gas sector emissions at a pace and scale necessary to contribute to Canada's 2030 climate goals, to achieve net-zero GHG emissions by 2050, and in a way that allows the sector to compete in the emerging net-zero global economy. Draft regulations were released on November 4, 2024. The comment period ends January 8, 2025.	Limit and reduce emissions from the Oil and Gas sector.	Regulatory	Planned	Energy	CH_4, CO_2, N_2O, HFCs, PFCs, SF_6, NF_3	TBD	Environment and Climate Change Canada Natural Resources Canada	NA[b]	NE[e]
OIG-04	Phasing out inefficient fossil fuel subsidies	In 2009, G20 leaders committed to "rationalize and phase out over the medium-term inefficient fossil fuel subsidies." At the North American Leaders' Summit on June 29, 2016, Canada agreed to implement this commitment by 2025. As directed in the mandate letters for the Ministers of Environment and Climate Change and of	Eliminate inefficient fossil fuel subsidies.	Fiscal Economic Planning Voluntary Agreement Enabling	Implemented	Energy	CO_2, CH_4	2023	Environment and Climate Change Canada Finance Canada Natural Resources Canada	NA[b]	NE[d]

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		Finance, Canada subsequently committed to an accelerated timeline to eliminate inefficient fossil fuel subsidies by 2023, and to develop a plan to phase out public financing of the fossil fuel sector, including by federal Crown corporations.									
GRG-03	Federal Clean Electricity Fund	PSPC is implementing, on behalf of the Government of Canada, a procurement strategy to provide clean electricity to the federal community in order to address the Greening Government Strategy's commitment to use 100% clean electricity.	100% clean electricity use for federal operations.	Fiscal Planning	Planned	Energy	CO_2	2020	Public Services and Procurement Canada	0.00	22.00
BC-ENG-01	British Columbia Innovative Clean Energy (ICE) Fund	The Innovative Clean Energy Fund is funded through a levy on energy sales, designed to support the Province's energy, economic, environmental and GHG reduction priorities, to advance BC's clean energy sector. The fund supports pre-commercial clean energy technology projects, clean energy vehicles, research and development, and	Support advancement of clean energy technologies.	Economic Fiscal Research	Implemented	Energy Transport Industrial Processes and Product Use	CO_2	2008	British Columbia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		energy efficiency programs.									
BC-ENG-02	British Columbia Natural Gas Utility GHG Emissions Cap**	A GHG emissions cap for natural gas utilities is being considered. As per the CleanBC Roadmap to 2030, the cap may be set at approximately 6 Mt CO_2 eq per year for 2030 and include a variety of compliance options.	Reduce GHG emissions from buildings and industry.	Regulatory	Planned	Energy	CO_2	2030	British Columbia	NA[b]	NE[e]
BC-ENG-03	CleanBC Building Innovation Fund (CBBIF)	The CBBIF provides incentives to BC manufacturers and technology developers to commercialize and demonstrate new energy efficient and low-carbon building technologies, designs, and practices. Investments in low-carbon technologies through the Building Innovation Fund including heating and ventilation equipment, digital tools, construction systems as well as mass timber manufacturing technology and demonstration projects.	Reduce emissions from buildings.	Economic Fiscal Education Information Research	Implemented	Energy Industrial Processes and Product Use	CO_2	2021	British Columbia	NA[f]	NE[f]
BC-ENG-04	British Columbia Building Green Code*	British Columbia's Building Green Code works to improve energy efficiency in the building sector,	Improve energy efficiency in new houses and buildings.	Regulatory Research	Implemented	Energy Industrial Processes	CO_2	2008	British Columbia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		including for large residential, industrial, and commercial buildings, houses, and small buildings, as well as in public sector buildings, including a LEED Gold requirement and research on low carbon building material options. The CleanBC Roadmap to 2030 sets BC's path to zero carbon new construction by 2030.		Voluntary Agreement		and Product Use					
BC-ENG-05	British Columbia Climate Action Charter (Charter) / Local Government Climate Action Program (LGCAP)	The Charter is a voluntary agreement between provincial and municipal governments to work towards carbon neutral operations and complete, compact, low carbon communities. As of 2023, all local governments in BC have signed on to the Charter. BC introduced LGCAP for signatories to the BC Climate Action Charter. The LGCAP provides funding for local governments and Modern Treaty Nations to plan and implement climate action that will reduce emissions, create new opportunities for	Reduce GHG emissions in buildings, transportation, and waste.	Economic Fiscal Voluntary Agreement Education	Implemented	Energy Transport Waste Management	CO_2	2008	British Columbia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		people in the clean economy and prepare communities for future climate impacts. As of March 2024, the Province has paid out ~$120.5M to LGCAP participants.									
BC-ENG-06	British Columbia Technology and Retrofit Incentive Programs: CleanBC Better Homes and Better Buildings*	The Better Homes program has enhanced affordability and accessibility with a heat pump top-up for northern residents, expanded funding for income qualified participants, and a growing network of qualified home performance contractors. In May 2024, BC and Canada provided additional investments (up to $103.7M from Canada and $151M from BC) for building upgrades through the CleanBC Better Homes Energy Savings Program.	Reduce GHG emissions in buildings.	Economic Fiscal Education	Implemented	Energy Industrial Processes and Product Use	CO_2	2015	British Columbia	NE[f]	NE[f]
BC-ENG-07	Energy Efficiency Standards Regulation**	As part of the Roadmap to 2030 commitments, BC is also working on regulatory amendments to help ensure that all space and water heating equipment sold in BC after 2030 meet the highest-efficiency standards.	Increase energy efficiency in buildings.	Regulatory	Implemented	Energy	CO_2, CH_4, N_2O, NF_3, HFCs, PFCs, SF_6	2021	British Columbia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
BC-ENG-08	Low Carbon Building Materials Strategy	In January 2024, British Columbia worked with the Pacific Coast Collaborative (PCC) to release its Vision and Action Plan for a Low Carbon Pacific Coast Construction Sector. The goal is to promote a regional low-carbon construction sector and strengthen building decarbonization efforts across Pacific Coast cities, states, and BC BC's Mass Timber Action Plan maximizes opportunities for British Columbia as the market for mass timber grows across North America. It draws from government, industry, and academia to create new economic value from our forest resources, manufacturing base, construction sector, and trade networks.	Reduce the embedded carbon in infrastructure.	Economic Planning	Adopted	Energy Industrial Processes and Product Use	CO_2	2023	British Columbia	NA[b]	NE[e]
BC-ENG-09	British Columbia *Clean Energy Act*: Clean or Renewable Electricity Requirement**	As part of the Roadmap to 2030, BC is committing to adopting a 100% clean electricity delivery standard. BC Hydro will meet the new standard by ensuring it has produced or acquired sufficient	Maintain low carbon electricity supply.	Regulatory	Implemented	Energy	CO_2, CH_4	2010	British Columbia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		clean electricity to meet the needs of its domestic customers and phasing out remaining gas-fired facilities on its integrated grid by 2030.									
BC-ENG-10	British Columbia *Clean Energy Act*: Demand Side Management*	British Columbia amended the Greenhouse Gas Reduction (Clean Energy) Regulation to allow utilities to take demand-side measures to encourage customers to switch from higher-emission fuels to clean electricity. BC Hydro is required to meet 66% of its forecasted incremental electricity demand through demand-side management. BC also amended the Demand-Side Measures Regulation to discontinue the ability of utilities to offer rebates for natural gas equipment that is less than 100% energy efficient.	Reduce emissions from utilities consumers.	Regulatory Economic	Implemented	Energy	CO_2	2010	British Columbia	NE[f]	NE[f]
BC-ENG-11	BC Centre for Innovation and Clean Energy (CICE)	CICE has supported several innovative projects including development of a prototype battery energy storage system for high-speed vessels,	Reduce emissions from industry.	Research Fiscal Economic Information	Implemented	Energy Industrial Processes and Product Use	CO_2, CH_4	2021	British Columbia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		a hydrogen fuel supply infrastructure program to support heavy-duty hydrogen fuel cell electric trucks, and supply chains for the oil refining industry to comply with the BC low carbon fuel standard.		Enabling		Transport					
BC-ENG-12	CleanBC Program for Industry*	Through the CleanBC Program for Industry, BC directs a portion of carbon taxes paid by industry into incentives for cleaner operations (e.g., transmission grids, access to low carbon fuels). The CleanBC Industry Fund (CIF) invests in GHG-reducing projects and increases opportunities for innovative clean technologies.	Reduce GHG emissions from industry.	Economic	Implemented	Energy Industrial Processes and Product Use Transport	CH_4, N_2O, CO_2	2019	British Columbia	NE[f]	NE[f]
BC-ENG-13	Industrial Electrification*	The Province and BC Hydro provided a 20% discount from standard industrial electricity rates for new and existing industrial customers who power their operations with clean electricity. The discounted rates apply to new clean industries setting up or expanding operations in BC (including hydrogen and biofuels); eligible existing customers that	Reduce GHG emissions from industry.	Economic	Implemented	Energy	CO_2	2021	British Columbia BC Hydro	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		install new equipment that uses electricity rather than fossil fuels; and eligible new customers that can demonstrate they could have used fossil fuels rather than electricity to power their facilities.									
BC-ENG-14	British Columbia Electrification of the Natural Gas Sector*	Amendments to the GHG Reduction Regulation supports the development of additional transmission infrastructure in northeast BC to provide clean electricity to meet increasing demand from the upstream natural gas sector. The regulation enables BC Hydro to provide incentives for electrification to bridge the cost difference between using natural gas and electricity in upstream oil and gas infrastructure.	Reduce oil and gas GHG emissions.	Economic Regulatory	Implemented	Energy	CH_4, CO_2, N_2O	2016	British Columbia	NE[f]	NE[f]
BC-ENG-15	British Columbia Methane Reduction Policy/Regulations*	This policy aims to reduce methane emissions from upstream oil and gas operations to meet or exceed federal and provincial methane emission reduction targets. The policy targets extraction and processing emissions and targets a 45% reduction by 2025 in	Reduce oil and gas GHG emissions.	Regulatory	Implemented	Energy	CH_4	2017	British Columbia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		fugitive and vented emissions compared to 2014 levels. The CleanBC Roadmap to 2030 further commits to implementing stronger methane policies that will reduce methane emissions from the oil and gas sector by 75% below 2014 levels by 2030 and nearly eliminate all industrial methane emissions by 2035.									
BC-ENG-16	British Columbia Regulatory Framework for Carbon Capture and Storage	The framework allows for carbon capture and storage projects at natural gas extraction and processing facilities. It also supports the storage of carbon dioxide from non-oil and gas industrial emitters. Work is ongoing to improve and clarify regulatory guidance, fiscal supports, and communications to provide certainty to industry, increase Indigenous capacity to participate in the sector, and further encourage all types of carbon capture and storage projects to proceed.	Reduce oil and gas GHG emissions.	Regulatory Planning Research	Planned	Energy	CO_2	TBD	British Columbia	NA[b]	NE[e]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
BC-ENG-17	Oil and Gas Royalty System	In 2022 British Columbia announced that it will be implementing a new Oil and Gas Royalty System that will be a revenue-minus-cost system. It will eliminate the Deep Well Royalty Program, the largest oil and gas subsidy, as well as other outdated and inefficient programs, such as the Marginal Well, Ultramarginal Well, Low Productivity Well Rate Reduction and the Clean Growth Infrastructure Royalty programs. Starting in September 2022, new wells drilled would not qualify for any of the legacy incentive programs and a transition royalty system was introduced that will be in place until the new system is fully implemented.	Reduce oil and gas GHG emissions.	Economic Regulatory Planning	Adopted	Energy	CH_4, CO_2	2022	British Columbia	NA[b]	NE[f]
AB-ENG-01	Alberta Large Emitter Greenhouse Gas Regulations*	Alberta has regulated GHG emissions from large industry since 2007 with a focus on sites emitting more than 100,000 t CO_2 eq	Reduce the emissions intensity of large emitters.	Economic Regulatory	Implemented	Energy Industrial Processes and Product Use	CH_4, CO_2, HFCs, N_2O, NF_3, PFCs, SF_6	2007	Alberta	NE[f,10]	20,000.00

[10] 2020 Emissions reduction estimate was 14,000 kt. Note that estimated mitigation impacts are relative to 2015 projections and also include the impacts of measures such as: renewable electricity program; carbon capture, use and storage; coal phase-out; and methane regulations.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		annually. These entities represent approximately half of the province's emissions. These regulations include: • 2007–forward: Specified Gas Emitters Regulation • 2018–2019: Carbon Competitiveness Incentive Regulation • 2020–forward: Technology Innovation and Emissions Reduction (TIER) Regulation									
AB-ENG-02	Alberta Renewable Fuels Standard (RFS)*	The Alberta RFS pertains to fuels produced from renewable materials in the form of renewable fuel alcohols such as ethanol (used in gasoline) and bio-based diesel (used in diesel). The RFS requires a minimum annual average of 5% renewable alcohol in gasoline and 2% renewable diesel in diesel fuel sold in Alberta by fuel suppliers. To meet the RFS, renewable fuels must demonstrate at least 25% fewer GHG emissions than the	Reduce emissions from fuels.	Regulatory	Implemented	Energy Transport	CH_4, CO_2, HFCs, N_2O, NF_3, PFCs, SF_6	2020	Alberta	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		equivalent petroleum fuel.									
AB-ENG-03	Industrial Energy Efficiency and Carbon Capture Utilization and Storage (IEE CCUS) Grant Program	The $131M Industrial Energy Efficiency and Carbon Capture Utilization and Storage (IEE CCUS) Grant Program is part of Alberta's $750M investment from the TIER Fund to cut emissions, create jobs and contribute to Alberta's economic recovery. The IEE CCUS program is helping Alberta's large industrial emitters reduce emissions; increase competitiveness; lower carbon compliance costs; and improve energy efficiency through technology and equipment upgrades.	Reduce emissions from large emitters.	Economic	Implemented	Energy Industrial Processes and Product Use	CO_2	2020	Alberta	NE[f]	NE[f]
AB-ENG-04	Alberta Coal-Fired Electricity Generation phase-out*	As part of Alberta's Climate Leadership Plan announced in 2015, pollution from coal-fired sources of electricity will be phased out completely by 2030. Alberta is on track to surpass this with projections that all coal power will be eliminated by 2024. Estimate of mitigation impact in 2030 is included in Large	Phase out the use of coal as a source of electricity by 2030.	Regulatory Education Fiscal Voluntary Agreement	Implemented	Energy	CO_2	2015	Alberta	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Emitter Greenhouse Gas Regulations impacts.									
AB-ENG-05	Alberta *Renewable Electricity Act*	Outlines Alberta's commitment to increasing renewable electricity generation to meet the legislated target of 30% of Alberta's electricity from renewable sources by 2030.	Increase renewable electricity generation.	Regulatory Fiscal	Implemented	Energy	CO_2	2016	Alberta	NE[f]	NE[f]
AB-ENG-06	*Electricity Statutes (Modernizing Alberta's Electricity Grid) Amendment Act, 2022*	The *Electricity Statutes (Modernizing Alberta's Electricity Grid) Amendment Act, 2022*, helps Alberta's electricity system meet the evolving needs of consumers. It fosters a low-carbon future through investment from industry rather than costly subsidies from taxpayers and ensures that consumers continue to have access to safe, reliable, and affordable electricity.	Modernize Alberta's electricity grid.	Regulatory Economic	Implemented	Energy	CO_2	2022	Alberta	NA[b]	NE[f]
AB-ENG-07	*Geothermal Resource Development Act*	Establishes a clear path forward for geothermal projects, while ensuring the resource is developed responsibly and in the best interest of Albertans.	Increase renewable electricity generation.	Regulatory	Implemented	Energy	CO_2	2020	Alberta	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
AB-ENG-08	Alberta's Hydrogen Roadmap	Alberta's Hydrogen Roadmap outlines a strategy to develop an integrated hydrogen economy and create low-carbon hydrogen for domestic use and export to global markets. Increased usage of clean hydrogen can have a significant impact on emissions in a number of sectors, including industrial processes, commercial and residential heating, power generation, and transportation. Alberta's Hydrogen Roadmap outlines the enormous opportunity for government, industry, and municipalities to grow Alberta's hydrogen sector and position the province as an international leader in clean hydrogen.	Increase use of clean hydrogen.	Economic Fiscal Education Information Planning Research	Implemented	Energy Industrial Processes and Product Use Transport	CO_2, CH_4	2021	Alberta	NE[f]	6,000.00[11]
AB-ENG-09	Clean Hydrogen Centre of Excellence	The Alberta government invested $50M to create the new centre, which drives innovation in the production, deployment, and use of hydrogen across the economy. The centre is	Increase use of clean hydrogen	Fiscal Information Research Enabling	Implemented	Energy Industrial Processes and Product Use Transport	CO_2, CH_4	2022	Alberta	NA[b]	NE[d]

[11] Estimate of mitigation impact in 2030 ranges from 6,000.00 kt to 14,000.00 kt.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		a pillar in Alberta's Hydrogen Roadmap, which lays out the path to growing the provincial hydrogen economy and accessing global markets.									
AB-ENG-10	Renewing Alberta's Mineral Future	Renewing Alberta's Mineral Future sets a framework to capitalize on Alberta's vast mineral resources, and to expand the minerals industry in a sustainable way to meet the demands of an electrifying economy. As the first step toward implementation of the Minerals Strategy and Action Plan, the Government of Alberta passed Bill 82: the *Mineral Resource Development Act* in December 2021 to improve the regulatory environment and promote responsible mineral resource development.	Sustainably expand Alberta's minerals industry to meet the demands of the electrifying economy.	Economic Fiscal Education Information Planning Research Regulatory Enabling	Implemented	Energy Industrial Processes and Product Use	CO_2	2021	Alberta	NE[d]	NE[d]
AB-ENG-11	Alberta Directive 060: Upstream Petroleum Industry Flaring, Incinerating and Venting*	Requirements were developed in consultation with the Clean Air Strategic Alliance to eliminate or reduce the potential	Reduce flaring and venting in the Oil and Gas sector.	Regulatory Research Information	Implemented	Energy	CH_4, CO_2	1999	Alberta	NE[f,12]	NE[f]

[12] Estimated mitigation impact for 2020 was 4,000.00 kt.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		and observed impacts of these activities and to ensure that public safety concerns and environmental impacts are addressed before beginning to flare, incinerate, or vent. Directive 060 requirements are also aligned to ensure compliance with Alberta Environment and Sustainable Resource Development's Alberta Ambient Air Quality Objectives and Guidelines. The Directive was last updated in 2022.									
AB-ENG-12	Alberta Methane Emissions Program (AMEP)	The Alberta Methane Emissions Program (AMEP) is a three-year $17.6M initiative to support methane emissions reductions that is funded by the Government of Alberta through the TIER Fund. Carbon Management Canada and the Sundre Petroleum Operators Group were selected through a competitive process to deliver the program.	Reduce methane emissions from upstream oil and gas operations by 45% from 2014 level by 2025.	Fiscal Research	Implemented	Energy	CH_4	2021	Alberta	NE[f]	NE[f]
AB-ENG-13	Alberta *Oil Sands Emissions Limit Act**	Alberta's *Oil Sands Emissions Limit Act* provides a legislative framework for	Cap emissions from the oil sands sector to 100 Mt.	Regulatory Planning	Adopted	Energy	CO_2	2018	Alberta	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		implementing an annual oil sands GHG emissions cap of 100 Mt for oil sands facilities with provisions for co-generation and new upgrading capacity. Emissions remain below the limit.									
AB-ENG-14	Alberta reduction of methane emissions*	Alberta will reduce upstream oil and gas methane emissions by 45% below 2014 levels by 2025. This will be achieved through the implementation of methane emission reduction requirements contained in Alberta Energy Regulator Directive 060: Upstream Petroleum Industry Flaring, Incinerating and Venting and Directive 017: Measurement Requirements for Oil and Gas Operations. Estimates of mitigation impact are included under Alberta's Large Emitter Greenhouse Gas Regulations.	Reduce methane emissions from upstream oil and gas operations by 45% from 2014 level by 2025.	Regulatory	Implemented	Energy	CH_4	2020	Alberta	NE[f]	NE[f]
SK-ENG-01	Saskatchewan Regulation Respecting the Management and Reduction of Greenhouse Gases (General and Reporting)	These reporting regulations require all emitters of more than 10,000 t CO_2 eq annually to report emissions. The additional data will help produce a more robust provincial GHG	Regulate reporting of GHG emissions.	Regulatory Planning Enabling	Implemented	Energy Industrial Processes and Product Use	NA	2018	Saskatchewan	NA[d]	NA[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		inventory and allow Saskatchewan to efficiently target and reduce sources of GHG emissions in the province.									
SK-ENG-02	Saskatchewan Regulation Respecting the Management and Reduction of Greenhouse Gases (Standards and Compliance)*	Saskatchewan's sector-specific Output-Based Performance Standards (OBPS) Program applies to facilities emitting more than 25,000 t CO_2 eq per year. Registered facilities that emit more than is permitted must pay compliance. Compliance can be paid by making payments into the Saskatchewan Technology Fund, retiring performance credits, or retiring carbon capture, utilization and storage (CCUS) credits. Performance credits are awarded to regulated facilities that emit less than the permitted level. CCUS credits are awarded for net sequestration of CO_2. Both types of credits can be banked for future use or sold to other regulated facilities.	Reduce industrial emissions.	Economic Regulatory	Implemented	Energy Industrial Processes and Product Use	CO_2, CH_4, HFCs, N_2O, PFCs, SF_6	2019	Saskatchewan	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
SK-ENG-03	Saskatchewan SaskPower Demonstration and Implementation of Carbon Capture Technology*	Together with industry and government partners, Saskatchewan has initiated a number of capture and storage projects. These include the Aquistore deep saline geological formation CO_2 storage project; the Weyburn-Midale project; and the Boundary Dam Carbon Capture Facility. The Boundary Dam facility alone has captured over 6 Mt CO_2 since 2014. These emission reductions are not listed to avoid double counting since the Boundary Dam emission reductions are listed by the federal government (reported under the Energy Innovation Program).	Reduce GHG emissions from coal energy.	Voluntary Agreement Research	Implemented	Energy	CO_2	2014	Saskatchewan	NE[f]	NE[f]
SK-ENG-04	Saskatchewan Energy Efficiency Standards for Buildings*	Saskatchewan adopted the most recent edition of the National Building Code and the National Energy Code for Buildings to improve energy efficiency standards for houses, small and large buildings, and facilitate increased use of wood in construction to extend carbon storage. New government buildings are required	Reduce emissions associated with buildings.	Regulatory	Implemented	Energy Industrial Processes and Product Use	CO_2	2019	Saskatchewan	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		to exceed the energy performance requirements of the 2015 National Energy Code for Buildings by 10%. All new government builds and major renovations will be designed to meet or exceed LEED Silver certification standards.									
SK-ENG-05	Development and deployment of small modular reactors (SMRs)	The Saskatchewan Growth Plan commits the province to exploring the development and deployment of small modular reactors (SMRs) to supply safe and reliable zero-emissions baseload power.	Deploy 1,200 MW of non-emitting power from SMRs between 2034 and 2042 in Saskatchewan.	Fiscal Voluntary Agreement	Adopted	Energy	CO_2, CH_4, HFCs, N_2O, PFCs, SF_6	2021	Saskatchewan	NA[e]	NE[e]
SK-ENG-06	Saskatchewan Regulation Respecting the Management and Reduction of Greenhouse Gases (General and Electricity Producer)*	The Management and Reduction of Greenhouse Gases (General and Electricity Producer) Regulations impose a declining GHG emissions cap on the province's electricity sector (namely SaskPower) and impose a minor reporting obligation on independent power producers. These regulations underpin an equivalency agreement that avoid application of federal coal-fired electricity	Reduce emissions from electricity generation.	Regulatory	Implemented	Energy	CO_2, CH_4, HFCs, N_2O, PFCs, SF_6	2018	Saskatchewan	1,350.00	10,900.00

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		regulations in Saskatchewan.									
SK-ENG-07	SaskPower Electricity Initiatives	SaskPower is committed to reach net-zero GHG emissions by 2050 or sooner. SaskPower also set a target to achieve up to 50% of its generation capacity from non-emitting sources by 2030. SaskPower plans to retire approximately 1,300 MW of conventional coal generation by 2030 while expanding its wind and solar generation by as much as 2,000 MW. Meanwhile, expanded regional transmission interconnections, battery energy storage, new natural gas generation, and demand-side management programming are also planned.	Reduce GHG emissions from electricity generation and enhance supply of renewables.	Voluntary Agreement Planning	Implemented	Energy	CO_2	2007	Saskatchewan	NE[f]	NE[f]
SK-ENG-08	Small Modular Reactor Investment Fund	Saskatchewan has established the Small Modular Reactor Investment Fund, a segregated fund designed to support the future development of the province's first small modular nuclear reactor, which will	Expand non emitting electricity generation.	Fiscal Enabling	Implemented	Energy	CO_2, CH_4, N_2O	2023	Saskatchewan	NA[b]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		provide zero emission baseload power.									
SK-ENG-09	Clean Electricity Transition Grant	The Clean Electricity Transition Grant provides SaskPower with a grant for in-year clean electricity operating costs, including power purchase agreements for renewable electricity and customer-focused clean electricity, efficiency, and demand management programs. In 2024-25, the Clean Electricity Transition Grant is $140M.	Expand non emitting electricity generation.	Fiscal Voluntary Agreement	Implemented	Energy	CO_2, CH_4, N_2O	2023	Saskatchewan	NA[b]	NE[d]
SK-ENG-10	Net Metering Program	Through Net Metering, the price paid to customers for excess power generated and sent to the grid is 7.5¢ per kilowatt-hour to March 31, 2026. Those in the pre-2019 program receive credits equal to their retail power rate until 2029. Since 2007, total net metering installed generating capacity has reached nearly 50 MW.	Increase carbon neutral generation.	Voluntary Agreement Economic Fiscal	Implemented	Energy	CO_2, CH_4, N_2O	2007	Saskatchewan	NE[f]	NE[f]
SK-ENG-11	Power Generation Partnership Program	In October 2018, SaskPower introduced the new Power Generation Partner Program (PGPP) to replace the existing	Increase carbon neutral generation.	Voluntary Agreement Economic	Implemented	Energy	CO_2, CH_4, N_2O	2018	Saskatchewan	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Small Power Producers and Flare Gas Power Generation Programs. The PGPP provides customers with the opportunity to generate power using a qualified technology and sell it to SaskPower at an agreed-upon rate for a set period of time. As of July 2024, there are a total of 26 projects proceeding or in-service (24 solar and two carbon neutral), representing 22 MW of generation.									
SK-ENG-12	Saskatchewan Methane Action Plan*	Saskatchewan's Methane Action Plan, released in January 2019, introduced 10 new complementary policies and programs to reduce emissions from venting and flaring in the upstream oil and gas industry. New programs were introduced to incentivize and regulate with flexibility.	Reduce emissions from venting and flaring.	Regulatory	Implemented	Energy	CH_4	2019	Saskatchewan	NE[f]	38,200.00[13]
SK-ENG-13	Saskatchewan Oil and Gas Emissions Management Regulations*	Regulations under the Methane Action Plan to reduce GHG emissions from oil wells and facilities using a results-based system.	Reduce emissions from venting.	Regulatory	Implemented	Energy	CH_4	2019	Saskatchewan	7,000.00	7,000.00

[13] Estimated emissions reductions for 2030 are cumulative since 2020.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		The system allows industry to efficiently prioritize emission reduction investments to achieve greater emissions reduction at lower cost. The industry has flexibility to strategically plan its emissions reduction by adopting innovative technologies. The consecutive emissions reduction in the past 4 years demonstrate Saskatchewan's regulatory leadership and the innovation of the upstream oil and gas sector.									
SK-ENG-14	SaskEnergy – Rebate Programs	SaskEnergy, a Saskatchewan Crown corporation, offers several rebate programs aimed at increasing energy efficiency, including for: high efficiency heating upgrades for residential and commercial buildings, and for home renovations.	Improve efficiency of building operations.	Fiscal	Implemented	Energy	CO_2	2005	Saskatchewan	NE[f]	NE[f]
MB-ENG-01	Indigenous Community Energy Efficiency Program	In 2022, Efficiency Manitoba provided $440,000 to fund 11 energy efficiency advocate positions in First Nations Communities through its Indigenous Community Energy	Identify energy-saving opportunities in Indigenous communities.	Fiscal Education Voluntary Agreement Enabling	Implemented	Energy	CO_2	2022	Manitoba	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Efficiency Program. These positions are a two-year funded role ($40,000 per year) designed to create and implement community energy efficiency plans with guidance, training, and technical support from Efficiency Manitoba. The role of the advocate is to identify energy-saving opportunities in their community, with support from Efficiency Manitoba, and encourage participation in energy efficiency programs, leading to reduced energy consumption and lower energy bills in homes and businesses.									
MB-ENG-02	*The Efficiency Manitoba Act* and Energy Efficiency Programing*	Manitoba's newest Crown Corporation, Efficiency Manitoba, delivers demand-side management (DSM) programs and services to residential, Indigenous, income-qualified, commercial, institutional, industrial, and agricultural customers to assist them to reduce their use of electricity and natural gas. As per *The Efficiency Manitoba Act*, Efficiency	Reduce energy use and improve energy efficiency.	Regulatory Economic	Implemented	Energy	CO_2, CH_4	2020	Efficiency Manitoba	21.00	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Manitoba must meet legislated energy savings targets of 22.5% of domestic electricity demand (an average of 1.5% annually of domestic electricity consumption) and 11.25% of domestic natural gas demand (an average of 0.75% annually of natural gas consumption) over a 15-year period. Efficiency Manitoba offerings continue to expand to support energy efficiency programs across all sectors.									
MB-ENG-03	Manitoba Keeyask Hydro-electricity Project*	Manitoba constructed the Keeyask generating station, which added 695 MW of renewable electricity capacity in the province, when its first generator went into service in February 2021 and its seventh and final unit in March 2022. The project will allow for GHG reductions of approximately 3 Mt per year in Saskatchewan and US states.	Increase renewable energy generation (local and export).	Fiscal	Implemented	Energy	CO_2, CH_4	2021	Manitoba	3,000.00	3,000.00
MB-ENG-04	Manitoba Long-Term Energy Strategy	Manitoba is developing a long-term energy strategy that builds on the province's	Reduce emissions from transportation, heavy industry,	Information Planning	Planned	Energy Transport	NA	TBD	Manitoba	NA[b]	NA[e]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		significant renewable electricity assets and focuses on greening transportation, industrial, and building efficiency. This strategy will provide critical forward-looking information, set provincial policy objectives on energy, and outline pathways to meet the province's future energy needs while reducing GHG emissions.	and buildings sectors.	Enabling		Industrial Processes and Product Use					
MB-ENG-05	Ceased operation of two natural gas-generating units*	Two natural gas generating units ceased operations after Selkirk Generating Station was taken offline in April 2021, reducing emissions by 5,000 tonnes annually.	Ceased operation of two thermal generating units.	Voluntary Agreement	Implemented	Energy	CO_2, CH_4, N_2O	2021	Manitoba	5.00	5.00
ON-ENG-01	Electrification & Energy Transition Panel	The Electrification & Energy Transition Panel delivered their final report to government in December 2023, titled Ontario's Clean Energy Opportunity. The report builds on Powering Ontario's Growth and provides 29 recommendations for Ontario's future long-term integrated planning and the energy transition. The	Advise the Minister of Energy on key integrated energy planning matters related to electrification and energy transition.	Research Enabling	Adopted	Energy	NA	2022	Ontario	NA[b]	NA[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		report was made public on January 19, 2024. The Ministry is reviewing the Panel's recommendations and planning next steps toward a more integrated planning process later in 2024.									
ON-ENG-02	Ontario Energy Efficiency Standards for Products and Appliances and Equipment	Ontario's regulation O. Reg. 509/18 sets efficiency requirements for over 90 products using electricity, natural gas, and oil in the residential, commercial, and industrial sectors. Efficiency standards reduce energy use and GHG emissions across all sectors. Ontario is committed to regularly updating its efficiency standards and harmonizing its standards with leading North American jurisdictions, such as the US Department of Energy and Natural Resources Canada.	Reduce GHG emissions in the residential, commercial, and industrial sectors.	Regulatory	Implemented	Energy	CO_2, CH_4, N_2O	1989	Ontario	NE[f]	NE[f]
ON-ENG-03	Ontario Building Code*	In line with Ontario's commitments to more closely align with the National Construction Codes, the new 2024 Ontario Building Code (OBC) eliminated 1,730 technical	Establish standards and promote improvements in energy efficiency.	Regulatory	Planned	Energy Industrial Processes and Product Use	CO_2, CH_4, N_2O	2018	Ontario	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		variations between provincial and national codes, which represents more changes than any previous new edition. The OBC already had robust energy efficiency requirements. Therefore, rather than overwhelming the sector with more changes, the government decided to maintain its energy efficiency requirements in the new OBC.									
ON-ENG-04	Ontario Natural Gas Demand Side Management Programs*	Ontario's main natural gas utility, Enbridge Gas, has been delivering natural gas energy efficiency programs to its industrial, commercial, institutional, and residential customers for over 30 years, with oversight of Ontario Energy Board (OEB). From 2007 to 2022, Ontarians conserved over 2.3M m^3 of natural gas from natural gas conservation programs (the equivalent to the natural gas used by	Reduce natural gas consumption in the residential, commercial, and industrial sectors.	Economic	Implemented	Energy	CO_2	2003	Ontario	4,600.00[14]	NE[f]

[14] Estimated emissions reductions are cumulative from 2007 to 2022.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		about 1M homes per year). These persisting savings are equivalent to GHG emissions reductions of 4.6 Mt in the year 2022.									
ON-ENG-05	Net-zero Ontario Power Generation electricity by 2040	Ontario Power Generation, Ontario's largest electricity producer, plans to have net-zero emissions by 2040 through such actions as advancing electrification initiatives; advancing SMR development and deployment for both on-grid and off-grid applications, continued investment in hydroelectric generation and nuclear refurbishment, exploring opportunities in non-hydro renewables and energy storage, investigating negative emissions technology, and supporting nature-based solutions and biodiversity initiatives to help provide offsets and support resiliency.	Reach net-zero electricity emissions from Ontario Power Generation by 2040.	Fiscal Research Voluntary Agreement	Planned	Energy	CO_2, CH_4	TBD	Ontario	NA[b]	NE[e]
ON-ENG-06	Small Modular Reactors*	Moving forward with plans to deploy a total of four SMRs at the	Utilise SMR development to increase the	Economic Research	Planned	Energy	CO_2, CH_4	2028	Ontario	NA[b]	300.00[15]

[15] Estimated emissions reductions for 2030 range from 300.00 kt to 2,000.00 kt.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Darlington site. In June 2024, Ontario announced that early work for the first SMR has been completed on time and on budget, allowing the main site preparation work to begin. The SMRs would provide reliable and emission-free electricity to help meet growth in Ontario's electricity demand, including from increasing electrification of the economy. The construction of the first SMR at Darlington site is set to be completed by 2028. The other three SMRs are expected to enter into service between 2034 and 2036.	availability of clean electricity to meet Ontario's growing demand.								
ON-ENG-07	Ontario's Low-Carbon Hydrogen Strategy	Ontario's low-carbon hydrogen strategy aims to leverage clean electricity for hydrogen production to support investments in clean steel, electric vehicles, and energy storage, as well as create local jobs and attract investment while reducing GHG emissions.	Support development and use of hydrogen fuel in Ontario.	Information Education Planning Research Enabling	Adopted	Energy Industrial Processes and Product Use Transport	CO_2, CH_4, N_2O	2022	Ontario	NA[b]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
ON-ENG-08	Ontario Regulatory Changes and Investments for Reducing Coal Use in Energy-Intensive Industries	Regulatory changes have been developed for major-emitting industrial sectors (e.g., cement, lime, and iron and steel manufacturers) that would help facilities use alternative, less carbon intensive fuels (e.g., biomass and waste materials) in place of coal and petroleum coke, and stay competitive with other jurisdictions that similarly allow the use of alternative fuels. Investments to transition existing coal-fed furnaces to low-emission furnaces in Sault Ste. Marie and Hamilton will help sustain good-paying jobs and anchor the Ontario auto industry for generations to come while also reducing emissions.	Reduce GHG emissions, and coal and petroleum coke use.	Regulatory Fiscal	Implemented	Energy	CO_2	2015	Ontario Innovation, Science and Economic Development Canada	NE[f]	5,100.00
ON-ENG-09	Ontario Critical Minerals Strategy 2022–2027: Unlocking potential to drive economic recovery and prosperity	Ontario developed a critical minerals strategy to support Ontario's transition to a low-carbon economy within the province and abroad. Budget 2022 allocated $5M over two years to create a Critical Minerals Innovation Fund to	Supporting development of electric vehicle production in Ontario.	Research Fiscal Information Planning	Planned	Energy Transport Industrial Processes and Product Use	CO_2	2022	Ontario	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		support the mining industry, academia, start-ups, and research and developing firms to find innovative solutions for extraction and processing of critical minerals. Budget 2024 put an additional $15M over three years in the Critical Minerals Innovation Fund to enhance research and development.									
ON-ENG-10	Powering Ontario's Growth plan	The Ontario government is planning and building the electricity infrastructure required for a more electrified Ontario, where economic growth continues to drive new jobs and emissions continue to be reduced.	Provide families and industries with reliable, low-cost, and clean power.	Planning Information Research	Implemented	Energy	CO_2	2023	Ontario	NA[b]	NE[f]
ON-ENG-11	Clean Energy Credit Registry and Future Clean Electricity Fund	Ontario launched a clean energy credit (CEC) registry in 2023. Net proceeds from the sale of CECs from Ontario Power Generation and the Independent Electricity System Operator will be directed to the Future Clean Electricity Fund (FCEF), once established, which will help keep costs down for ratepayers by supporting the future	Support businesses to meet their environmental and sustainability goals and demonstrate that their electricity has been sourced from a non-fossil fuel resource.	Voluntary Agreement Regulatory Fiscal Enabling	Implemented	Energy	NA	2023	Ontario	NA[b]	NA[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		development of new clean energy projects in Ontario.									
ON-ENG-12	Electricity 2021 to 2024 Conservation and Demand Management Framework*	Ontario directs the Independent Electricity System Operator (IESO) to design, deliver, and fund the Conservation and Demand Management (CDM) electricity energy efficiency programs for the January 2021 to December 2024 framework. IESO sets out targets to reduce electricity usage through residential, commercial, industrial, and agricultural programs which are forecasted to achieve 725 MW of summer peak demand savings and 3.8 TWh of electricity consumption savings in 2024, reducing reliance on on-demand electricity production from natural gas electricity generators. Programs since 2006 delivered 15 TWh of persisting electricity savings in the year 2022 (equivalent to GHG emissions reductions of 3.2 Mt).	Help consumers manage their electricity use while meeting electricity system needs.	Information Fiscal	Implemented	Energy	CO_2	2021	Ontario	3,200.00	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
ON-ENG-13	Net Metering Regulation	Ontario's net metering framework supports customer adoption of behind-the-meter renewable distributed energy generation and energy storage. A net-metered customer can generate electricity for their own use and earn credits on their monthly bill for electricity sent to the distribution system. Amendments to the net metering regulation made in 2022 clarified eligibility for third-party ownership arrangements (such as leasing, financing, and power purchase agreements) and introduced consumer protection measures. These changes broaden access to net metering by allowing third-party energy service providers to finance the upfront capital costs of renewable generation systems.	To support on-site renewable energy generation.	Regulatory	Implemented	Energy	CO_2	2005	Ontario	NE[f]	NE[f]
ON-ENG-14	Community Net Metering Regulation	Regulation to support community net metering (CNM) demonstration pilot projects and enable innovative approaches to community energy	To support on-site renewable generation and net-zero communities.	Regulatory	Implemented	Energy	CO_2	2021	Ontario	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		planning, including credit sharing across all participating accounts in the CNM model. These changes will facilitate the implementation of the authorized CNM demonstration project, the West 5 development in London, Ontario, and assist in enabling the net-zero goals of the project. Lessons learned from the CNM demonstration project are intended to inform future options to enhance the net metering framework in Ontario, which could support increased development of net-zero buildings and communities to improve resilience, reduce GHG emissions and adapt to climate change.									
ON-ENG-15	Clean energy storage	New energy storage projects will support the operation of Ontario's clean electricity grid by drawing and storing electricity during off-peak periods when	Increase Ontario's clean electricity grid capacity.	Fiscal	Planned	Energy	CO_2	TBD	Ontario	NA[b]	NE[e]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		power demand is low, and returning the power to the system at times of higher electricity demand. The procurement of a targeted 2,500 MW of clean energy storage represents the largest battery procurement in Canada's history and will increase the efficiency of Ontario's clean electricity grid, complementing Ontario's 2023 agreement for the 250 MW Oneida Energy Storage Project.									
ON-ENG-16	Wataynikaneyap Power project	Supporting the construction of the Wataynikaneyap Power project, an initiative to connect 16 remote First Nation communities to the grid and reduce reliance on diesel fuel, by providing a construction phase loan; the project is expected to avoid 6.6 Mt of emissions from diesel generation over the life of the project.	Reduce First Nation communities' reliance on diesel fuel through grid connection.	Fiscal	Adopted	Energy	CO_2	2022	Wataynikaneyap Power Ontario	NA[b]	NE[e]
ON-ENG-17	Hydrogen Innovation Fund	In 2023, the IESO awarded $13.4M of funding across 15 projects through the Hydrogen Innovation	Develop opportunities for hydrogen to be integrated into Ontario's clean	Research Voluntary Agreement	Implemented	Energy Transport	CO_2, CH_4	2023	Independent Electricity System Operator (IESO)	NA[b]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Fund (HIF). These projects will help to improve Ontario's experience and understanding of the potential benefits and limitations of hydrogen in supporting the provincial electricity grid and powering economic growth.	electricity system, including hydrogen electricity storage.	Fiscal Enabling					Ontario		
ON-ENG-18	Broader Public Sector Energy Reporting and Benchmarking	A regulation for Broader Public Sector Organizations including municipalities, municipal service boards, school boards, post-secondary institutions, and hospitals to report their annual energy consumption to the Ministry of Energy and complete and update a conservation and demand management Plan every five years.	Reduce energy and GHG emissions by benchmarking consumption data.	Regulatory	Implemented	Energy	CO_2	2013	Ontario	NE[f]	NE[f]
ON-ENG-19	Energy and Water Reporting and Benchmarking Program	A regulation for owners and managers of privately owned buildings 50,000 square feet and above to report their annual energy and water consumption to the Ministry of Energy.	Reduce energy and water usage and GHG emissions by benchmarking consumption data.	Regulatory	Implemented	Energy	CO_2	2018	Ontario	NE[f]	NE[f]
ON-ENG-20	Municipal Energy Plan Program	This voluntary funding program which is open to all municipalities across the province, supports the development or	To support the development of community energy plans to reduce energy	Voluntary Agreement Fiscal Enabling	Implemented	Energy	NA	2013	Ontario	NA[d]	NA[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		enhancement of a municipal energy plan. There is no deadline and intake is ongoing. As of 2024, MEP program participants have represented 61 municipalities.	and GHG emissions.								
QC-ENG-01	Québec Bioenergy Program*	This program aims to reduce GHG emissions and the consumption of fossil fuels by funding specific energy conversion projects to switch from fossil fuels to residual forest biomass and other bioenergy sources. The program received additional funding under the 2024–2029 Implementation Plan. Total funding of $358.51M. Increase of $54M over the previous 5-year period.	Reduce GHG emissions from heating buildings and industrial energy demands.	Economic Fiscal	Implemented	Energy	CO_2	2013	Québec	79.00	NE[g]
QC-ENG-02	Québec EcoPerformance Program* *(link in French only)*	The EcoPerformance Program is available to businesses, institutions, and municipalities. Both small and large energy consumers can apply for financial assistance. The program aims to improve the energy efficiency of commercial and institutional buildings as well as that of industrial processes. In addition to direct	Reduce GHG emissions.	Economic Fiscal	Implemented	Energy Industrial Processes and Product Use	CO_2, HFCs	2013	Québec	913.00	NE[g]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		reductions projected in the short term, indirect, longer-term mitigation impacts are also expected. Total funding of $846.31M for EcoPerformance — Industry and $309.13M for EcoPerformance — Buildings (2024–2029 Implementation Plan).									
QC-ENG-03	Québec Green Hydrogen and Bioenergy Strategy*	Deployment of the Québec Green Hydrogen and Bioenergy Strategy will help diversify complementary solutions to electrification in order to decarbonize Québec, particularly in the industrial sector. The use of green hydrogen and bioenergy will, among other things, facilitate the management of electricity peaks in a context where the gradual abandonment of fossil fuels will result in increased pressure on hydroelectric networks. A major program of the 2030 Plan for a Green Economy is the Program to Support the Production of Renewable Natural Gas in Québec, with a	Increase bioenergy production by 50% by 2030, 5% renewable natural gas in the grid by 2025, and a minimum of 10% by 2030. Reduce GHG emissions across the economy and reduce our dependence on fossil fuels.	Economic Fiscal Regulatory	Implemented	Energy Industrial Processes and Product Use	CH_4, CO_2, HFCs, N_2O, NF_3, PFCs, SF_6	2022	Québec	NA[b]	NE[g]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		total envelope of $300M, an increase of $92M over the last 5-year period.									
QC-ENG-04	Recovery and reuse of heat	As an alternative to fossil fuels, using waste heat from one industry to meet the heat needs of another nearby industry or organization is part of an optimal use of resources. The program received total funding of $394.45M under the 2024–2029 Implementation Plan, an increase of $181M over the previous 5-year period. In addition, by the end of 2024 Québec will establish a regulation making annual reporting of data on thermal discharges mandatory for regulated industries. The data collected will provide a more accurate picture of the thermal discharges available in Québec, thus allowing improvements to be made to the map of thermal discharges and needs in Québec. A better inventory of places where these discharges can be	Reduce GHG emissions and energy consumption in the buildings sector. Reuse waste heat and support the circular economy.	Economic Fiscal Regulatory	Implemented	Energy	CO_2, CH_4, N_2O	2021	Québec	NE[g]	NE[g]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		recovered will help meet the need for new supplies of energy.									
QC-ENG-05	*Regulation respecting the integration of low-carbon-intensity fuel content into gasoline and diesel fuel** *(link in French only)*	The Government of Québec aims to increase the use of renewable fuels to 15% in gasoline and 10% in diesel by 2030. The Regulation is particularly ambitious in that it aims to incorporate low-carbon fuels that will result in real GHG reductions. In addition, the Regulation will support the deployment of the emerging bioenergy sector in Québec by providing a stable and predictable market for producers. It will provide significant regional economic benefits, while helping to reduce fossil fuel imports and achieve the government's GHG reduction target.	Reduce GHG emissions across the economy and reduce dependence on fossil fuels.	Regulatory	Implemented	Energy Transport	CH_4, CO_2, HFCs, N_2O, NF_3, PFCs, SF_6	2021	Québec	NE[g]	NE[g]
QC-ENG-06	Energy Efficiency and Conservation Roadmap*	The Roadmap ($90M envelope in the 2024–2029 Implementation Plan) includes measures such as: introducing an energy performance rating system for large residential, commercial, and institutional buildings;	Increase energy conservation and efficiency across sectors.	Economic Fiscal Regulatory	Adopted	Energy	CO_2, HFCs	2024	Québec	NA[b]	NE[g]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		increasing requirements for new construction and renovations; increasing requirements for the energy efficiency of products and appliances; and, deploying an energy conservation project. Joint initiatives by the government and Hydro-Québec have so far generated additional annual savings of around 1 TWh per year. Hydro-Québec estimates that electricity savings of 21 TWh could be achieved by 2035 (equivalent to the annual consumption of around 1.2 million households). As a first step toward realizing this potential, the government, in close collaboration with Hydro-Québec, will gradually implement measures to achieve energy savings of around 5 TWh by 2035, doubling the annual electricity savings. This 21 TWh potential is divided equally between the									

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		industrial, residential, and commercial sectors.									
QC-ENG-07	Québec's Chauffez Vert Program*	The Chauffez Vert program encourages energy-efficient home renovations aimed at reducing energy consumption and GHG emissions in Québec homes, while improving comfort for their occupants. Financial assistance is granted for the conversion of a main heating system that uses oil, propane, or any other fossil fuel except natural gas to a main system powered by geothermal, hydroelectric, wind, or solar energy. The 2024–2029 Implementation Plan allocated $214.61M to this program.	Reduce GHG emissions in the Buildings sector (residential).	Economic Fiscal Information	Implemented	Energy	CO_2	2016	Québec	329.00	NE[g]
QC-ENG-08	Making Québec institutions ecoresponsible*	The program aims to provide financial assistance for projects that implement one or more targeted means of saving fossil fuel consumption with a view to reducing or avoiding overall GHG emissions. With a 5-year budget of $10.1M for the period 2024–2029, the Québec government is	Reduce GHG emissions and energy consumption in the Buildings sector (institutional).	Fiscal Economic Information	Implemented	Energy	CO_2	2016	Québec	23.00	NE[g]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		aiming to accelerate change by adopting innovative public practices and incorporating climate and energy orientations and objectives into all its interventions. Tackling climate change and the energy transition is a complex, multi-sector challenge, requiring the mobilization of the entire government apparatus. To this end, the government is continuing its efforts to: • support the energy transition in government buildings and the government vehicle fleet; and, • incorporate best practices, particularly in terms of energy efficiency and energy management.									
QC-ENG-09	Planning and implementation of renewable energy projects in off-grid communities	Supporting off-grid communities in planning and implementing renewable energy projects (in line with Hydro-Québec's initiatives with customers still served by off-grid systems),	Reduce GHG emissions across the economy and reduce our dependence on fossil fuels.	Fiscal Planning	Implemented	Energy	CH_4, CO_2, HFCs, N_2O, NF_3, PFCs, SF_6	2022	Québec	NA[b]	NE[g]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		most of which produce their energy using diesel generators. It should be noted that the decarbonization target for stand-alone power systems will be reviewed by Hydro-Québec in 2025. This measure has $208.1M in funding between 2024–2029.									
NB-ENG-01	New Brunswick Energy Outlook	*Powering our Economy and the World with Clean Energy – Our Path Forward to 2035* is a 12-year energy roadmap and supporting strategies for how the energy landscape will transition in New Brunswick and how we will achieve our energy reliability, sustainability, and affordability goals.	Transitioning to a clean energy economy.	Economic Planning Education	Planned	Energy	CH_4, CO_2, HFCs, N_2O, NF_3, PFCs, SF_6	2023	New Brunswick	NA[b]	309.00[16]
NB-ENG-02	New Brunswick Hydrogen Roadmap	New Brunswick released its Hydrogen Roadmap that serves as the foundation for developing a viable and sustainable hydrogen industry. The Hydrogen Roadmap is expected to drive NB's economic development and supports a critical part of NB's climate	Transitioning to a clean energy economy.	Economic Planning Enabling	Planned	Energy Transport	NA	2024	New Brunswick	NA[b]	NA[d]

[16] Estimated emissions reductions for 2030 range from 309.00 kt to 390.00 kt.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		change action plan and energy strategy.									
NB-ENG-03	New Brunswick Energy Efficiency	Energy efficiency is critically important to the affordability of energy for all New Brunswickers. Energy that is not used represents the most efficient and cleanest generation there is. New Brunswick has been steadily increasing its investments in energy efficiency, through legislative commitment and investments from the province and federal governments. Since 2021-22 the $32.6M budget has nearly quadrupled to about $130M in 2024-25. One flagship program is the Enhanced Energy Savings Program which helps qualified modest income homeowners with free energy efficiency retrofits, including building envelope and heat pumps.	Deliver energy efficiency savings programs.	Fiscal Economic Voluntary Agreement	Implemented	Energy Transport	CH_4, CO_2, HFCs, N_2O, NF_3, PFCs, SF_6	2015	New Brunswick	NE[f]	330.00[17]
NB-ENG-04	Building Codes*	Progressively and at regular intervals, adopt more stringent tiers within the National	Improve building energy usage and efficiency.	Regulatory Education	Implemented	Energy Industrial Processes	CO_2, N_2O	2024	New Brunswick	NA[f]	NE[f]

[17] Estimated emissions reductions for 2030 range from 330.00 kt to 610.00 kt.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Energy Code of Canada for Buildings and the National Building Code of Canada between 2023 and 2030 with the objective of achieving net-zero energy ready construction by 2030. New Brunswick was awarded $6.94M from the federal government (NRCan) to support the necessary education and training to accelerate the building code adoption.				and Product Use					
NB-ENG-05	Provincial Buildings Energy Retrofit and Renewable Energy	These measures reduce GHG emissions through building systems re-commissioning, lighting upgrades, converting to lower emissions fuel sources and implementation of renewable energy systems.	Improve clean energy usage and performance of government buildings.	Fiscal	Implemented	Energy	CO_2, N_2O	2016	New Brunswick	40.00	160.00
NB-ENG-06	Energy Efficiency Programs	Since 2021-22 the efficiency budget has almost doubled to $62.8M in 2022-23 and is projected to be over $118M in 2023-24. Programs include: Enhanced Energy Savings Program; Total Home Energy Savings Program; New Home Construction; Business Rebate Program; Commercial	Affordable clean energy for all New Brunswickers.	Fiscal Economic Education Voluntary Agreement	Implemented	Energy	CO_2, CH_4, N_2O	2023	New Brunswick	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Buildings Retrofit Program; Industrial Energy Efficiency Program, New Construction Commercial & Industrial; Peak Rebate Program.									
NB-ENG-07	New Brunswick Affordable Housing	$2M awarded to fund energy efficiency measures in non-profit housing and social development housing units.	Improve energy efficiency of non-profit and social housing units.	Fiscal	Implementing	Energy	CO_2, CH_4, N_2O	2023	New Brunswick	NA[b]	NE[f]
NB-ENG-08	New Brunswick *Electricity Act*, Renewable Portfolio Standard Regulation, and Energy Efficiency Mandate* [iv]	The Electricity from Renewable Resources Regulation requires 40% of electricity sold in New Brunswick to be from renewable sources by 2020 (Climate Change Action Plan – Action 42). NB Power forecasts that at least 75% of New Brunswick's electricity requirements will be met by carbon-free sources in each year until 2029. Afterward, the number increases significantly, approaching nearly 100% in 2035 and beyond.	Achieve 40% of renewable energy for electricity sold in New Brunswick.	Regulatory	Implemented	Energy	CO_2, N_2O	2014	New Brunswick	178.00[18]	NE[f]
NB-ENG-09	New Brunswick Phase-out of Coal-	The Government of New Brunswick has	Achieve GHG reductions	Voluntary Agreement	Planned	Energy	CO_2, N_2O	2030	New Brunswick	NA[b]	800.00[19]

[18] Estimated emissions reductions for 2022 range from 178.00 kt to 220.00 kt.
[19] Estimated emissions reductions for 2030 range from 800.00 kt to 1,300.00 kt.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
	Fired Electricity Generation*	committed to phase out coal in the latest climate change action plan, as required by the federal government. Phasing out coal will reduce emissions significantly from New Brunswick's electricity supply.	through the phase out of coal-fueled electricity generation.								
NB-ENG-10	Integrated Resource Plan	The 2023 plan was prepared with a focus on reducing NB Power's GHG emissions and achieving a net-zero electricity system by 2035.	Net-Zero electricity by 2035.	Regulatory Planning Research	Implemented	Energy	CO_2, CH_4, N_2O	2023	New Brunswick	NA[b]	NE[f]
NB-ENG-11	New Brunswick Energy Efficiency Regulation	Under the *Electricity Act* is the provincial regulation that establishes an escalating series of electricity efficiency targets for in-province electricity sales from 2023 to 2029 along with escalating funding to support non-electric and social programs	Establishing energy efficiency targets and associated funding.	Fiscal Regulatory	Implemented	Energy	CO_2, CH_4, N_2O	2022	New Brunswick	50.00	250.00
NB-ENG-12	SMR	Install 600 MW of new capacity by 2035 located at the Point Lepreau Nuclear Generating Station. Expect the first 150 MW of power to begin coming online in early 2030s.	Net Zero electricity by 2035.	Fiscal Regulatory	Planned	Energy	CO_2, CH_4, N_2O	2031	New Brunswick	NA[e]	NA[e]
NB-ENG-13	GHG Reporting and Management Requirements	In 2017, the provincial government amended Operating Approvals	GHG reporting and Management Requirements.	Regulatory	Implemented	Energy	CH_4, CO_2, HFCs, N_2O,	2017	New Brunswick	150.00	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		for industrial facilities that emit at least 10,000 tonnes of GHG emissions per year, requiring that they report their GHG emissions. Also extended the GHG management requirements for those facilities that emit at least 25,000 tonnes of GHGs per year. The Approvals amendments were completed in 2019. In 2022, GHG management plans were required across all six landfills in New Brunswick.				Industrial Processes and Product Use Waste Management	NF_3, PFCs, SF_6				
NS-ENG-01	Nova Scotia Energy Efficiency Measures for Non-Electrically Heated Homes	Homeowners on a low income can qualify for no-charge home efficiency upgrades through Efficiency Nova Scotia's Low Income Homeowner Service. For those who qualify for the program, a certified energy advisor will conduct a home-energy assessment and energy efficient upgrades are provided at no cost to the homeowner. Program participants who heat with non-electrical heat sources save, on	Encourage energy efficiency.	Economic Fiscal	Implemented	Energy	CO_2, CH_4, N_2O	2011	Nova Scotia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		average, $900 per year. The province is investing $140M over four years to provide free heat pumps and home upgrades for low-income Nova Scotians, supporting 13,500 low-income and 30,000 middle-income households to transition away from oil heating starting in 2023.									
NS-ENG-02	Nova Scotia *Electricity Act*	In 2022, amendments to Nova Scotia's *Electricity Act* introduced a Hydrogen Innovation Program, allowing hydrogen facilities to connect to the electrical grid for hydrogen production and processing. The Minister of Natural Resources and Renewables will oversee the program, setting requirements and approving applications. The amendments also grant the Minister authority to mandate public utilities to sell energy from specific facilities to customers. Additionally, in 2023, new amendments introduced provisions that allow the Governor in Council to approve	Creation, sale, and distribution of electricity.	Regulatory Voluntary Agreement	Implemented	Energy	CO_2, CH_4, N_2O	2004	Nova Scotia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		energy-storage projects owned by public utilities if beneficial to ratepayers, including setting project terms and conditions. These changes reflect the government's commitment to supporting renewable energy and sustainable energy management.									
NS-ENG-03	Nova Scotia *Electricity Efficiency Regulations**	The *Electricity Efficiency and Conservation Restructuring (2014) Act* establishes a framework for transitioning from the Efficiency Nova Scotia Corporation (ENS) to a new first franchise holder (now Efficiency One, an independent, non-profit organization which holds the exclusive franchise to provide energy efficiency and conservation activities in NS). The Act mandates the transfer of business information, agreements, assets, liabilities, and employees from ENS to the franchise holder	Use energy more efficiently.	Regulatory Economic	Implemented	Energy	CO_2	2014	Nova Scotia	NE[c]	NE[c,20]

[20] GHG reductions achieved through electricity efficiency are included in the GHG reduction estimates provided for the Nova Scotia Greenhouse Gas Emissions Regulations.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		(Efficiency One), ensuring continuity of services. It also introduces the Electricity Demand-side Management Fund, regulating large industrial and electricity generation emitters. Additionally, the Act emphasizes the importance of aligning Nova Scotia's energy efficiency initiatives with sustainable development goals.									
NS-ENG-04	Nova Scotia Electricity Sector Regulations and Nova Scotia Greenhouse Gas Emissions Regulations	Nova Scotia has implemented two regulations to address emissions from the electricity sector and enhance the supply of renewables. The *Greenhouse Gas Emissions Regulations* implement a mandatory declining cap on GHG emissions from electricity generation facilities. The decreases are scheduled in progressive steps. The *Renewable Electricity Regulations* require 80% of electricity supply to be generated from renewable sources by 2030. This will involve the adoption of a diverse	Reduce GHG emissions from the electricity sector and to increase the share of clean energy in the province's energy use.	Regulatory	Implemented	Energy	CO_2, CH_4, HFCs, N_2O, NF_3, PFCs, SF_6	2009	Nova Scotia	NE[c]	NE[c]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		mix of energy sources including wind, tidal, solar, hydro and bioenergy.									
NS-ENG-05	Nova Scotia's 2030 Clean Power Plan*	This is designed to achieve significant emissions reductions and transition the province to a reliable, renewable energy future while minimizing financial risks to ratepayers. The plan commits to closing coal plants by 2030, to surpassing the 80% Renewable Energy Standard, and to contribute to cutting total GHG emissions by over 53% compared to 2005. The plan also prioritizes competition in energy generation and grid management while avoiding costly capital investments through 2075, leading to savings for households and businesses across energy bills. The plan envisions investments in growth sectors like wind, solar, energy storage, transmission development, low-carbon fast-acting generation, and electrification and load management.	Creates a path to coal closure in NS by 2030, while opening room for future investments in growth sectors.	Regulatory Economic Planning Voluntary Agreement Enabling	Implemented	Energy	CO_2	2023	Nova Scotia	NA[b]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
NS-ENG-06	Nova Scotia's Green Hydrogen Action Plan	The Plan aims to establish a green hydrogen sector in Nova Scotia, supporting clean energy solutions, creating clean economy jobs, and driving economic growth, especially in rural communities. The plan focuses on harnessing the province's natural resources sustainably to produce green hydrogen for export and domestic use. This will contribute to prosperity, advance Nova Scotia's climate change goals, and deliver social and economic benefits to local communities.	Establishes the framework for building wind farms in ocean waters.	Economic Fiscal Planning Research Education Information Enabling	Implemented	Energy	CO_2	2023	Nova Scotia	NA[b]	NE[d]
NS-ENG-07	Nova Scotia's Offshore Wind Roadmap	Nova Scotia aims to lease 5 gigawatts of offshore wind energy by 2030, initiating bids in 2025. Module 2 of the Offshore Wind Roadmap focuses on developing a strong supply chain for this sector, building on the foundational work of Module 1, which establishes legislative and regulatory frameworks. A third module will incorporate feedback from the	Establishes the framework for building wind farms in ocean waters.	Regulatory Planning Research Fiscal Economic Enabling	Implemented	Energy	CO_2	2023	Nova Scotia	NA[b]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Mi'kmaq and Indigenous communities, the fishing industry, environmental organizations, workers, and researchers, ensuring a collaborative approach to offshore wind development.									
PE-ENG-01	Energy Rebate	Energy rebate to engage Islanders to reduce carbon emissions and work to make electricity cheaper. Clean Energy Price Incentive will rebate 10% of the first block of residential electricity, as well as on lower emitting heat sources, including firewood, pellets, and propane. The rebate will be at the retail level and Prince Edward Island will reimburse the supplier for 10% of sales subject to HST. The rebate will be deducted from electricity, propane, or wood fuel bill.	Incentivize Islanders to reduce carbon emissions and make electricity cheaper.	Economic	Implemented	Energy	CO_2	2018	Prince Edward Island	NE[f]	NE[f]
PE-ENG-02	Prince Edward Island Energy Strategy	Prince Edward Island has developed a 10-year energy strategy to reduce energy use, establish cleaner and locally produced energy sources and moderate	Reduce energy use and develop renewable energy.	Voluntary Agreement Planning Enabling	Implemented	Energy	CO_2	2016	Prince Edward Island	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		future energy price increases. The Strategy is guided by three principles: lowering GHG emissions, cost-effectiveness, and creating local economic opportunities.									
PE-ENG-03	Renewables in Agriculture Program	A new program developed to assist the agricultural industry in installing on-farm renewable energy generation equipment.	Support farmers to mitigate the production of GHGs and/or sequester carbon in the soil.	Fiscal	Planned	Energy Agriculture LULUCF	CO_2, N_2O	2023	Prince Edward Island	NA[b]	NE[e]
PE-ENG-04	Free Heat Pump Program	An emissions-reducing measure to help income-qualified Island residents become less reliant on home heating oil.	Reduce combustion emissions from buildings.	Economic Fiscal	Implemented	Energy	CO_2	2021	Prince Edward Island	NE[f]	NE[f]
PE-ENG-05	Prince Edward Island Biomass Heating	PEI solicited proposals for the installation of biomass heating systems in public buildings. Nine biomass plants are supplying heat to 18 facilities across PEI: West Royalty Elementary, Westwood Primary, ME Callaghan Intermediate, a combined plant for Kensington Intermediate Senior High School and Queen Elizabeth Elementary, École Francois Buote, a combined plant for	Reduce energy use and GHG emissions from the building sector.	Fiscal Research Planning	Implemented	Energy	CO_2	2019	Prince Edward Island	NE[f]	4.00

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Glen Stewart Primary and Stratford Elementary Schools, Queens County Highway Depot, seven senior's apartment complexes in Summerside, and a combined plant for Montague Intermediate School and Riverview Manor. This project is funded in part by the Government of Canada's Low Carbon Economy Leadership Fund.									
PE-ENG-06	*Prince Edward Island Building Code Act**	The 2015 National Building Code and 2017 National Energy Code for buildings are in force province wide.	Reduce energy use and GHG emissions from the building sector.	Regulatory	Implemented	Energy Industrial Processes and Product Use	CO_2	2020	Prince Edward Island	NE[f]	10.00
PE-ENG-07	Prince Edward Island Energy Efficiency and Fuel Switching Rebate Programs (efficiencyPEI)	Programs to enhance efficiency in residential and commercial buildings. Programs include the Energy Efficiency Equipment Appliance Rebates, Home Insulation Rebates, Instant Energy Savings Program (point-of-sale), New Home Construction Incentive, Energy Efficiency Loan Program, Home	Support residential and commercial energy efficiency.	Economic Fiscal	Implemented	Energy	CO_2	2008	Prince Edward Island	NE[f,21]	57.61

[21] Estimated emissions reductions in 2020 were 41.79 kt.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Comfort and Winter Warming Programs (Low-income weatherization Building Envelope Upgrades), Energy Audit Programs, Solar Electric Rebate Program, and Business Energy Rebates. All of these programs, except New Home Construction, have been expanded because of support from the Low Carbon Economy Leadership Fund.									
PE-ENG-08	Prince Edward Island *Renewable Energy Act*	The *Renewable Energy Act* established a minimum purchase price utilities must pay for power produced by large-scale renewable energy generators and makes it economically feasible for island homeowners, small businesses or farmers who have an interest in generating their own electricity to install small-scale generating systems through net-metering.	Pursue cleaner sources of energy and reduce reliance on imported energy.	Regulatory Economic	Implemented	Energy	CO_2	2005	Prince Edward Island	NE[f]	NE[f]
PE-ENG-09	Prince Edward Island Wind Farm Development*	Two new wind farms on Prince Edward Island. 70 MW of new wind generation by 2026.	Develop additional renewable electricity supply.	Fiscal	Planned	Energy	CO_2	TBD	Prince Edward Island	NA[b]	22.00

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PE-ENG-10	Western Transmission Line Expansion Project	Proposed 100 km, 138 kV transmission line in Western PEI to increase access for renewables and increase reliability.	System improvements.	Fiscal	Planned	Energy	CO_2	TBD	Prince Edward Island	NA[b]	NE[f]
NL-ENG-01	Green Technology Tax Credit*	A 20% green technology tax credit for companies that invest in equipment for energy conservation and clean energy generation, use fuels from waste, or make efficient use of fossil fuels. The maximum credit is $1M annually, of which 40% is refundable. Unused credits can be carried back to the three previous tax years or forward to the 20 following tax years. The unused credits cannot be applied to a tax year that ends before April 7, 2022.	Reduce GHG emissions.	Economic Fiscal	Implemented	Energy Waste Management	CO_2, CH_4, N_2O	2022	Newfoundland and Labrador	NA[b]	NE[f]
NL-ENG-02	Fuel oil to electricity incentive program*	Newfoundland and Labrador delivers a fuel switching program in the residential sector. Homes primarily heated by fossil fuels are eligible for an incentive up to $22,000 to help transition their homes from oil to electricity, retroactive to April 1, 2023.	Support residential energy efficiency.	Economic Fiscal	Implemented	Energy	CO_2, CH_4, N_2O	2020	Newfoundland and Labrador	NE[f]	13.70

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
NL-ENG-03	Newfoundland and Labrador energy efficiency support – public buildings	Newfoundland and Labrador delivers a program to enhance efficiency in the public sector through the Low Carbon Economy Leadership Fund. Given that electricity will be largely emissions free going forward, GHG reductions will accrue from fuel-oil heated buildings.	Support energy efficiency in public buildings, such as office buildings, schools, medical facilities, and post-secondary institutes.	Fiscal	Implemented	Energy	CO_2, CH_4, N_2O	2019	Newfoundland and Labrador	NE[f]	14.00
NL-ENG-04	Newfoundland and Labrador Muskrat Falls hydroelectric project*	This project is displacing generation at a thermal oil facility and will result in 98% of electricity consumption in the province coming from renewable sources. The project will also allow for GHG reductions of at least 1 Mt per year in other provinces such as Nova Scotia.	Implement Muskrat Falls hydroelectric project.	Fiscal	Implemented	Energy	CO_2, CH_4, N_2O	2023	Newfoundland and Labrador	NA[b]	1,400.00
NL-ENG-05	Newfoundland and Labrador Renewable Energy Plan*	Building on the Muskrat Falls development, which will reduce GHG emissions in Newfoundland and Labrador by 10% once operational, Newfoundland and Labrador published a renewable energy strategy that is projected to, among other items, increase	Renewable electricity strategy.	Economic Regulatory Education Information Research Planning	Implemented	Energy	CO_2, CH_4, N_2O	2021	Newfoundland and Labrador	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		capacity and demand for renewable electricity in isolated diesel systems in the province's northern, remote, and Indigenous communities.									
NL-ENG-06	Newfoundland and Labrador methane regulations*	Through the Frontier and Offshore Regulatory Renewal Initiative (FORRI), Newfoundland and Labrador worked with the federal government to develop regulatory requirements relating to the reduction of emissions such that the Canada–Newfoundland and Labrador Offshore Petroleum Board will regulate methane emissions under the *Canada–Newfoundland and Labrador Atlantic Accord Implementation Act*. The *Canada–Newfoundland and Labrador Offshore Area Petroleum Operations Framework Regulations* modernize existing regulatory requirements from a prescriptive approach to a hybrid approach where performance-based requirements are used to the extent	Reduce emissions from venting and flaring.	Regulatory Education Planning	Implemented	Energy	CH_4	2024	Newfoundland and Labrador	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		possible, while maintaining prescriptive requirements where necessary.									
YT-ENG-01	*Clean Energy Act*	The *Clean Energy Act*, passed in Yukon's Legislative Assembly in November 2022, legislates targets related to achieving net zero and increases accountability through public reporting.	Reduce GHG emissions.	Regulatory	Implemented	Energy	CH_4, CO_2, N_2O	2022	Yukon	NA[b]	NE[f]
YT-ENG-02	Government of Yukon Building Retrofits	Conduct retrofits to Government of Yukon buildings to reduce energy use and contribute to a 30% reduction in GHG emissions by 2030. Continue to require all new Government of Yukon buildings to be designed to use 35% less energy than the targets in the National Energy Code for Buildings, in accordance with the Government of Yukon's Design Requirements and Building Standards Manual. Install renewable electricity generation systems in five Government of Yukon buildings in off-grid locations by 2025 to reduce reliance on diesel-generated electricity.	Reduce energy use and GHGs.	Regulatory Fiscal	Implemented	Energy Industrial Processes and Product Use	CH_4, CO_2, N_2O	2020	Yukon	NE[f]	8.00

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
YT-ENG-03	Yukon Good Energy Rebates	The Government of Yukon's Good Energy Rebate program provides rebates for energy-efficient choices, including household appliances, products, services and heating systems, retrofits or upgrades to buildings and homes, purchasing clean transportation vehicles, and generating electricity from renewable energy sources.	Reduce diesel consumption for electricity and heat generation.	Economic Fiscal	Implemented	Energy Transport Industrial Processes and Product Use	CH_4, CO_2, N_2O	2020	Yukon	1.00	16.00
YT-ENG-04	Yukon Independent Power Production Policy	The IPP Policy aims to enable independent, non-utility electricity producers to sell electricity to Yukon's two public utilities through renewable energy technologies such as wind power, micro-hydro, biomass, and solar electric (or photovoltaic) systems. As of the end of 2023, 13.09 MW of energy capacity has been installed through the Independent Power Producer program. Within the program, six First Nations governments have signed Independent Power Producer agreements, while two are currently	Reduce diesel consumption for electricity and heat generation.	Economic Regulatory	Implemented	Energy	CO_2, CH_4, N_2O	2019	Yukon	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		generating energy. The Government of Yukon raised the cap for Independent Power Production from 20 GWh to 40 GWh.									
YT-ENG-05	Yukon Microgeneration Policy	To assist small scale power producers, the Government of Yukon's Microgeneration Policy enables individuals and businesses to install electrical generating systems and connect them to the grid. The electricity generated is consumed on site and any surplus can be sold into the grid. By the end of 2023, 9.5 MW of renewable electricity has been installed through the Micro-Generation Program. This goal was achieved 7 years ahead of schedule (7 MW by 2030). Applications are paused for the Whitehorse and Southern Lakes area while work is underway to ensure grid stability. Applications are expected to resume January 2025.	Reduce diesel consumption for electricity and heat generation.	Economic Regulatory Research	Implemented	Energy	CO_2, CH_4, N_2O	2014	Yukon	NE[f]	NE[f]
YT-ENG-06	Yukon Energy Corporation 10-Year Renewable Electricity Plan* [iv]	Our Clean Future has mandated that an average of 93% of electricity generated on	Reduce GHG emissions from electricity grid and electrify the	Regulatory Planning	Implemented	Energy Transport	CH_4, CO_2, N_2O	2020	Yukon Energy Corporation	1.00	46.00

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		the grid must be produced from renewable sources and includes specific actions to electrify the Territory's transportation and heating sectors. This plan outlines a portfolio of key projects and partnerships needed by 2030 to address the substantial demand for renewable electricity that will result from ongoing economic growth of the Territory, and from the policies and actions outlined in Our Clean Future.	Territory's transportation and heating sectors.								
YT-ENG-07	Mining Industry Emissions Target	A target of an overall mining emissions intensity reduction of 45% below 2023 levels for 2035 and subsequent years was announced during the spring 2023 legislative session. This target is planned to be set into legislation in Fall 2024. Since 2022, through the licensing process, quartz mines have been required to project anticipated GHG emissions, identify reduction measures, and annually report on GHG emissions.	Reduce sectoral GHG emissions	Regulatory Voluntary Agreement Planning Research	Planned	Energy Industrial Processes and Product Use	CO_2, CH_4, N_2O	TBD	Yukon	NA[b]	NE[e]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
NT-ENG-01	Arctic Energy Alliance's Outreach	The Arctic Energy Alliance, a non-profit organization, provides free information, advice, and incentives to residents of the Northwest Territories on energy efficiency. They also host the annual Energy Actions Awards. The Arctic Energy Alliance also conducts energy audits to educate residents on how to reduce home energy consumption.	Educate, raise awareness, and help residents adopt energy saving practices.	Education Information Enabling	Implemented	Energy	NA	2007	Arctic Energy Alliance	NA[d]	NA[d]
NT-ENG-02	GHG Grant Program (federally funded)	The GHG Grant Program was launched by the GNWT with support from a LCEF Leadership Grant from ECCC. Two funding streams were developed: GHG Grant Program for Government and GHG Grant Program for "Buildings and Industry". These funding streams will support applications from municipal, Indigenous and territorial governments, and by NWT businesses, industry and non-profit organizations, who intend to implement initiatives that help to reduce GHG emissions. All funds	Provide support for emissions-reducing projects over $100,000 and led by NWT organizations.	Fiscal	Implemented	Energy	CO_2	2018	Northwest Territories	2.30	5.70

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		available under the program have been allocated as of October 1, 2023, with discussions with the Government of Canada underway to extend the programs in 2024 and beyond.									
NT-ENG-03	NWT 2030 Energy Strategy* [iv]	The NWT 2030 Energy Strategy sets out the Government of the Northwest Territories' long-term approach to supporting secure, affordable, and sustainable energy in the Northwest territories. It is also the main mechanism for achieving the territorial target of reducing GHG emissions by 30%.	Territorial strategy to develop secure, affordable and sustainable energy and achieve the 2030 GHG emissions target of 30% below 2005 levels.	Economic Education Fiscal Information Research Voluntary Agreement	Implemented	Energy	CO_2	2018	Northwest Territories	13.70	NE[f]
NT-ENG-04	Arctic Energy Alliance's Enhanced Programs and Services (funded by the Low Carbon Economy Leadership Fund)	The Northwest Territories, with support from Environment and Climate Change Canada, has provided enhanced funding opportunities for some of the existing programs and services offered through Arctic Energy Alliance in addition to new programs such as; Low Income Energy Assistance; Deep Home Energy Retrofits; Energy Efficiency Rebates for NGOs;	Enhanced support for energy efficient initiatives.	Economic Fiscal	Implemented	Energy	CO_2	2018	Arctic Energy Alliance	0.17	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Electric Heat Incentives; Wood Stove Programs; and, Community Energy Planning Implementation.									
NT-ENG-05	Arctic Energy Alliance's Rebate Programs	The Northwest Territories has several publicly available building efficiency programs including: the Energy Efficiency Incentive Program (2007) that provides rebates for energy efficient appliances, residential retrofits, and new homes; the Alternative Technologies Program (2007) to support Indigenous and community governments, non-profit organizations, commercial businesses, and residents to convert to renewable and clean energies; the Commercial Energy Conservation and Efficiency Program (2011) that enables eligible small businesses to receive free energy audits and rebates on the cost of retrofit expenses; and the Electric Vehicles Incentive Program (2020) to provide	Support energy efficient and low carbon technologies.	Economic Fiscal	Implemented	Energy Transport Industrial Processes and Product Use	CO_2	2007	Arctic Energy Alliance	0.38	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		rebates for the purchase of electric vehicles (EV) and residential EV charging.									
NT-ENG-06	Capital Asset Retrofit Fund	The Northwest Territories initiated the Capital Asset Retrofit Fund to improve building efficiency for territorial owned assets through energy audits and energy retrofit projects.	Improve energy conservation and reduce GHG emissions and operational cost in territorial-owned building and assets.	Economic Information	Implemented	Energy	CO_2	2007	Northwest Territories	5.50	NE[f]
NT-ENG-07	Inuvik Wind Project*	The Inuvik Wind Project is a key initiative of the 2030 Energy Strategy. The 3.5 MW wind turbine, funded by the federal Investing in Canada Infrastructure Program and the GNWT, began producing power in November of 2023, the wind project is expected to reduce diesel consumption in Inuvik, the NWT's largest diesel-powered community, by 30%.	Reduce diesel and LNG consumption and NWT's GHG emissions.	Fiscal	Implemented	Energy	CO_2	2023	Northwest Territories Northwest Territories Power Corporation	NA[b]	6.00
NT-ENG-08	Net metering program	The net metering program allows customers to receive credits for renewable electricity generated (installations up to 15 kW).	Allows residents to participate in power generation.	Economic Regulatory	Implemented	Energy	CO_2	2014	Northwest Territories Northwest Territories Power Corporation Naka Power	0.60	1.80

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
NT-ENG-09	Transmission Line to Fort Providence and Kakisa	A transmission line connecting NWT's Fort Providence and Kakisa communities to the existing Taltson hydropower transmission system is expected to begin operations in 2026. This project aims to reduce diesel used to generate electricity by one million litres annually.	Reduce use of diesel-generated electricity in the communities of Fort Providence and Kakisa.	Fiscal Planning	Planned	Energy	CO_2	2026	Northwest Territories	NA[b]	3.00
NT-ENG-10	Transmission Line to Whati	A new transmission line connecting the community of Whati to the existing Snare hydropower transmission system, and displacing diesel-fuelled electricity generation, is estimated to be completed by 2028.	Reduce use of diesel-generated electricity in the community of Whati.	Fiscal Planning	Planned	Energy	CO_2	2028	Northwest Territories Tlicho Government	NA[b]	1.40
NT-ENG-11	Sachs Harbour Diesel Plant Replacement	The previous power plant was at the end of its operating life. Installation of a new high-efficiency diesel plant will improve reliability and provide cleaner electricity.	Replace diesel generation units to improve efficiency and reduce diesel consumption.	Fiscal	Implemented	Energy	CO_2	2024	Northwest Territories Northwest Territories Power Corporation	NA[b]	0.10
NT-ENG-12	Lutselk'e Diesel Plant Replacement	The previous power plant was at the end of its operating life. Installation of a new high-efficiency diesel plant will improve reliability and provide cleaner electricity.	Replace diesel generation units to improve efficiency and reduce diesel consumption.	Fiscal	Implemented	Energy	CO_2	2023	Northwest Territories Northwest Territories Power Corporation	0.10	0.10

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
NT-ENG-13	Fort Simpson LNG	Construction of a natural gas power generation plant and LNG storage facility, to displace diesel and reduce emissions.	Replace diesel fuel with LNG for the generation of electricity.	Fiscal Planning	Planned	Energy	CO_2	TBD	Northwest Territories Northwest Territories Power Corporation	NA[b]	1.80
NT-ENG-14	Power Purchase Agreements under the Renewable Electricity Participation Model for Diesel Communities	Provide a framework for utility-scale self-generators to participate in the electricity market in diesel communities as part of the 2030 Energy Strategy. Four Power Purchase Agreements have been signed as of October 2024.	Provide a framework for utility-scale self-generators to participate in the electricity market in diesel communities.	Regulatory	Implemented	Energy	CO_2	2018	Northwest Territories Northwest Territories Power Corporation Naka Power	0.10	1.50
NU-ENG-01	Municipal Green Infrastructure Fund – Nunavut	The Municipal Green Infrastructure Fund allows municipalities to apply for funding towards climate change projects, including energy efficiency retrofits and installation of renewable energy systems on municipality-owned buildings. This is being funded by carbon tax revenue.	Reduce GHG emissions.	Fiscal	Implemented	Energy	CO_2	2019	Nunavut	NE[f]	NE[f]
NU-ENG-02	Nunavut EnergyWise	EnergyWise is a GN-led public awareness campaign targeting Nunavummiut at home and in the workplace to reduce emissions by increasing energy	Reduce GHG emissions.	Education Information Enabling	Implemented	Energy	CO_2	2017	Nunavut	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		efficiency and reducing energy consumption.									
NU-ENG-03	Nunavut new district heating systems	The communities of Sanikiluaq and Taloyoak, in Nunavut, will benefit from a new district heating system that will help reduce the territory's fuel consumption and cut carbon emissions. The project funded by the Government of Canada's Low Carbon Economy Fund, captures residual heat from power generation and provides space and hot water heating to nearby commercial and institutional buildings, allowing customers to save on energy costs and extend the life of their heating equipment. Feasibility studies estimate that a new district heating system in Sanikiluaq and Taloyoak will displace approximately 298,000 litres of fuel and reduce emissions by 830 t CO_2 annually.	Reduction of fossil fuel consumption.	Fiscal	Implemented	Energy	CO_2	2018	Qulliq Energy Corporation (Nunavut's Utility)	0.82	7.37
NU-ENG-04	Nunavut Energy Management Program	Initiated in 2007, the Nunavut Energy Management Program is a Government of	Reduce fossil fuel consumption.	Voluntary Agreement Fiscal	Implemented	Energy Industrial Processes	CO_2	2007	Nunavut	NE[f,22]	23.78

[22] Estimated emissions reductions for 2020 were 2.14 kt.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Nunavut program led by the Department of Community and Government Services. It involves implementing energy retrofits on Government-of-Nunavut-owned buildings. The objectives are to reduce water, fuel, and electricity consumption by 20% by retrofitting existing Government-of-Nunavut-owned facilities territory wide; to reduce GHG emissions by substituting diesel generated energy with renewables where feasible; and to explore new energy efficient building technologies. This program is currently targeting the South Baffin and North Baffin regions and has received funding from the Low Carbon Economy Fund.		Information Research		and Product Use					
NU-ENG-05	Nunavut Housing Corporation's Accelerated Modernization and Improvement Project	The Nunavut Housing Corporation's Accelerated Modernization and Improvement Project received funding from the Government of	Reduction of fossil fuel consumption.	Fiscal	Implemented	Energy	CO_2	2018	Nunavut	NE[f,23]	20.43

[23] Estimated emissions reduction in 2020 were 2.04 kt.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Canada's Low Carbon Economy Fund in fall 2018 to oversee energy efficiency upgrades and retrofits to public housing units. Housing retrofits will include window and door replacements (Target 1), hot water heater replacements (Target 2), and furnace/boiler replacements (Target 3).									
NU-ENG-06	Renewable Energy Cabin Grant Program	The Department of Environment's Climate Change Secretariat provides funding for cabin owners in Nunavut to help offset the cost of installing a renewable energy system on their cabin. This funding is provided in the form of a one-time non-repayable grant.	Increase renewable energy use.	Economic Fiscal	Implemented	Energy	CO_2	2021	Nunavut	NE[f]	NE[f]
NU-ENG-07	Renewable Energy Homeowner Grant Program	In partnership with the Climate Change Secretariat (CCS), the Nunavut Housing Corporation (NHC) provides funding for homeowners in Nunavut to help offset the cost of installing a renewable energy system on their house. Homeowners are eligible for a non-repayable grant of up	Increase renewable energy use.	Economic Fiscal	Implemented	Energy	CO_2	2021	Nunavut	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		to 50% of total project costs, up to a maximum of $30,000.									
NU-ENG-08	Exploring alternatives to diesel-fired electricity generation	Qulliq Energy Corporation has been working with various levels of governments and stakeholders on alternative energy research in order to reduce its dependence on diesel.	Reduce dependence on fossil fuels.	Research Enabling	Implemented	Energy	CO_2	2020	Nunavut	NE[f]	NE[f]
NU-ENG-09	Nunavut Commercial and Institutional Power Producers Program	Commercial and Institutional Power Producers Program by Qulliq Energy Corporation (QEC) allows commercial and institutional customers to generate electricity on their premises using renewable energy systems and to sell the power generated to QEC.	Promote renewable energy use.	Economic Regulatory	Implemented	Energy	CO_2	2021	Nunavut	NE[f]	NE[f]
NU-ENG-10	Nunavut's Independent Power Producer (IPP) Program	The IPP program allows producers outside the Qulliq Energy Corporation (QEC) who meet the technical requirements and who are successful in being approved for participation in the IPP program by QEC to generate electrical power from renewable energy systems and sell it directly to QEC. Integrating renewable energy systems in the	Reduction of fossil fuel consumption.	Economic Regulatory	Adopted	Energy	CO_2	2022	Qulliq Energy Corporation (Nunavut's Utility)	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		territory's energy grid helps decrease Nunavut's dependency on diesel fuel, enabling the corporation to reduce carbon emissions and promote energy self-reliance.									
NU-ENG-11	Nunavut's Net Metering Program	This program encourages hamlet and residential customers to install their own renewable energy system and offers energy credits for communities and individuals for feeding energy back into the Qulliq Energy Corporation's energy grid. This program enables interested customers to offset their energy use and help reduce their carbon footprint.	Reduction of fossil fuel consumption.	Economic Regulatory Voluntary Agreement	Implemented	Energy	CO_2	2018	Qulliq Energy Corporation (Nunavut's Utility)	NE[f]	NE[f]
MPT-ENG-01	Small Modular Reactor Memorandum of Understanding	Alberta, Saskatchewan, Ontario, and New Brunswick signed a memorandum of understanding to support the development and deployment of small modular reactors (SMRs) that will provide safe, emissions-free nuclear energy to cities, industry, and remote settlements.	Provide safe, emissions-free nuclear energy in remote areas.	Voluntary Agreement Planning Enabling	Implemented	Energy	CO_2	2021	Alberta Saskatchewan Ontario New Brunswick	NE[d]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		The provinces released a *Strategic Plan for the Deployment of SMRs* in 2022 as the final deliverable under the MOU.									
MPT-ENG-02	Prince Edward Island-New Brunswick Cable Interconnection Upgrade Project*	PEI completed a cable interconnection upgrade within the Northumberland Strait, between the provinces of Prince Edward Island and New Brunswick. Two 180 MW cables will help meet the growing demand for electricity on PEI, deliver reliable, long-term energy for Islanders, and help balance the intermittent nature of growing wind energy supply.	Deliver reliable, long-term energy, and balance the growing wind energy supply.	Fiscal	Implemented	Energy	CO_2	2017	Prince Edward Island New Brunswick	NE[f]	NE[f]

A3.3 Transport Sector policies and measures

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
ECW-09.3	Public Transit priority investment area *Part of Canada Infrastructure Bank (CIB) (ECW-09)*	The CIB invests in public transit infrastructure projects to provide citizens with cleaner and faster commutes and reduce GHG emissions. Zero-emission buses	The CIB has a long-term investment target of $5B in the Public Transit priority sector. Public transit investments contribute to the	Fiscal	Implemented	Transport	CO_2	2017	Canada Infrastructure Bank	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		(ZEBs) were added as a new subsector within Public Transit in the October 2020 Growth Plan, resulting in the launch of the ZEBs initiative.	CIB's overall portfolio target of emissions reductions of 15 Mt CO_2 eq.								
TRN-01	Light-Duty On-Road Vehicle Emission Regulations*	Set annually more stringent GHG emission standards for new passenger cars and light-duty trucks through model year 2026. Canada is developing amendments to ensure post-2026 regulations are aligned with US regulations.	Reduce GHG emissions from the Transportation sector.	Regulatory	Implemented	Transport	CO_2, CH_4, N_2O	2017	Environment and Climate Change Canada	2,800.00	24,300.00
TRN-02	Regulated light-duty zero-emission vehicle (ZEV) sales target*	The Government of Canada finalized Canada's Electric Vehicle Availability Standard (regulated targets for zero-emission vehicles) in December 2023. The regulations establish annually increasing targets, that require 100% of new light-duty vehicles offered for sale in Canada to be ZEVs by 2035, with interim targets of 20% by 2026 and 60% by 2030.	Reduce GHG emissions from the Transportation sector.	Regulatory	Implemented	Transport	CO_2, CH_4, N_2O	2026	Environment and Climate Change Canada	NA[b]	2,000.00
TRN-03	Incentives for Zero-Emission Vehicles (iZEV) Program* [iv]	The iZEV Program helps make new light-duty ZEVs more affordable by offering	Accelerate the uptake of electric vehicles.	Economic	Implemented	Transport	CO_2, CH_4, N_2O	2019	Transport Canada	639.00	1,954.00

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		point-of-sale incentives to individuals and businesses, supporting adoption of ZEVs across Canada.									
TRN-04	Heavy-duty on-road vehicle emission regulations*	Set more stringent GHG emission standards for new heavy-duty vehicles through model year 2027. Canada is developing amendments to ensure post-2027 regulations are aligned with the most stringent standards in North America.	Reduce GHG emissions from the Transportation sector.	Regulatory	Implemented	Transport	CO_2, CH_4, N_2O	2018	Environment and Climate Change Canada	2,600.00	5,700.00
TRN-05	Strategy to reduce emissions from medium- and heavy-duty vehicles (MHDVs)	The Government of Canada developed an integrated strategy to reduce emissions from medium- and heavy-duty vehicles with the aim of reaching 35% of total MHDV sales being ZEVs by 2030. The strategy includes a suite of initiatives that accelerate the adoption of zero-emission technologies, including: • Incentives for Medium- and Heavy-Duty Zero-Emission Vehicles (iMHZEV) Program (TC); • Zero-Emission Trucking Program (ZETP) (TC); and,	Accelerate the decarbonization of MHDVs.	Economic Fiscal Information Education Regulatory Research Voluntary Agreement Planning	Implemented	Transport	CO_2, CH_4, N_2O	2022	Transport Canada Housing, Infrastructure and Communities Canada	NA[b]	NA[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		• Green Freight Program to help fleets reduce the fuel consumption and GHG emissions of their existing vehicles (NRCan). In addition, the Zero-Emission Transit Fund is supporting public transit and school bus operators across Canada who are electrifying their fleets as part of HICC's Canada Public Transit Fund.									
TRN-05.1	Medium- and heavy-duty zero-emission vehicles (ZEV) sales regulations** *Part of the Strategy to reduce emissions from medium-and heavy-duty vehicles (MHDVs) (TRN-05)*	The 2030 Emissions Reduction Plan committed Canada to developing a regulation to require 100% MHDV sales to be ZEVs by 2040 for a subset of vehicle types based on feasibility, with interim 2030 regulated sales requirements that would vary for different vehicle categories based on feasibility and explore interim targets for the mid-2020s.	Reduce GHG emissions from the Transportation sector.	Regulatory	Planned	Transport	CO_2, CH_4, N_2O	TBD	Environment and Climate Change Canada	NA[b]	NE[e]
TRN-05.2	Incentives for Medium- and Heavy-Duty Zero-Emission Vehicles (iMHZEV) Program*[iv]	The iMHZEV Program helps make medium- and heavy-duty zero-emission vehicles more affordable by offering point-of-sale incentives for Canadian	Accelerate the uptake of medium- and heavy-duty zero-emission vehicles (MHZEVs).	Economic	Implemented	Transport	CO_2, CH_4, N_2O	2022	Transport Canada	3.67	113.00

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
	Part of the Strategy to reduce emissions from medium-and heavy-duty vehicles (MHDVs) (TRN-05)	organizations and businesses who buy or lease an eligible MHZEV. There are many different makes and models of eligible zero-emission vehicles for purchase or lease with incentives of up to $200,000 per vehicle.									
TRN-05.3	Zero Emission Trucking Program (ZETP) *Part of the Strategy to reduce emissions from medium-and heavy-duty vehicles (MHDVs) (TRN-05)*	Address barriers to zero-emission trucking commercialization through deployments, supporting provincial and territorial readiness, and directed research.	Accelerate the adoption of Medium and Heavy-Duty Zero Emission Vehicles through Research and Deployments.	Information Education Research	Adopted	Transport	CO_2, CH_4, N_2O	2022	Transport Canada	NA[b]	NE[f]
TRN-06	Zero Emission Vehicle Infrastructure Program (ZEVIP)	The ZEVIP supports deploying electric vehicle (EV) chargers and hydrogen refueling stations across Canada. Since 2019, over $600M has been invested in the ZEVIP.	Enable the reduction of GHG emissions from the Transportation sector.	Fiscal	Adopted	Transport	CO_2, CH_4, N_2O	2019	Natural Resources Canada	NE[f]	NE[f]
TRN-08	Green Freight Program (GFP)*	The GFP was launched to help fleets reduce their fuel consumption and GHG emissions from on-road freight through fleet energy assessments, fleet retrofits, engine repowers, best-practice implementation and the purchase of low-carbon vehicles. The program provides	Reduce emissions from heavy and medium-duty vehicles.	Fiscal Economic Education	Adopted	Transport	CO_2	2022	Natural Resources Canada	NA[b]	500.00

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		funding through two streams: Stream 1 offers grant funding to Canadian fleet operators to undertake third-party energy assessments, and to implement retrofits that would result in lower GHG emissions. Stream 2 provides contribution funding for projects that repower existing medium- and heavy-duty fleets and helps offset the incremental cost of the purchase of a new truck that is fueled by lower carbon alternatives.									
TRN-09	Clean Transportation RD&D Program	Advances multi-modal research, development, and testing of clean technology solutions for Canada's transportation system.	Research and development to assess the safety, viability, and environmental performance of low-carbon fuels and zero-emission propulsion technologies for the rail and marine sector; and research on new technologies for aircraft and sustainable aviation fuels.	Information Research Enabling	Implemented	Transport	CO_2, CH_4, N_2O, Other – non-volatile particulate matter, Other – black carbon, Other – NOx, Other – Pb	2019	Transport Canada	NE[d]	NE[d]
TRN-09.1	Clean Transportation	The marine portion of the Clean Transportation RD&D	RD&D to test the viability of low-carbon fuels and	Information Research	Implemented	Transport	CO_2, CH_4, N_2O	2019	Transport Canada	NE[d]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
	RD&D Program – Marine** *Part of the Clean Transportation RD&D Program (TRN-09)*	Program undertakes research and development activities to support the marine industry's adoption of new technologies that reduce emissions of greenhouse gases and criteria air contaminants. The projects are designed to help the marine industry address technical challenges inhibiting adoption. It helps produce knowledge and best practices for operating these new technologies safely, with the intent to inform the development of regulations, standards, codes, and guidelines.	zero-emission propulsion technologies. Support industry adoption. Address safety and hazard concerns associated with new technologies to avoid barriers to their adoption.	Enabling							
TRN-09.2	Clean Transportation RD&D Program – Rail *Part of the Clean Transportation RD&D Program (TRN-09)*	The rail portion of the Clean Transportation RD&D Program undertakes research and development activities to support the rail industry's adoption of new technologies that reduce emissions of GHGs and criteria air contaminants. The projects are designed to help the rail industry address technical challenges inhibiting adoption. The program collaborates	RD&D to test the viability of low-carbon fuels and zero-emission propulsion technologies for rail. Support industry adoption. Address safety and hazard concerns associated with new technologies to avoid barriers to their adoption.	Information Research Enabling	Implemented	Transport	CO_2, CH_4, N_2O	2019	Transport Canada	NE[d]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		with other departments and shares technical findings with stakeholders with the intent to inform the development of regulations, standards, codes, and guidelines.									
TRN-09.3	Clean Transportation RD&D Program – Aviation *Part of the Clean Transportation RD&D Program (TRN-09)*	The aviation portion of the Clean Transportation R&D program funds research and development activities in support of new technologies for aviation and sustainable aviation fuels, as well as more stringent standards to reduce emissions of GHGs and criteria air contaminants.	Research on new technologies for aircraft and sustainable aviation fuels, including distribution; improvements to emissions measurement methods.	Information Research Enabling	Implemented	Transport	CO_2, Other - non-volatile particulate matter, Other - black carbon, Other - NOx, Other - Pb	2019	Transport Canada	NE[d]	NE[d]
TRN-10	Decarbonization of the rail sector – Memorandum of Understanding (MOU)*	The Memorandum of Understanding with the Railway Association of Canada focuses on reducing locomotive emissions through ambitious yet attainable goals for reducing Class 1 railway emissions by 2030, increasing clean fuel usage in the existing locomotive fleet, and accelerating the retrofitting and upgrading of locomotives to advance net-zero technology.	Reduce GHG emissions from railway locomotives operated by Canadian railway companies in Canada.	Voluntary Agreement	Implemented	Transport	CO_2, CH_4, N_2O	2023	Transport Canada	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
TRN-11	Canada Public Transit Fund (CPTF)**	The Canada Public Transit Fund is a historic investment that will support transit in communities of all sizes across Canada. Announced in 2024, the Fund will provide $3B per year for public transit and active transportation infrastructure, beginning in 2026-27. The Fund will deliver stable funding for public transit providing municipalities, transit authorities, and other groups with the resources they need to plan and implement key public transit projects over the long-term. Funding will be delivered through three streams: Metro-Region Agreements, Baseline Funding, and Targeted Funding.	Provide stable and predictable funding to address long-term transit goals; Increase the use of public transit and active transportation relative to car travel; Increase the housing supply and affordability as part of complete, transit-oriented communities; Help mitigate climate change through modal shift and fleet decarbonization; Improve climate resilience; and, Improve public transit and active transportation options for all, especially Indigenous Peoples and equity-deserving groups.	Fiscal Economic	Adopted	Transport	CO_2, CH_4, N_2O	2026	Housing, Infrastructure, and Communities Canada	NA[b]	NE[f]
TRN-12	Collaboration at the International	In 2023, Canada implemented the IMO's agreed short-term	Reduce GHG emissions from marine transport.	Regulatory Planning	Planned	Transport	CO_2, CH_4, N_2O	2023	Transport Canada	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
	Maritime Organization (IMO)	measures to reduce GHG emissions from international shipping. In 2024, Canada established the Canadian Carbon Intensity Indicator (CCII) for its domestic fleet, reflecting the Canadian fleet's unique technical and operational traits. Pursuant to the 2023 IMO GHG Strategy, Canada will continue to work with IMO Member States to develop new mid-term measures for adoption in 2025, including a marine fuel GHG intensity standard and a maritime GHG pricing mechanism. Domestically, these would be adopted via new or amended Canadian regulations.									
TRN-13	Collaboration with aviation sector through Canada's Aviation Climate Action Plan*	This government-industry initiative identifies key ongoing and planned initiatives to reduce GHGs on a path to net-zero emissions by 2050. The plan also includes an ambitious aspirational goal of 10% sustainable aviation fuels (SAF) use target by 2030. A key deliverable under the plan is the	Reduce GHG emissions from the aviation sector.	Planning Research Education Voluntary Agreement	Implemented	Transport	CO_2, CH_4, N_2O	2022	Transport Canada	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		development of a SAF Blueprint for Canada.									
TRN-14	Supporting decarbonization at the International Civil Aviation Organization (ICAO)/Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)	Canada supports the reduction of CO_2 emissions from international aviation through ICAO, including through the development, implementation and maintenance of the international CO_2 and CORSIA standards. The CO_2 standard is a certification standard applicable to airplane manufacturers. CORSIA is a global market-based measure requiring air operators to acquire eligible emissions units on the open market to offset a portion of their carbon dioxide emissions on international flights. Canada has implemented both standards in domestic regulations.	Reduce GHG emissions from the global aviation sector.	Regulatory	Implemented	Transport	CO_2	2019	Transport Canada	NE[f]	NE[f]
TRN-15	Off-road decarbonization strategy *Previously referred to as Off-road zero-emissions equipment regulations*	Exploring options for zero-emission off-road equipment.	Reduce GHG emissions and other air contaminants from the Transportation sector.	Research Planning	Planned	Transport	CO_2, N_2O, CH_4	TBD	Environment and Climate Change Canada	NA[b]	NE[e]
TRN-16	Green Shipping Corridor Program (GSCP)	The Green Shipping Corridor Program aims to advance the	Decarbonization of the marine sector.	Fiscal	Implemented	Transport	CO_2	2023	Transport Canada	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Government of Canada's commitment to facilitate the establishment of green shipping corridors and the decarbonization of the marine sector along the Great Lakes, the St. Lawrence Seaway, as well as Canada's East and West Coasts.									
GRG-02	Federal Low-Carbon Fuel Procurement Program (LCFPP)	The program provides financial support to departments to help offset the extra costs of purchasing low carbon fuels for the federal air and marine fleets. The Government of Canada will work with other major fuel purchasers and key stakeholders to increase public and private sector procurement and market demand for low carbon fuels.	Reduce Scope 1 CO_2 emissions from federal government air and marine internal operations.	Fiscal	Implemented	Transport	CO_2	2023	Treasury Board of Canada Secretariat	NA[b]	400.00[24]
BC-TRN-01	BC Hydrogen Strategy	BC's Hydrogen Strategy was released in 2021. It outlines the Province's plan to accelerate the production and use of renewable and low-carbon hydrogen and be a world leader in the growing hydrogen economy. The strategy	Promote innovation and investment in the production and deployment of hydrogen.	Information Education Research Planning Voluntary Agreement	Implemented	Transport	CO_2	2021	British Columbia	NA[b]	NE[f]

[24] Estimated emissions reductions for 2030 are cumulative since implementation started in 2023.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		includes 63 actions to undertake over the short term (2020 to 2025), medium term (2025 to 2030) and long term (2030 and beyond). In 2023, the Province established the Clean Energy and Major Projects Office (CEMPO) to accelerate investment in clean energy and technology, including hydrogen. The CEMPO is working to implement the actions in the BC Hydrogen Strategy.		Enabling							
BC-TRN-02	British Columbia Increased Supply of Renewable Fuels	In 2023, the renewable content in the diesel fuel supplied to BC increased significantly to 21.7%, an increase from 13.3% in 2023. The renewable content in the gasoline supplied increased from 10.6% in 2022 to 11.2% in 2023. In 2024, BC increased the target for renewable fuels produced in BC to 1.5 billion litres per year by 2030, as part of Powering Our Future: BC's Clean Energy Strategy.	Reduce GHGs from transportation.	Economic Fiscal Planning Voluntary Agreement	Implemented	Transport	CO_2, N_2O	2020	British Columbia	NE[f]	NE[f]
BC-TRN-03	British Columbia Light-Duty *Zero-Emission Vehicles Act*/Mandate*	British Columbia passed the *Zero-Emission Vehicles Act* in 2019 and	Reduce GHGs from transportation.	Regulatory Enabling	Implemented	Transport	CO_2, N_2O	2019	British Columbia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		accelerated targets in 2023 to phase in targets for the sale of zero-emission vehicles (ZEVs). New light-duty sales targets are 26% by 2026, 90% by 2030, and 100% by 2035. The government will continue to support these targets with steps to make ZEVs more affordable.									
BC-TRN-04	British Columbia Low Carbon Fuel Standard (LCFS)*	On January 1, 2024, the new *Low Carbon Fuels Act* (LCFA) came into effect replacing the Greenhouse Gas Reductions (Low Carbon Fuels Requirement) Regulations. The LCFS sets carbon intensity reduction requirements of 30%, in the gasoline and diesel class pools, by 2030 and increases the non-compliance penalty from $200/tonne to $600/tonne. Beginning in 2026, low carbon fuel requirements on jet fuel come into force, requiring a 10% reduction in carbon intensity by 2030.	Reduce GHGs from transportation.	Regulatory Economic	Implemented	Transport	CO_2	2008	British Columbia	NE[b]	NE[f]
BC-TRN-05	British Columbia Medium- and Heavy-Duty Zero-	In the Roadmap, BC committed to creating targets for medium and	Reduce GHGs from transportation.	Regulatory Planning	Planned	Transport	CO_2, N_2O	TBD	British Columbia	NA[b]	NE[e]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
	Emission Vehicle Mandate**	heavy-duty ZEVs in consultation with automakers, businesses, and industry in alignment with jurisdictions like California.		Research							
BC-TRN-06	British Columbia Right-To-Charge legislation	To enable the installation of charging infrastructure in buildings, BC introduced Right-To-Charge legislation, making it easier for strata corporations and owners to install EV charging infrastructure in their properties.	Reduce GHGs from transportation.	Regulatory	Implemented	Transport	CO_2, N_2O	2023	British Columbia	NA[b]	NE[f]
BC-TRN-07	British Columbia Transport Infrastructure Investments*	BC plans to transition to a fully electric bus fleet over two decades and invest in hybrid diesel-electric or dual fuel-capable ferries that can run on liquefied natural gas or ultra-low sulphur diesel. In 2022, BC invested $295M in the Highway Infrastructure Climate Adaptation Program, spanning nine years and focusing on replacing and repairing culverts to bolster the resilience of the transportation network to new climate conditions and ensure public safety.	Reduce GHGs from transportation.	Fiscal	Implemented	Transport	CO_2, N_2O	2016	British Columbia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
BC-TRN-08	CleanBC Go Electric program* [iv]	The CleanBC Go Electric program is intended to encourage and accelerate the adoption of zero-emission vehicles in BC. It includes a suite of programs to support ZEV adoption: Light-duty vehicle point of purchase rebates; commercial vehicle rebates; hydrogen fueling infrastructure; home and workplace and public charging programs; ZEV sector economic development (research and development); fleet program; investments in research and development for medium and heavy-duty ZEVs; research training and public education and outreach. Over $650M has been invested since 2011.	Reduce GHGs from transportation.	Economic Fiscal Research Education	Implemented	Transport	CO_2, N_2O	2011	British Columbia	NE[f]	NE[f]
BC-TRN-09	CleanBC Heavy-Duty Vehicle Efficiency (HDVE) Program	Investments into reducing emissions from the existing heavy-duty vehicle fleet through a program of education and equipment purchase incentives through the CleanBC HDVE Program.	Reduce emissions from the Transportation sector.	Education Economic Fiscal	Implemented	Transport	CO_2, N_2O	2019	British Columbia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
BC-TRN-10	Expand the Low Carbon Fuel Standard (LCFS) to aviation and marine fuels**	As part of the Roadmap to 2030, BC committed to modernizing the legislation governing the Low Carbon Fuel Standard, including expanding it to cover marine and aviation fuels beginning in 2024. On January 1, 2024, the new *Low Carbon Fuels Act* came into effect, replacing the *Greenhouse Gas Reductions (Low Carbon Fuels Requirements) Act*, and implemented renewable volumetric content and carbon intensity requirements on jet fuel.	Reduce GHGs from transportation.	Regulatory Planning	Implemented	Transport	CO_2	2023	British Columbia	NA[b]	NE[f]
BC-TRN-11	*Move. Commute. Connect: BC's Active Transportation Strategy*	*Move. Commute. Connect: BC's Active Transportation Strategy* is the province's strategy for cleaner, more active transportation, including support for community planning and infrastructure. The goal of the strategy is to double the percentage of trips taken with active transportation by 2030. The Active Transportation Grants Program funds projects	Increase active transportation options and usage.	Fiscal Economic Information Research Planning	Implemented	Transport	CO_2	2019	British Columbia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		that support infrastructure accessibility and the shift to more active modes of transportation. In 2023, BC committed new funding of $100M over three years for building active transportation networks to increase sustainable mode share.									
BC-TRN-12	Clean Transportation Action Plan	BC is working on a Clean Transportation Action Plan that will set out additional actions to reduce emissions from transportation, based on an efficiency-first, five-pillar approach: reducing distances travelled, mode shifting to efficient modes, improving vehicle efficiency, adopting ZEVs across all modes, and using clean fuels.	Reduce GHGs from transportation.	Information Voluntary Agreement Planning	Planned	Transport	CO_2, N_2O	TBD	British Columbia	NA[b]	NE[e]
AB-TRN-01	Alberta Zero Emission Hydrogen Transit (AZEHT) project	Emissions Reduction Alberta (ERA) provided support for the Alberta Zero Emission Hydrogen Transit (AZEHT) project, which will demonstrate two hydrogen fuel cell electric buses to be used in road trials shared by the municipalities of	Develop hydrogen fuel cell electric bus technologies.	Research Fiscal Voluntary Agreement	Adopted	Transport	CO_2, CH_4, N_2O	2021	Alberta	NA[b]	NE[e]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Edmonton and Strathcona County, with the active participation of Calgary and Banff/Bow Valley.									
AB-TRN-02	Alberta Zero Emissions Truck Electrification Collaboration (AZETEC) project	Via Emissions Reduction Alberta (ERA), the Alberta Zero Emissions Truck Electrification Collaboration (AZETEC) is a project in conjunction with the Alberta Motor Transport Association. It will feature the development of two long-range fuel-cell electric trucks for operation between Edmonton and Calgary to showcase Alberta's role in developing technologies that reduce freight transportation emissions.	Develop technologies that reduce freight transportation emissions.	Research Fiscal Voluntary Agreement	Adopted	Transport	CO_2, CH_4, N_2O	2019	Alberta	NE[e]	NE[e]
SK-TRN-01	Regulatory Cooperation	The Ministry of Highways is working collaboratively with the other provinces and territories in the adoption of best practices to improve inter-jurisdictional planning for key trade corridors, improving freight fluidity, and reducing traffic congestion.	Reduce emissions from freight transportation.	Voluntary Agreement Enabling	Planned	Transport	CO_2	2022	Saskatchewan	NA[b]	NE[d]

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SK-TRN-02	Saskatchewan Congestion and Idling Reduction	The Ministry of Highways utilizes traffic data to identify bottlenecks on the highway network and uses this information to develop projects that address the congestion issues and help mitigate GHG emissions.	Reduce emissions from congestion and idling.	Voluntary Agreement Research Enabling	Implemented	Transport	CO_2	2019	Saskatchewan	NE[f]	NE[f]
SK-TRN-03	Saskatchewan Short Line Rail Improvement Program	Supports industry in expanding the size and usage of the short haul (short line) rail systems. In April 2024, the Province announced $530,000 in new provincial short line rail investments.	Increase use of short line rail to reduce transportation emissions.	Voluntary Agreement Fiscal	Implemented	Transport	CO_2	2018	Saskatchewan	NE[f]	NE[f]
SK-TRN-04	Saskatchewan Trucking Partnership Program	The province uses trucking partnership agreements to quantify and monitor annual fuel savings.	Increase fuel efficiency of trucks.	Voluntary Agreement Enabling	Implemented	Transport	CO_2	2019	Saskatchewan	NE[d]	NE[d]
MB-TRN-01	Manitoba biofuel mandates*	On January 1, 2022, Manitoba increased the minimum mandatory ethanol content in gasoline to 10% and the minimum mandatory biodiesel content in diesel fuel to 5%.	Reduce emissions from transportation.	Regulatory	Implemented	Transport	CO_2	2020	Manitoba	515,211.00	456,535.00
MB-TRN-02	Manitoba Efficient Trucking Program	In June 2019, Manitoba and Canada launched a 3-year $11.8M efficient trucking program for the installation of fuel saving technologies and retrofits to heavy-	Reduce emissions from freight transportation.	Voluntary Agreement Fiscal	Implemented	Transport	CO_2	2019	Manitoba	25.00	134.00

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		duty vehicles to reduce fuel consumption and GHG emissions, which includes $5.9M in funding from the Low Carbon Economy Leadership Fund.									
MB-TRN-03	Manitoba Electric Vehicle Rebate Program* [iv]	Offering an electric vehicle rebate for eligible Manitobans, worth up to $4,000 for a new battery electric or plug-in hybrid and $2,500 for eligible recipients of a used battery electric vehicle or plug-in hybrid.	Help lower emissions, protect the environment, and help to lower costs of electric vehicles to help families save money.	Economic Fiscal	Implemented	Transport	CO_2	2024	Manitoba Manitoba Public Insurance	NA[b]	25,000.00
MB-TRN-04	Electric Vehicle Infrastructure Support for Northern and Rural Municipalities	To increase rural and northern electric vehicle (EV) charging infrastructure, the Government of Manitoba provided funding to Eco-West Canada to work with local business owners to support the installation of new EV chargers across the province. As of 2024, there are now 440 EV chargers in Manitoba, with 119 being Level III and 321 Level II. Additionally, Manitoba Hydro provides low interest loans up to $3,000/5-year term for the purchase of a Level II home charger.	Increase Electric Vehicle Charging Infrastructure in rural and northern areas through funds provided to service delivery partners.	Economic Fiscal	Implemented	Transport	CO_2	2022	Manitoba Manitoba Hydro	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
MB-TRN-05	Investments to Improve Public Transit	Together, the Government of Canada, the Government of Manitoba, and the City of Winnipeg invested in the purchase of approximately 100 electric buses and the necessary charging/fueling infrastructure; the purchase of 135 additional diesel buses to meet growing transit needs; and the construction of a new LEED-certified energy efficient bus storage and maintenance facility. Additional investments will focus on improving the efficiency and accessibility of the transit system to encourage ridership.	Increase the efficiency of Winnipeg's transit system while simultaneously reducing associated emissions.	Fiscal	Implemented	Transport	CO_2	2023	Manitoba City of Winnipeg	NA[b]	9.50
ON-TRN-01	Cleaner Transportation Fuels: Renewable Content Requirements for Gasoline and Diesel Fuels*	The Cleaner Transportation Fuels Regulation requires that fuel suppliers blend 10% renewable content in gasoline from 2020 to 2024. The renewable content requirement increases to 11% in 2025, 13% in 2028, and 15% in 2030 and onward. Renewable content must emit 45% fewer GHG emissions than	Reduce GHG emissions from transportation.	Regulatory	Implemented	Transport	CO_2	2005	Ontario	NE[f]	NE[f]

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		fossil gasoline on a lifecycle basis before 2030, and 50% fewer from 2030 onward. The regulation also requires fuel suppliers to continue to blend 4% renewable content in diesel. Renewable content must emit 70% fewer GHG emissions than fossil diesel on a lifecycle basis.									
ON-TRN-02	Investing in Electric Vehicles	Ontario is supporting the transition of its automotive sector to clean technology, including: • $772M in support to Stellantis and General Motors to retool Ontario assembly plants and build production lines for EVs; • Supporting a $15B investment by Honda for an EV supply chain including an EV production plant; • $1B to support battery cell manufacturing plants to Volkswagen/ PowerCo and LGES/Stellantis; and, • Supporting Asahi Kasei's $1.6B investment for a	To pivot Ontario's auto manufacturing cluster to the production of battery electric vehicles.	Fiscal Enabling	Adopted	Transport	CO_2, CH_4, N_2O	2022	Ontario	NA[b]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		battery separator plant.									
ON-TRN-03	Making Electric Vehicle Charging More Accessible	Providing $91M to help make EV chargers more accessible to the public across the province, including highway rest stops, carpool parking lots, Ontario Parks and in community hubs like hockey arenas and municipal parks. The province will also introduce the Rural Connectivity Fund to support the installation of EV chargers in rural communities and encourage EV adoption outside of urban centres.	Supporting the uptake of electric vehicles.	Fiscal Enabling	Planned	Transport	CO_2, CH_4, N_2O	2023	Ontario	NA[b]	NE[d]
ON-TRN-04	Ontario Driving Prosperity Plan – Phase 2	Phase 2 focuses on transforming the auto sector by building electric, autonomous, and connected vehicles and supporting a broader supply chain that includes the exploration, mining, and production of critical minerals. It supports attracting large-scale EV manufacturing and aims to attract 2 to 3 battery plants to anchor an advanced electric battery supply chain in Ontario.	Position Ontario as a North American leader in developing and building the car of the future through emerging technologies and advanced manufacturing processes.	Economic Research Information Fiscal Planning Enabling	Implemented	Transport Energy Industrial Processes and Product Use	CO_2, CH_4, N_2O	2021	Ontario	NA[b]	NE[d]

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		Ontario also committed $56.4M to the Ontario Vehicle Innovation Network (OVIN) over four years.									
ON-TRN-05	Ontario Transit Investments	Historic provincial investments across Ontario in transit initiatives that are in various phases of development, including: Ontario Line, Yonge North Subway Extension, Eglinton Crosstown West Extension, Scarborough Subway Extension, GO Rail Expansion, Hamilton LRT, Eglinton Crosstown LRT, Hurontario LRT, and Finch West LRT.	Increasing options for transportation, safe and secure mobility, and lower GHG emissions.	Fiscal	Implemented	Transport	CO_2, CH_4, N_2O	2019	Ontario	NE[f]	580.00
ON-TRN-06	DriveON - Vehicle Emission Testing Program	Combined emissions testing and safety inspection program for heavy-duty diesel commercial motor vehicles, developed in 2022. This regulation does not apply to light passenger vehicles or heavy duty, non-diesel vehicles.	Contribute to Ontario's overall GHG reduction strategy.	Regulatory	Implemented	Transport	CO_2	2022	Ontario	NA[b]	NE[f]
ON-TRN-07	Introduction of Electric Ferries to Provincial Service	The Wolfe Islander IV ferry is one of the first electric passenger and vehicle ferries in North America. The ferry will be able to provide clean reliable service	Contribute to Ontario's overall GHG reduction strategy.	Fiscal	Implemented	Transport	CO_2	2024	Ontario	NA[b]	NE[f]

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		to the communities it serves moving forward. Additionally, Amherst Islander II, another electric passenger ferry is currently in an advanced state of readiness and is planned to be deployed into full-time service in the coming months.									
QC-TRN-01	Québec Assistance Program to Improve Public Transit Services* *(link in French only)*	The program will impact GHG emissions associated with passenger transportation through support for transit authorities to increase public transit services, operations, and capital projects. Investments are made in urban and rural services as well as interregional bus transport. Québec has provided funding of nearly $1.06B for the electrification of urban buses under its 2024-2029 Implementation Plan.	Reduce GHG emissions in the Transportation sector.	Fiscal	Implemented	Transport	CO_2, CH_4	2013	Québec	23.00	NE[f]
QC-TRN-02	Québec Eco-Trucking Program *(link in French only)*	This program aims to promote the use of equipment and technology to improve energy efficiency while reducing GHG emissions in the transportation of goods. The program offers financial support for eligible technology	Reduce GHG emissions in the Transportation sector.	Fiscal	Implemented	Transport	CO_2, CH_4, N_2O	2013	Québec	325.00	NE[f]

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		and the completion of projects to reduce GHG emissions. The program received total funding of $330M under the 2024-2029 Implementation Plan.									
QC-TRN-03	Energy Efficiency Program for Marine, Air and Railway Transportation* *(link in French only)*	This program aims to reduce or avoid GHG emissions by offering financial assistance to improve the energy efficiency of organizations and businesses that use marine, air, or railway transportation services, particularly through the use of more efficient transportation materials and equipment. It has three components: infrastructure and equipment; pilot projects; and studies. Businesses, municipal organizations, and other legally constituted organizations with an establishment in Québec are eligible for the program. The program received total funding of $2M under the 2024-2029 Implementation Plan.	Reduce GHG emissions in the Transportation sector.	Fiscal Research	Implemented	Transport	CO_2, CH_4, N_2O	2022	Québec	135.00	NE[f]
QC-TRN-04	Québec support for the deployment of electric school buses	A total of nearly $340M will be used to fund the School Transportation Electrification Program	Reduce GHG emissions in the Transportation sector.	Fiscal	Implemented	Transport	CO_2, CH_4, N_2O	2013	Québec	NE[f]	NE[f]

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	(link in French only)	between 2024 and 2029, an increase of $130M over the previous 5-year period. Of this amount, $112M was allocated in 2023-24, to be used over 2024 to 2029. Discussions are also underway between the Québec government and the federal government to enhance funding to support school transportation operators in this transition.									
QC-TRN-05	Québec Transportation Electrification Initiatives* [iv] *(link in French only)*	A range of complementary programs and actions are in place to support the reduction of GHG emissions, with priority given to the electrification of modes of transport for people in Québec. In particular, the 2024-2029 Implementation Plan aims to improve accessibility to charging for electric vehicles, with investments that will accelerate the pace of deployment of this essential infrastructure for the 2 million electric vehicles expected on Québec roads in 2030.	Reduce GHG emissions in the Transportation sector and accelerate the deployment of electric vehicles and associated infrastructure.	Economic Fiscal	Implemented	Transport	CO_2, CH_4, N_2O	2012	Québec	90.00	NE[f]

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QC-TRN-06	Québec Zero-Emission Vehicle Regulation*	The government is pursuing the implementation of the light-duty ZEV standard, reinforced in 2023, with a target of 2 million electric vehicles on Québec roads in 2030, as well as the drawing up of a heavy-duty ZEV standard to ensure an adequate supply of electric vehicles. In a complementary move, by December 31, 2024, the government will propose a new regulation banning the sale or lease of certain new on-road combustion vehicles by the end of 2035.	Reduce GHG emissions in the Transportation sector and accelerate the deployment of electric vehicles and associated infrastructure.	Regulatory	Implemented	Transport	CO_2, CH_4, N_2O	2018	Québec	NE[f]	NE[f]
NB-TRN-01	New Brunswick Electric Vehicles and Infrastructure	New Brunswick was the first fully connected province for electric vehicle charging infrastructure with a robust charging network. The New Brunswick Climate Change Action Plan (2022) set a goal to have 6% of new light-duty vehicle sales be electric by 2025, and 50% by 2030, using incentives and programs to promote	To have 20,000 electric vehicles registered by 2030.	Voluntary Agreement Economic	Adopted	Transport	CO_2, N_2O	2021	New Brunswick	NE[b]	50.00[25]

[25] Estimated emissions reductions for 2030 range from 50.00 kt to 250.00 kt.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		electric vehicles and support charging infrastructure in the province.									
NB-TRN-02	Electrify Rebate Program* [iv]	A $5,000 provincial rebate is available for the purchase and lease of a new battery-electric vehicle (BEV) or a long-range plug-in hybrid electric vehicle (PHEV). A $2,500 provincial rebate is available for the purchase or lease of a shorter-range PHEV or a used BEV/PHEV. Additionally, a $750 rebate is available for the installation of a home EV charger. These rebates are offered in addition to the federal rebates for electric vehicles.	Encourage the purchase of electric vehicles.	Economic Fiscal	Implemented	Transport	CO_2, CH_4, N_2O	2021	New Brunswick	NA[b]	NE[f]
NB-TRN-03	Freight Fuel Saving Program	$1.25M freight efficiency program to install fuel saving devices for freight transportation vehicles.	Improve efficiency in freight transportation.	Fiscal	Implemented	Transport	CO_2, CH_4, N_2O	2022	New Brunswick	NA[b]	NE[f]
NB-TRN-04	Government Electric Vehicle Charging	$1M awarded to support the implementation of EV chargers for greening government fleet.	Green government fleet.	Fiscal	Adopted	Transport	CO_2, CH_4, N_2O	2023	New Brunswick	NA[b]	NE[f]
NS-TRN-01	Electric Vehicle Rebate Program* [iv]	A $3,000 rebate is available for the purchase of a new battery-operated electric vehicle or long-range plug-in hybrid electric vehicle. A	Encourage the purchase of electric vehicles.	Economic Fiscal	Implemented	Transport	CO_2, CH_4, N_2O	2021	Nova Scotia	NA[b]	NE[f]

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		$2,000 rebate is available for the purchase of a new short-range plug-in hybrid electric vehicle. A $2,000 rebate is available for the purchase of a used battery-operated electric vehicle and a $1,000 rebate is available for the purchase of a used short-range plug-in hybrid electric vehicle. A $500 rebate is available for the purchase of an e-bike that retails for more than $1,200. These rebates are offered in addition to the federal rebates for electric vehicles.									
PE-TRN-01	Active Transportation Strategy	The Active Transportation Strategy lays out pathways to support Islanders in making active, cleaner, and healthier transportation choices. The Active Transportation Strategy was developed as part of the Sustainable Transportation Action Plan.	Support active transportation.	Voluntary Agreement Information Education Planning Enabling	Implemented	Transport	CO_2	2021	Prince Edward Island	NA[b]	NE[f]
PE-TRN-02	Bike Incentives	The Bicycle Rebate will help increase active transportation on the Island. The instant	Support active transportation.	Economic Fiscal	Implemented	Transport	CO_2	2022	Prince Edward Island	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		rebate of up to $100 will be offered on bicycles with a retail price of up to $2,000 (before tax). There is a price floor of $50 (the bike cannot be sold for a sticker price of less than $50 after the rebate has been applied).									
PE-TRN-03	e-Bike Incentive	The Government of Prince Edward Island is offering eligible Islanders and organizations a $500 rebate for those who purchase an e-Bike (Power Assisted Bicycle). The purpose of the program is to encourage greater adoption of Active Transportation options among Islanders.	Support active transportation.	Economic Fiscal	Implemented	Transport	CO_2	2022	Prince Edward Island	NA[b]	NE[f]
PE-TRN-04	PEI Active Transportation Fund	$25M over 5 years to support active transportation (AT) in PEI. The AT Fund is helping to build new walking and bike paths, install paved shoulders, and better connect existing walking and cycling trails to improve and grow PEI's active transportation network. Sixty-five projects have been completed under the Active Transportation Fund	Support active transportation.	Fiscal	Implemented	Transport	CO_2	2021	Prince Edward Island	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		including investment in PEI's Confederation Trail system.									
PE-TRN-05	PEI Electric Vehicle Charging Funding Program	The PEI Electric Vehicle Charging Fund will support up to 75% of eligible costs for First Nations, municipalities, business, academic and community organizations in PEI to install commercial EV chargers in public parking areas, workplaces, light-duty vehicle fleet parking, and designated multi-unit residential buildings (MURBs). Funded in part through Natural Resources Canada's ZEVIP.	Promote adoption of electric vehicles.	Economic Education Fiscal	Implemented	Transport	CO_2	2022	Prince Edward Island	NA[b]	NE[f]
PE-TRN-06	PEI Electric Vehicle Rebate Program* [iv]	The Electric Vehicle (EV) Rebate Program provides rebates of $2,500 to $5,000 towards a plugin hybrid or new or used EV. This has included investments in EV charging infrastructure for homes, and businesses and multi-unit residential buildings.	Promote adoption of electric vehicles.	Economic Fiscal	Implemented	Transport	CO_2	2021	Prince Edward Island	NA[b]	NE[f]
PE-TRN-07	Prince Edward Island Electric Vehicle Charging Network	Federal and provincial funding support was secured to build PEI's first level 3 EV fast charger network. PEI continues to invest in	Encourage adoption of electric vehicles.	Voluntary Agreement Fiscal	Implemented	Transport	CO_2	2019	Prince Edward Island	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		level 2 public chargers across the province.									
PE-TRN-08	Prince Edward Island Sustainable Transportation Action Plan	The Sustainable Transportation Action Plan was released in 2019 and contains 27 actions in four key areas: public transit, vehicles, active transportation, and community design. A variety of government departments, agencies, and organizations will implement the plan through programs, services, and policies over the course of 5 years.	Reduce emissions from the Transportation sector through efficiency, fuel-switching and alternative transportation modes.	Voluntary Agreement Information Education Planning Enabling	Implemented	Transport	CO_2	2019	Prince Edward Island	NE[f]	NE[f]
PE-TRN-09	Rural Transit Pilot Program	The Province of Prince Edward Island has developed a province-wide integrated public transportation system with routes available across all of PEI. In August 2023, the Governments of Canada and Prince Edward Island announced a joint investment of more than $22.7M to support the expansion and electrification of public transit in Charlottetown.	Reduce GHG emissions.	Fiscal	Implemented	Transport	CO_2	2019	Prince Edward Island	NE[f]	NE[f]
PE-TRN-10	School Bus Electrification	Prince Edward Island announced that the province would transition their school	Reduce GHG emissions.	Fiscal	Implemented	Transport	CO_2	2019	Prince Edward Island	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		bus fleet to electric. As of February 2024, the Province had 107 electric school buses, meaning about one-third of the public school bus fleet has transitioned to electric to date.									
NL-TRN-01	Electric vehicle incentive program*[iv]	Newfoundland and Labrador delivers an EV incentive program for residential and commercial sector battery and plug-in hybrid electric vehicles. Rebates are available for 100% all-electric and plug-in hybrid vehicles purchased or leased between April 1, 2023 and March 15, 2025. Vehicles purchased outside of the province starting April 1, 2024 are no longer eligible for a rebate.	Support EV diffusion.	Economic Fiscal	Implemented	Transport	CO_2, CH_4, N_2O	2021	Newfoundland and Labrador	NA[b]	6.00
NL-TRN-02	Newfoundland and Labrador freight transportation measures	To provide incentives for freight transportation companies to install technologies to reduce fuel consumption and GHG emissions. This program is supported by the Low Carbon Economy Leadership Fund.	Improve on-road freight transportation efficiency.	Economic Fiscal	Implemented	Transport	CO_2, CH_4, N_2O	2019	Newfoundland and Labrador	NE[f]	3.00
NL-TRN-03	Newfoundland electric vehicle charging network	33 level 3 (62.5 KW) charging stations have been installed on the	Encourage adoption of electric vehicles.	Fiscal	Implemented	Transport	CO_2, CH_4, N_2O	2019	Newfoundland and Labrador	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Trans Canada Highway and major provincial highways. Funding is approved to allow for the installation of 10 ultra fast (175 KW) chargers starting in late 2024, Level 3 stations are necessary to allow for increased penetration of EVs in the province.									
YT-TRN-01	Renewable Fuel Regulations**	The Government of Yukon has set a target to reduce the life cycle carbon intensity of on-road transportation fuel sold in Yukon, aiming for 30% by 2030 and align emissions intensity with BC's Low Carbon Fuel Standard.	Reduce GHG emissions from the Transportation sector.	Regulatory	Planned	Transport	CH_4, CO_2, N_2O	2025	Yukon	NA[b]	33.00
YT-TRN-02	ZEV Sales Target/Mandate	The Government of Yukon has committed to 10 actions that increase the number of zero emission vehicles on our roads, which includes setting an ambitious target to ensure zero emission vehicles are 10% of light-duty vehicle sales by 2025 and 60% by 2030. This also includes continuing the electrification of Government of Yukon's vehicle fleet and by 2025 develop vehicle	Reduce GHG emissions from the Transportation sector.	Regulatory Information Fiscal	Implemented	Transport	CH_4, CO_2, N_2O	2020	Yukon	NE[f]	27.00

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		lifecycle management practices that incorporate emissions or GHG emissions reductions into vehicle replacement decision-making.									
NT-TRN-01	Northwest Territories Electric Vehicle Infrastructure Program and GNWT top-up for charging infrastructure developed by electrical utilities	An application-based grant program designed to support the installation of new electric light-duty vehicle charging infrastructure in the NWT in locations including public places, on-street, workplaces and at multi-unit residential build. The program is now closed to new applications. In addition, the Government of the Northwest Territories has provided $1.9M to help develop a fast-charging corridor connecting to Alberta.	Enhance the electric vehicle charging infrastructure network.	Fiscal Economic	Implemented	Transport	CH_4, CO_2, N_2O	2022	Northwest Territories Northwest Territories Power Corporation Naka Power	0.10	1.20

A3.4 Industrial Processes and Produce Use Sector policies and measures

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
BDG-03	Green Construction through Wood (GCWood) program	Provides non-repayable contributions of up to 50% of a project's eligible costs (up to a total of $1.4M) for demonstration projects with high growth potential that target low-carbon, wood-based systems and technologies and advanced building bio-products. Provides non-repayable contributions for eligible costs of Accelerating Construction Transformation projects, including building capacity, advancing wood education, and supporting building codes and standards.	Mitigate GHG emissions in the buildings sector.	Fiscal Economic Research	Implemented	Industrial Processes and Product Use Energy	CO_2	2018	Natural Resources Canada	NE[f]	190.00[26]
BDG-09.1	Low Carbon Building Materials Innovation Hub *Part of the Canada Green Buildings Strategy (BDG-09)*	Provides tools and information promoting the use of lower carbon construction materials (e.g., wood, steel, cement, etc.) in the built environment.	Drive further research, building code reform, and demonstration activities promoting the use of lower carbon construction materials.	Information Enabling	Implemented	Industrial Processes and Product Use Energy	CO_2	2022	Natural Resources Canada	NA[b]	NA[d]

[26] Estimated emissions reductions for 2030 range from 190.00 kt CO_2 eq to 260.00 kt CO_2 eq, including 130.00 kt CO_2 eq to 180.00 kt CO_2 eq stored/sequestered and 60.00 kt CO_2 eq to 80.00 kt CO_2 eq avoided/mitigated.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
BDG-09.5	Climate resilience of the built environment *Part of the Canada Green Buildings Strategy (BDG-09)*	Developing an approach to increasing the climate resilience of the built environment.	Develop an approach to increasing the climate resilience of the built environment.	Fiscal Economic Research	Adopted	Industrial Processes and Product Use Energy	CO_2	2022	Natural Resources Canada	NA[b]	NA[d]
BDG-11	Centre of Excellence in Construction Life Cycle Assessment (CECLA)	Beginning in 2024, the Low Carbon Built Environment Challenge program will implement a Centre of Excellence in Construction Life Cycle Assessment (CECLA) to provide ongoing technical support to federal departments and industry, including the development of environmental data sets, benchmarks, and methodologies for LCA in the Canadian construction sector, supporting the development of low-carbon materials and solutions, and informing low-carbon procurement requirements. Planning for the CECLA has begun and it is on track to be launched in 2024.	A newly developed CECLA at the NRC's Construction Research Centre will help guide RD&D support for low-carbon innovation in the construction industry.	Research Enabling	Planned	Industrial Processes and Product Use Energy	NA	2024	National Research Council Canada	NA[b]	NA[d]
HVI-01	Hydrofluorocarbon (HFC) Regulations*	The HFC Regulations work to support the phase down of consumption of HFCs and prohibits the	Reduce emissions of HFCs.	Regulatory	Implemented	Industrial Processes and Product Use	HFCs	2019	Environment and Climate Change Canada	1,000.00	9,000.00

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		import and manufacturing of products containing or designed to contain HFCs.									
HVI-07	Green Industrial Facilities and Manufacturing Program (GIFMP) *Previously referred to as Industrial Energy Management System*	The GIFMP helps industrial facilities realize energy savings and related cost savings, which contributes to improving competitiveness and sustainability. These savings will support Canada in its efforts to reduce energy consumption and associated GHG emissions.	Improve energy efficiency and reduce GHGs in the industrial sector in Canada.	Fiscal Economic Education Research	Implemented	Industrial Processes and Product Use Energy	CO_2	2022	Natural Resources Canada	NA[b]	2600.00
QC-IPU-01	Supporting industrial energy conversion projects	Decarbonization of the industrial sector mainly involves pursuing energy transition initiatives such as the GHG Challenge program, the development of bio-energies, and other energy conversion projects prioritizing efficient electrification, energy efficiency, and power management. For businesses subject to the Cap-and-Trade System for GHG Emission Allowances, financial assistance is available to analyze the technical and	Reduce emissions by industrial emitters.	Economic Fiscal Research Planning	Implemented	Industrial Processes and Product Use Energy	CH_4, CO_2, HFCs, N_2O, NF_3, PFCs, SF_6	2021	Québec	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		economic potential of decarbonization initiatives and undertake projects to reduce GHG emissions. To date, 49 of the 54 eligible large emitters have confirmed their interest in this initiative. Furthermore, a significant proportion (52.6% in 2021) of the industrial sector's GHG emissions comes from industrial processes and product use. The government will therefore devote $100M to support research and testing of breakthrough technologies to reduce these emissions, as well as carbon capture, utilization, and storage. Projects are underway with cement plants, which are responsible for 12.4% of GHG emissions in Québec's industrial sector. At the request of the Québec government, the province's four cement plants submitted a plan in May 2024 to reduce their GHG emissions. These plans are									

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		currently being analyzed.									
QC-IPU-02	Québec's Regulation respecting halocarbons	The purpose of the strengthened regulation is to reduce the release of halocarbons into the atmosphere in order to ensure the protection of the ozone layer and to minimize the increase in the greenhouse effect. A specific measure on this topic is included in the 2024–2029 Implementation Plan: Recover foam insulation from large household appliances to prevent the release of halocarbons ($20.7M envelope).	Reduce halocarbon emissions.	Regulatory	Implemented	Industrial Processes and Product Use	Other - Halocarbons	2020	Québec	NE[g]	NE[g]

A3.5 Agriculture Sector policies and measures

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
AGR-01	Agricultural Climate Solutions (ACS) program *Part of the Natural Climate Solutions Fund (NBS-01)*	ACS is a multi-stream program that will help to develop and implement farming practices to tackle climate change. By developing, evaluating, adopting, and surveying agricultural technologies and practices, ACS is	Increase carbon sequestration and reduce GHG emissions from the Agriculture sector.	Research Fiscal Economic Education Enabling	Implemented	Agriculture LULUCF	CO_2, CH_4, N_2O	2021	Agriculture and Agri-Food Canada	NE[c]	NE[c]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		focused on sequestering carbon, reducing GHG emissions, and delivering environmental benefits.									
AGR-01.1	Agricultural Climate Solutions: Living Labs Stream** *Part of the Natural Climate Solutions Fund (NBS-01)*	The Living Labs program provides funding for the co-development, testing, adoption, dissemination, and monitoring of technologies and practices, including beneficial management practices (BMPs), that sequester carbon and/or mitigate GHG emissions.	Co-develop and test beneficial management practices that sequester carbon and/or reduce GHG emissions on farms.	Research Fiscal Education Enabling	Implemented	Agriculture LULUCF	CO_2, CH_4, N_2O	2021	Agriculture and Agri-Food Canada	NA[f]	1,000
AGR-01.2	Agricultural Climate Solutions: On-Farm Climate Action Fund** *Part of the Natural Climate Solutions Fund (NBS-01)*	The On-Farm Climate Action Fund awards funding to recipient organizations nationwide to help producers adopt and implement immediate on-farm beneficial management practices (BMPs) with the greatest potential to store carbon and reduce GHG emissions. Estimated emission reductions include 940 kt CO_2 eq related to nitrogen management.	Increase carbon sequestration and reduce GHG emissions from the primary Agriculture sector.	Fiscal Economic Education Enabling	Implemented	Agriculture LULUCF	CO_2, CH_4, N_2O	2022	Agriculture and Agri-Food Canada	NA[b]	2,740

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		The total also includes an estimated reduction of 180 kt CO_2 eq from the $34.1M announced in Budget 2023 to optimize fertilizer use.									
AGR-02	Agricultural Clean Technology Program*	Provides funding for research, innovation, and adoption of clean technology that will support a low-carbon economy and drive sustainable growth in the agriculture sector.	Reduce emissions and drive sustainable growth in the Agriculture Sector.	Research Fiscal Economic Enabling	Implemented	Agriculture Energy	CO_2, CH_4, N_2O	2020	Agriculture and Agri-Food Canada	NE[d]	NE[d]
AGR-02.1	Agricultural Clean Technology Program: Adoption Stream*	The Adoption Stream supports the purchase and installation of commercially available clean technology or equipment upgrades that will reduce GHG emissions.	Reduce emissions and drive sustainable growth in the Agriculture sector.	Fiscal Economic	Implemented	Agriculture	CO_2, CH_4, N_2O	2020	Agriculture and Agri-Food Canada	NE[f]	300
AGR-02.2	Agricultural Clean Technology Program: Research and Innovation Stream*	The Research and Innovation Stream supports pre-market innovation, including research, development, demonstration, and commercialization activities to develop transformative clean technologies and enable the expansion of current technologies in three priority areas: green energy and energy efficiency; precision agriculture; and bioeconomy.	Reduce emissions and drive sustainable growth in the Agriculture sector.	Research Fiscal Enabling	Implemented	Agriculture Energy	CO_2, CH_4, N_2O	2021	Agriculture and Agri-Food Canada	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
AGR-02.3	Agricultural Methane Reduction Challenge	The Agricultural Methane Reduction Challenge awards funds to innovators advancing low-cost and scalable practices, processes, and technologies designed to reduce methane emissions produced by cattle in the cow-calf, dairy, and feedlot industries.	Reduce emissions and drive sustainable growth in the Agriculture sector.	Research Fiscal	Implemented	Agriculture	CO_2, CH_4, N_2O	2023	Agriculture and Agri-Food Canada	NA[b]	NE[f]
AGR-03b	Sustainable Canadian Agricultural Partnership (Sustainable CAP)**	Funding is provided to strengthen competitiveness, innovation, and resiliency in the agriculture, agri-food and agri-based products sector. Launched in April 2023, Sustainable CAP is a five-year $3.5B investment that includes $1B for federal programming and $2.5B for programming that is cost-shared 60:40 by the federal, provincial, and territorial governments to focus on five priority areas, including the Climate Change and Environment priority area, which specifically	Tackling climate change and environmental protection to support GHG emission reductions and the long-term vitality of the sector while positioning producers and processors to seize economic opportunities from evolving consumer demands.	Fiscal Economic Research Voluntary Agreement Enabling	Implemented	Agriculture LULUCF	CO_2, CH_4, N_2O	2023	Agriculture and Agri-Food Canada	NA[b]	410[27]

[27] The total estimated emissions reductions includes 70 kt CO_2 eq from fertilizer BMPs.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		addresses climate change and advancing environmental sustainability. This does not include the Resilient Agricultural Landscape Program (RALP), reported separately (see AGR-03.1).									
AGR-04	Fertilizer emission reduction target**	Under Canada's strengthened climate plan, the Government of Canada committed to setting a national fertilizer emission reduction target of 30% below 2020 levels by 2030 and to work with fertilizer manufacturers, farmers, provinces, and territories to develop an approach to meet it.	Reduce emissions from fertilizer.	Information Education Voluntary Agreement	Implemented	Agriculture	N_2O	2022	Agriculture and Agri-Food Canada	NA[b]	NA[c,28]
AGR-05	Sustainable agriculture and agri-food innovation for a net-zero economy	Investment in transformative science for a sustainable sector in an uncertain climate and net-zero economy for 2050. Funding will support fundamental and applied research supporting a path to net-zero emissions, knowledge transfer, and developing metrics.	Reduce GHG emissions from the Agriculture sector.	Research Fiscal Enabling	Implemented	Agriculture	CO_2, CH_4, N_2O	2023	Agriculture and Agri-Food Canada Natural Sciences and Engineering Research Council of Canada Social Sciences and Humanities	NA[b]	NE[d]

[28] Estimated fertilizer emission reductions are captured as a portion of the projected emission reductions for programs where the reductions were funded, e.g., On-Farm Climate Action Fund (AGR-01.2) and the Sustainable Canadian Agricultural Partnership (AGR-03b)

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
									Research Council		
AGR-06	Sustainable Agriculture Strategy	Establish a long-term vision and approach to agri-environmental issues to advance the sustainability, competitiveness, and vitality of the sector.	Improve environmental performance in the Agriculture sector.	Voluntary Agreement Planning Enabling	Planned	Agriculture LULUCF	CO_2, CH_4, N_2O	TBD	Agriculture and Agri-Food Canada	NA[b]	NE[e]
BC-AGR-01	Agricultural Clean Technology and Adaptation Initiatives	As part of the CleanBC Roadmap to 2030, BC will continue to support the transition to technologies and practices that reduce both net GHG emissions and operating costs for producers. Initiatives include the B.C. Centre for Agritech Innovation and BC's Climate Preparedness and Adaptation Strategy.	Reduce GHG emissions from the Agriculture sector and support the sector's adaptation to climate change.	Economic Fiscal	Implemented	Agriculture LULUCF	CO_2	2021	British Columbia	NA[f]	700.00
BC-AGR-02	British Columbia Nutrient Management Program	The Nutrient Management Program promotes the right amount, form, placement, and timing of fertilizers and manure to optimize crop growth and minimize the environmental impacts of nutrient application, including GHG emissions and nitrate leaching into ground water. As of 2023, farms that apply nutrients will need a nutrient management	Reduce GHG emissions in the Agriculture sector.	Education Regulatory Enabling	Implemented	Agriculture	N_2O	2015	British Columbia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		plan in place by the 2024 growing season if they meet certain criteria.									
MB-AGR-01	Ag Action Manitoba Program – Assurance: Beneficial Management Practices and Watershed Ecological Goods and Services	Ag Action Manitoba provides funding to help farmers implement and adopt beneficial management practices (BMPs) on their farm identified in their Environmental Farm Plan. Farmers can apply directly to the Ag Action Manitoba BMP activity for practices that provide environmental benefits, including reducing on-farm GHG emissions. Watershed districts can apply to the Ag Action Manitoba program activity called Watershed Ecological Goods and Services, which provides funding to watershed districts to work with farmers to implement practices that conserve and enhance ecological goods and services on the agricultural landscape.	Reduce emissions, enhance carbon sequestration, and provide co-benefits such as water quality, biodiversity, soil health, etc.	Voluntary Agreement Fiscal Economic	Implemented	Agriculture LULUCF	CO_2, CH_4, N_2O	2018	Manitoba	85.90	NE[f]
MB-AGR-02	Manitoba's Protein Advantage Strategy	Released in 2019, the Protein Advantage Strategy aims to grow the plant and animal protein industry by creating new value for producers and	Attract new investment and growth in the plant and animal protein industry, while improving sustainability.	Information Planning Research Education	Implemented	Agriculture LULUCF	CO_2, CH_4	2019	Manitoba	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		processors through targeted innovation and value chain collaboration. The key objectives of the strategy are to attract new investments of $1.5B and create 1,550 jobs by 2025. The strategy aims to reduce carbon intensity per kilogram of animal protein by 15% and increase productivity of agricultural Crown lands and privately owned grasslands and forages by 15%.		Enabling							
ON-AGR-01	Ontario's Agrifood Energy Cost Savings Initiative	Investments by the governments of Canada and Ontario through the Sustainable Canadian Agricultural Partnership resulted in over $16M worth of energy cost savings projects to help food processing businesses increase energy efficiency and lower their costs. The cost-shared funding, provided through the Agri-Food Energy Cost Savings Initiative will help 30 food processors lower their energy costs to be more competitive and sustainable.	Increase energy efficiency and lower costs in the food processing industry.	Fiscal Economic	Implemented	Agriculture Energy	CO_2	2023	Ontario	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
ON-AGR-02	Agri-Tech Innovation Initiative	The governments of Canada and Ontario are investing up to $25M, through the Sustainable Canadian Agricultural Partnership (Sustainable CAP), to expand production capacity and boost energy efficiency in the agriculture and food sector. Through the Agri-Tech Innovation Initiative, funding will be provided to eligible farm and food processing businesses to help them invest in innovative technology, equipment, or processes that will expand production capacity or enhance efficiency.	Increase energy efficiency and production capacity in the agriculture and food processing industries.	Fiscal Economic	Adopted	Agriculture Energy	CO_2	2024	Ontario	NA[b]	NE[f]
NB-AGR-01	Farm Based Anaerobic Digesters	$1.5M program to support feasibility studies for the development of farm-based anaerobic digesters.	Support the development of anaerobic digester projects to reduce methane emissions and produce renewable energy	Fiscal Research	Implemented	Agriculture	CH_4	2024	New Brunswick	NA[b]	0.25
PE-AGR-01	PEI Agriculture Climate Solutions Program	The PEI Agriculture Climate Solutions Program is designed to encourage and assist the PEI agriculture industry to implement best management	Support farmers to mitigate the production of GHGs and/or sequester carbon in the soil.	Fiscal Economic Research	Implemented	Agriculture LULUCF	CO_2, N_2O	2021	Prince Edward Island	NE[f]	0.23

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		practices that mitigate the production of GHGs during or from various agricultural activities or by prompting carbon storage in soils. The Program provides financial assistance for the adoption of beneficial on-farm projects, payments that encourage the adoption of beneficial practices through demonstration, validation, and knowledge-transfer. Funding for this program is provided by Environment and Climate Change Canada's Low Carbon Economy Fund and the Province of Prince Edward Island.									
PE-AGR-02	Ruminant Feeding Trials	Trial-based research activities determining the impact of including kelp in dairy and beef rations on methane emissions. In-vitro research suggests that kelp inclusion can achieve a 30% reduction in methane. This finding will be validated in the feeding trial, and optimal inclusion rate will be determined.	Reduce GHG Emissions.	Research Enabling	Implemented	Agriculture	CH_4	2022	Prince Edward Island	NA[b]	NE[f]

A3.6 Waste Management Sector policies and measures

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
WST-01	Food Waste Reduction Challenge	A five-year challenge to incentivize developing and deploying innovative new solutions to reduce food waste across the supply chain.	Reduce food waste.	Fiscal Economic Research Enabling	Implemented	Waste Management	CO_2, CH_4	2021	Agriculture and Agri-Food Canada	NE[d]	NE[d]
WST-02	Zero plastic waste	Comprehensive approach to reduce plastic waste and pollution and move towards a circular economy that includes conducting and investing in research to advance Canada's Plastics Science Agenda, innovation through Canadian Plastics Innovation Challenges, support for sector-targeted solutions, greening operations and procurement, and the implementation of the Canada wide Action Plan on Zero Plastic Waste.	Enable emissions reductions through changes in demand for virgin and/or recycled resins, and product life extension.	Regulatory Voluntary Agreement Information Research Fiscal	Adopted	Waste Management	CO_2	2019	Environment and Climate Change Canada	NE[e]	NE[e]
WST-03	Minimum recycled content and labelling regulations for certain plastic manufactured items	Government of Canada's commitment to develop new regulations that will set minimum recycled content requirements and establish rules for recyclability and compostability labelling for certain single-use	The proposed recycled content requirements would increase demand for recycled resin, which would reduce carbon emissions associated with	Regulatory Information	Planned	Waste Management Industrial Processes and Product Use	CO_2	TBD	Environment and Climate Change Canada	NA[b]	NA[e]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		plastic products and packaging. The proposed Regulations are expected to decrease the amount of domestically produced plastic waste being landfilled by more than 9.5 million tonnes between 2025 and 2041. This measure is on hold pending a decision from the Federal Court of Appeal.	the production of virgin resin.								
WST-04	Single-use Plastics Prohibition Regulations (SUPPR)	The Government of Canada introduced SUPPR to phase out six categories of harmful single use plastic items that have readily available alternatives. Businesses across the country have stepped up and successfully transitioned to sustainable alternatives. This has already led to significant reductions in plastic pollution.	Expected to result in a net decrease of approximately 1.3 million tonnes in plastic waste over the 10-year analytical period (2023 to 2032).	Regulatory	Adopted	Waste Management	CO_2	2022	Environment and Climate Change Canada	NA[b]	NA[e]
WST-05	International legally binding agreement on plastic pollution	The Government of Canada will continue to play a leadership role on plastic pollution internationally,	Enable emissions reductions through changes in demand for virgin and/or	Regulatory Voluntary Agreement	Planned	Waste Management	CO_2	TBD	Environment and Climate Change Canada	NA[b]	NE[e]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		particularly in the development of a new international legally binding agreement on plastic pollution.	recycled resins, and product life extension.	Research							
WST-06	New regulations on reducing methane emissions from landfills**	The Government of Canada is developing new regulations to increase the number of landfills that collect and treat methane. Draft regulations were published in Canada Gazette Part I for public comment in June 2024. Final regulations are anticipated in 2025.	Reduce methane emissions from landfills.	Regulatory	Planned	Waste Management	CH_4	TBD	Environment and Climate Change Canada	NA[b]	8,000.00
BC-WST-01	British Columbia Organics Infrastructure Program (OIP)*	The OIP helps reduce GHG emissions by investing up to $30M into projects that support increasing organic waste processing capacity and keeping organic waste out of landfills. The program supports projects that propose new or expanded facilities for composting and anaerobic digestion (e.g., converting organic waste to energy). BC developed the OIP in partnership with federal and local governments.	Reduce GHG emissions from waste.	Fiscal	Implemented	Waste Management	CH_4	2019	British Columbia	22.60	105.30
BC-WST-02	British Columbia Landfill Gas Management Regulation*, [iv]	Under the regulation, last amended in 2022, regulated landfill sites are required to conduct	Increase methane capture rate at landfills.	Regulatory	Implemented	Waste Management	CH_4	2009	British Columbia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		landfill gas assessments. If the assessment estimates a landfill will generate more than 1,000 tonnes of methane in a calendar year, then they must install and operate a landfill gas collection and destruction system. Reduction estimates for the landfill gas assessments are based on modelling of likely impact of the regulatory approach, allowing for variances in the performance of the technologic solutions applied to meet the standard. CleanBC commits the province to helping communities have systems in place to capture 75% of landfill gas.									
BC-WST-03	CleanBC Organics Infrastructure and Collection Program (OICP)*	The OICP keeps organic waste out of landfills and reduces GHG emissions. OICP funding supports the total investment of $38.85M towards building new and expanding existing organic waste-processing facilities and residential household collection programs. The BC	Improve organic waste collection and processing.	Fiscal Economic	Implemented	Waste Management	CH_4	2021	British Columbia	18.80	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		government contributed $25.9M to fund up to 66% of eligible project costs of the successful projects.									
BC-WST-04	CleanBC Plastics Action Plan/ Single-Use and Plastic Waste Prevention Regulation	CleanBC Plastics Action Plan released and implemented; examples of actions include shoreline clean-up and changes to the Recycling Regulation. The Single-Use and Plastic Waste Prevention Regulation provides a framework to phase out certain single-use and plastic items and address waste and pollution in BC. The Action Plan includes the Clean Coast Clean Waters funding program for shoreline clean-up and derelict vessel removal.	Prevent waste, encourage reuse, and improve plastics recycling.	Fiscal Economic Regulatory Information Planning	Implemented	Waste Management	CO_2, CH_4	2021	British Columbia	NA[f]	NE[f]
BC-WST-05	Management of Wastewater Biosolids in BC	BC's Organic Matter Recycling Regulation (OMRR) sets requirements for the production, distribution, storage, sale, and use of biosolids and compost. The Canadian Council of Ministers of the Environment (CCME) identified energy production, compost and soil products,	Improve use of biosolids.	Research Regulatory	Implemented	Waste Management	CO_2, CH_4, N_2O	2012	British Columbia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		agricultural land and forestry applications, and land reclamation as potential beneficial use options for biosolids. When beneficially reused, biosolids replenish soils with nutrients, fix carbon and suppress fugitive landfill methane (when applied as a biocover).									
MB-WST-01	Manitoba Waste Reduction and Recycling Support (WRARS) Payments*, [iv]	The Manitoba government is providing more than $8.7M for initiatives such as the blue bin recycling program, organic waste diversion, and the safe disposal of residential hazardous waste. In 2022-23, Manitoba provided $875K in Manitoba Compost Support Payments to participating compost facilities that collectively diverted over 77,000 tonnes of organic waste diverted from landfills. In 2023-24, Manitoba provided $875K in Manitoba Compost Support Payments to participating compost facilities that collectively diverted over 83,000 tonnes of	Divert food and organic waste from landfills.	Information Fiscal	Implemented	Waste Management	CO_2	2009	Manitoba	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		organic waste from landfills.									
ON-WST-01	Ontario's Food and Organic Waste Framework	Ontario's plan to reduce food waste and recover resources from food and organic waste; and reduce GHG emissions from the waste sector.	Strategy for a zero-waste future with zero GHG emissions from the waste sector	Fiscal Planning Research Education	Implemented	Waste Management	CO_2, CH_4	2018	Ontario	NE[f]	970.00
QC-WST-01	Québec Program for Processing organic matter using biomethane and composting *(link in French only)*	This program provides financial support to municipalities and the private sector for the installation of organic waste treatment facilities. It aims to divert organic matter destined for disposal, and thus, reduce GHG emissions. Project submissions closed on December 31, 2023.	Reduce emissions in the Waste sector.	Fiscal	Implemented	Waste Management	CH_4, CO_2, N_2O	2009	Québec	80.00	NE[g]
QC-WST-02	Québec Residual Materials Management Policy* *(link in French only)*	One of the flagship initiatives that will be put forward to reduce emissions in this sector is the reclamation of municipal sludge for the City of Montréal. This project, which will be partly funded by the Québec government, will replace the incinerators at the wastewater treatment plant, which is responsible for 40% of GHG emissions from the City's operations. There will also be an increase in regulatory requirements	Reduce emissions from the Waste sector. Reduce halocarbon emissions.	Regulatory Fiscal Information	Implemented	Waste Management	CH_4, CO_2, N_2O, Other - Halocarbons	2011	Québec	NE[g]	NE[g]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		surrounding the capture and reclamation of methane at landfill sites. A total budget of $107.4M is earmarked for residual materials management in the 2024–2029 Implementation Plan.									
QC-WST-03	Québec Charges (Regular and Additional) for Residual Material Disposal	Charges for residual material disposal were introduced in 2006 and 2010 to reduce the quantities of residual materials subject to disposal and to increase the lifespan of disposal sites. The charges also fund the preparation, implementation, and revision of residual material management plans as well as the measures arising from the Québec Policy on Residual Waste Management and the Biomethanization and Composting Treatment of Organic Waste Program. Charges payable for the disposal of residual materials are indexed on January 1 of each year by $2/metric ton. Since January 2024, disposal charges have	Reduce emissions in the Waste sector.	Regulatory Economic	Implemented	Waste Management	CO_2, CH_4, N_2O	2006	Québec	NE[g]	NE[g]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		been $32/metric ton. A partial charge corresponding to one third of the amount of disposal charges is also payable for residual materials intended for non-final recovery and for the construction of access roads in residual material disposal areas. Since January 2024, the partial charge has been $10.67/metric ton.									
QC-WST-04	Québec's Organic Materials Reclamation Strategy* *(link in French only)*	In 2020, Québec released its Organic Materials Reclamation Strategy, which aims to: • Offer organic matter collection to all Québec citizens by 2025; • Manage organic matter in all industrial, commercial, and institutional buildings by 2025; • Recycle or reclaim 70% of targeted organic matter by 2030; and, • Reduce emissions by 270 kt CO_2 eq per year by 2030. The 2024–2029 Implementation Plan allocated $85M for the	Reduce emissions in the Waste sector.	Regulatory Economic Fiscal Information Planning	Implemented	Waste Management	CH_4, CO_2, N_2O	2020	Québec	NE[g]	NE[g]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		construction of composting and biomethanization facilities. Note that this amount is an integral part of the total spending envelope of $107.4M for the residual materials industry in the 2024–2029 Implementation Plan.									
NB-WST-01	New Brunswick Landfill Gas Management	As per Action 13 of the NB Climate Change Action Plan, NB has developed a performance standard to increase landfill gas capture at NB landfills. Similarly, in June 2024 ECCC released its proposed regulation for methane from the Waste Sector. Landfills in NB will be required to reduce GHG emissions from either the NB performance standard or the proposed federal regulation.	Increase methane capture rate at regional landfills.	Voluntary Agreement Regulatory	Implemented	Waste Management	CH_4	2014	New Brunswick	340.00	340.00
NB-WST-02	New Brunswick Support Strategic AD Projects	NB is providing financial support to complete anaerobic digestors feasibility studies that will increase the local production of biogas.	Incentivize and support the local production of Biogas.	Fiscal Research	Implemented	Waste Management Agriculture	CO_2, N_2O, CH_4	2024	New Brunswick	NA[b]	200.00
NB-WST-03	New Brunswick Solid Waste Management Strategy	Three pillar pathway to transforming NB waste into materials for tomorrow.	Reduce annual solid waste in landfills.	Regulatory Voluntary Agreement	Implemented	Waste Management	CO_2, N_2O, CH_4	2023	New Brunswick	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		By 2030, New Brunswick will achieve an annual 40,000 tonne reduction in solid waste being regionally landfilled, while creating a foundation that allows the province to effectively work towards reaching further waste reductions in the future.		Information Research Planning							
NS-WST-01	Nova Scotia Solid Waste Resources Management Regulations	Nova Scotia is advancing its circular economy efforts, maximizing material use and reducing waste. Key progress includes amending the Solid Waste Resource Management Regulations in 2023 to introduce Extended Producer Responsibility (EPR) for small appliances and batteries. The province has also launched new EPR regulations for packaging, paper products and packaging-like products. Public engagement has been instrumental in shaping waste reduction strategies, guiding the plan to reduce solid waste disposal to 300 kg per person	Increase the rate of waste diversion from landfills in Nova Scotia.	Regulatory Information	Implemented	Waste Management	CH_4, CO_2	1996	Nova Scotia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		annually by 2030. These initiatives align with the commitment in the *Environmental Goals and Climate Change Reduction Act* to sustainable waste management.									

A3.7 Land Use, Land-Use Change and Forestry Sector policies and measures

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
AGR-03.1	Resilient Agricultural Landscape Program (RALP)** *Part of the Sustainable Canadian Agricultural Partnership (AGR-03b)*	The RALP is a Federal-Provincial-Territorial cost-shared program that supports on-farm adoption using an ecological goods and services program approach and has been designed and delivered by provinces and territories in collaboration with AAFC to reflect local conditions and regional needs.	Support producers to conserve and enhance the resiliency of agricultural landscapes by accelerating the adoption of on-farm land-use and management practices such as restoring and maintaining grasslands, wetlands, agroforestry, riparian areas, and other regionally-relevant practices.	Fiscal Economic	Implemented	LULUCF Agriculture	CO_2, N_2O, CH_4	2023	Agriculture and Agri-Food Canada	NA[b]	3,000.00[29]

[29] Combined estimated emissions reductions for Sustainable CAP (AGR-03b) and RALP (AGR-03.1) for 2030 range from 3,000.00 kt to 3,500.00 kt.

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
NBS-01	Natural Climate Solutions Fund (NCSF)* **	The Natural Climate Solutions Fund will help Canada meet its 2030 and 2050 climate change mitigation objectives by reducing emissions from land management and strengthening resilience to climate change. The NCSF will invest nearly $5.5B over 10 years. This initiative consists of three distinct, but related, programs: • 2 Billion Trees Program led by Natural Resources Canada ($3.2B) • Nature Smart Climate Solutions led by Environment and Climate Change Canada ($1.4B) • Agricultural Climate Solutions led by Agriculture and Agri-Food Canada ($889.1M)	Address climate change and biodiversity loss.	Fiscal Education Research Enabling	Implemented	LULUCF Agriculture	CO_2	2021	Natural Resources Canada Environment and Climate Change Canada Agriculture and Agri-Food Canada	NE[d]	NE[d]
NBS-01.1	Nature Smart Climate Solutions Fund (NSCSF) *Part of the Natural Climate Solutions Fund (NBS-01)*	Provides funding for projects that conserve, restore, and enhance forests, wetlands, peatlands, and grasslands to store and capture carbon.	Reduce Canada's net GHG emissions using natural climate solutions, while providing benefits for biodiversity and human well-being.	Fiscal Research	Implemented	LULUCF	CO_2, N_2O	2021	Environment and Climate Change Canada	NA[b]	5,000.00

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
NBS-01.1a	Indigenous-led Natural Climate Solutions Initiative** *Part of the Natural Climate Solutions Fund (NBS-01)*	Within the NSCSF, up to $76.9M has been set aside for Indigenous-led natural climate solutions, to provide targeted support to Indigenous Nations, communities, and organizations to engage as leaders in natural climate solutions. This funding further supports the Government of Canada's commitment to Reconciliation.	Build capacity for and undertake ecological restoration, improved land management, and conservation.	Fiscal Education Research	Implemented	LULUCF	CO_2	2021	Environment and Climate Change Canada	NE[f]	NE[f]
NBS-01.2	2 Billion Trees Program (2BT)* *Part of the Natural Climate Solutions Fund (NBS-01)*	The 2 Billion Trees program aims to motivate and support new tree planting projects. Over a period of 10 years, by 2031, up to $3.2B will be invested in tree planting efforts to support provinces, territories, municipalities, third-party organizations (for and not-for profit) and Indigenous organizations contribute to the Government of Canada's commitment to plant 2 billion trees across Canada.	Contribute to Government of Canada's commitment to plant 2 billion trees to increase carbon sequestration while achieving co-benefits for biodiversity and human well-being.	Fiscal Economic Enabling	Implemented	LULUCF	NA	2021	Natural Resources Canada	NA[d]	NA[d]
NBS-02	Indigenous-Led Area-Based Conservation	Indigenous-Led Area-Based Conservation (ILABC) provides funding to Indigenous Peoples to lead or co-	Contribute to Canada's goal of conserving 25% of land and inland waters by 2025,	Fiscal Economic Education	Implemented	LULUCF	CO_2	2021	Environment and Climate Change Canada	NA[b]	NA[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
	Previously referred to as Indigenous Protected and Conserved Areas (IPCA)	lead the establishment and recognition of protected areas or other effective area-based conservation mechanisms (OECMs) across Canada.	and 30% of each by 2030.								
NBS-03	25 by 25 and 30 by 30	The Government of Canada is committed to conserving 25% of Canada's lands and 25% of its waters by 2025 and 30% of each by 2030.	Conserve wildlife and habitat, including species at risk and migratory birds, and contribute to broader nature-related outcomes of halting and reversing biodiversity loss, all while respecting the rights and roles of Indigenous Peoples.	Regulatory Voluntary Agreement	Adopted	LULUCF Transport Waste Management Energy	CO_2	2021	Environment and Climate Change Canada Fisheries and Oceans Canada	NA[b]	NE[f]
NBS-04	Natural Infrastructure Fund	Invests in projects that use natural or hybrid approaches to protect the natural environment, support healthy and resilient communities, contribute to economic growth, and improve access to nature for Canadians.	Support communities to use their ecosystems to improve quality of life, reduce pollution, enhance biodiversity and habitats, and build resilience to climate change.	Fiscal Enabling	Implemented	LULUCF	NA	2021	Housing, Infrastructure, and Communities Canada	NA[b]	NA[d]
BC-LCF-01	Forest Investment Program	The Forest Investment Program (FIP) was established in 2021 and oversees the investment of approximately $95M annually. In 2024-25	Enhance forest carbon removals and reduce emissions.	Fiscal	Implemented	LULUCF	CO_2, CH_4, N_2O	2017	British Columbia	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		FIP will support the planting of over 51 million trees and application of nutrients to over 30,000 ha of nutrient-deficient forests.									
BC-LCF-02	Growing and Caring for BC's Carbon Sinks	BC is partnering with Canada to plant more trees and create larger carbon sinks, including through the 2 Billion Trees Program and Forest Investment Program. BC is also partnering with Indigenous peoples and industry to build the market for high-value wood products that store carbon or displace products made with fossil fuels, through the Fibre Utilization Funding Program and the Indigenous Forest Bioeconomy Program.	Reduce GHG emissions and increase storage in the LULUCF sector.	Research Information Economic	Implemented	LULUCF	CO_2	2024	British Columbia	NA[b]	NE[f]
SK-LCF-01	Saskatchewan Agriculture Water Management Strategy	Saskatchewan's Agricultural Water Management Strategy facilitates responsible drainage to support productivity, wetland habitat conservation, and improve runoff management during extreme weather events. This Strategy balances development with four agri-environmental	Support responsible and sustainable agricultural water management practices that protect the environment.	Regulatory	Implemented	LULUCF Agriculture	N_2O	2018	Saskatchewan	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		priorities: flooding, drought, and adaptation; water quality; habitat; and soil health and GHG management. The Strategy supports resiliency to climate change by preserving wetland carbon sinks, preventing stored GHGs from entering the atmosphere, and reducing the amount of fertilizer lost to the atmosphere as N_2O through volatilization.									
SK-LCF-02	Saskatchewan Forest Management on Crown Lands	Saskatchewan manages Crown forests through sustainable forest management practices, which is key to carbon emission management. Forests are managed through practices that enhance the removal and storage of carbon from the atmosphere while allowing for sustainable harvesting, following principles of natural forest patterns, prompt reforestation, reducing wildfire risk, and maintaining forest biodiversity and productivity. In 2023, after a review, the content and terminology of the Forest Management	Increase carbon sequestration.	Voluntary Agreement Regulatory Education Information	Implemented	LULUCF	CO_2	2018	Saskatchewan	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		Planning Standard was updated.									
MB-LCF-01	Sustainable Agriculture Manitoba	Sustainable Agriculture Manitoba (SAM) provides funding to farmers and land managers to implement cost-shared beneficial management practices (BMPs) that increase the environmental and economic sustainability of agriculture operations in Manitoba. Priority areas include climate change adaptation and mitigation, air quality, water quality and quantity, soil health, and biodiversity. Projects that received funding under the latest intake process must be complete by March 31, 2025.	Increases environmental and economic sustainability of agricultural operations.	Fiscal Economic Voluntary Agreement	Implemented	LULUCF Agriculture	CO_2, CH_4	2018	Manitoba	NE[f]	NE[f]
MB-LCF-02	Manitoba Conservation Trust	The $102M Conservation Trust established in 2018 supports programs related to conserving ecosystems, enhancing natural infrastructure, improving water quality, and strengthening flood and drought mitigation and adaption to the impacts of climate. The program supports	Increase carbon sequestration and other benefits (reduce flooding and drought vulnerability, improve water quality, etc.).	Voluntary Agreement Fiscal Economic Research Education	Implemented	LULUCF	CO_2, N_2O	2018	Manitoba	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		increasing carbon sequestration. In 2024, there were $2.2M in new grants to 15 projects delivered by 11 Manitoba-based conservation groups. The $2.2M in Trust funds is being matched by $5.6M in funds and services by the groups, which will result in $7.8M of conservation activity in Manitoba.									
MB-LCF-03	Manitoba Growing Outcomes in Watersheds Program	The Growing Outcomes in Watersheds (GROW) Program supports emissions reduction and sequestration. The program will help producers with the establishment of projects that improve on-farm water management, enhance sustainable agricultural production, improve biodiversity and habitat, and carbon sequestration and storage.	Improve watershed resilience to the impacts of a changing climate.	Voluntary Agreement Economic Fiscal	Implemented	LULUCF Agriculture	CO_2, N_2O	2019	Manitoba	NE[f]	NE[f]
MB-LCF-04	Water Management Strategy	Manitoba has developed a comprehensive provincial Water Management Strategy to conserve wetlands, enhance resilience, improve surface water quality, manage nutrients, protect	Protect the province's water resources and ecosystems while sustainably growing the economy and communities.	Information Planning Research Education Fiscal	Implemented	LULUCF	CO_2	2022	Manitoba	NA[b]	NE[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		biodiversity, and sustain economic development.		Enabling							
ON-LCF-01	Ontario Provincial Land Use Policy, Plans and Legislation	Ontario's *Planning Act* requires that planning authorities have regard to matters of provincial interest, including the mitigation of GHG emissions. It requires that a municipal official plan contain policies that identify goals, objectives, and actions to mitigate GHG emissions. The Provincial Planning Statement 2024 (PPS 2024), effective October 2024, applies Ontario-wide, and sets the policy foundation for regulating land use and development. The PPS 2024 includes policies to support reduction of GHG emissions and requires municipalities to integrate these considerations in their local official plans, zoning by-laws and land use planning decisions.	Reduce GHG emissions through land use planning policies and approaches such as permanently protecting prime agricultural land and environmental sensitive areas.	Regulatory Planning Enabling	Implemented	LULUCF	CO_2	2005	Ontario	NE[d]	NE[d]
ON-LCF-02	Mitigation through Sustainable Forest Management	Ontario sustainably manages large, healthy, resilient forests using a forest policy framework that is continuously	Sustainable forest management.	Information Research Education	Implemented	LULUCF	CO_2	2014	Ontario	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		updated with the best available science and supports climate change adaptation and mitigation. Ontario encourages climate change mitigation through relevant sustainable forest management policies, guidance, and manuals and supports opportunities for forest managers to reduce emissions and increase carbon storage in forests and harvested wood products. The most recent Forest Management Planning Manual was released in March 2024.									
ON-LCF-03	*Sustainable Growth: Ontario's Forest Sector Strategy*	Ontario is implementing *Sustainable Growth: Ontario's Forest Sector Strategy* to enhance carbon sequestration through increased forest growth, increase carbon storage in wood products, and mitigate emissions through substitution benefits associated with replacing less environmentally friendly products with wood. To deliver commitments in the Strategy, the province	Enhance carbon sequestration through forest growth and encourage sustainable choices.	Information Research Education Economic Planning Enabling	Implemented	LULUCF	CO_2	2020	Ontario	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		developed a Forest Biomass Action Plan aimed at encouraging sustainability in the forest sector, while supporting economic development using forest biomass. Ontario is also proposing an Advanced Wood Construction Action Plan (AWCAP), aimed at adopting low-carbon materials, optimized construction methods, and building systems that support energy-efficient operations. The AWCAP will be implemented beginning in 2025.									
ON-LCF-04	Ontario's Resilient Agricultural Landscape Program	The Governments of Canada and Ontario have committed $56.7M through the Sustainable Canadian Agricultural Partnership to the deliver the Resilient Agricultural Landscape Program (RALP). This five-year program will make funds available to eligible farmers to complete projects such as natural grassland establishment, perennial biomass	Reduce emissions and/or sequester carbon from the agriculture sector.	Economic	Implemented	LULUCF Agriculture	CO_2	2023	Ontario	NA[b]	NE[c]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		crops, reducing tillage, and creating water retention ponds to reduce greenhouse gas emissions and sequester carbon.									
NB-LCF-01	Resilient Agricultural Landscape Program	Funding from this program will directly support the development of resilient farmlands and help farmers in New Brunswick protect their land and their operations.	Protect marginal land, wetlands and ponds, and pollinator habitat.	Fiscal Economic	Implemented	LULUCF	CO_2, N_2O, CH_4	2024	New Brunswick	NA[b]	NE[c]
NB-LCF-02	Accounting and management of agriculture carbon sinks	Commencing a two-phase research project: Phase 1: The Evaluation of GHG Emissions and Carbon Capture on New Brunswick Farms; and Phase 2: Benchmarking GHG emissions and carbon sequestration on New Brunswick farms in the potato, blueberry and dairy sectors using HOLOS software. This research has received funding through the province's Climate Change Fund 2024-25 disbursement.	Improve the accounting and management of carbon sinks.	Voluntary Agreement Research Enabling	Implemented	LULUCF Agriculture	CO_2	2021	New Brunswick	NA[b]	NE[f]
NB-LCF-03	Assessment and Reporting of New Brunswick's Forest Carbon Stocks	This publication provides inventory estimates of carbon storage in living woody tree biomass on all forestland in New Brunswick in 2023, as	On a recurring basis, New Brunswick will calculate and report forest carbon inventory estimates for	Research Information Enabling	Implemented	LULUCF	NA	2023	New Brunswick	NA[b]	NA[d]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
		partial fulfillment of the department's commitment, Action 16a in *Our Pathway Toward Decarbonization and Climate Resilience New Brunswick's Climate Change Action Plan 2022–2027*.	alive trees on Crown, Freehold, and Private lands.								
NB-LCF-04	Assessment of New Brunswick wetlands carbon stocks	The province is developing an assessment tool to quantify the carbon stocks of New Brunswick wetlands and prioritize high-functioning (carbon stock) wetlands. The Climate Change Action Plan committed to implementing the tool by 2026 and beginning to regularly track and release a report on wetland carbon stock by 2030.	Assess and protect high-functioning carbon stock wetlands.	Research	Adopted	LULUCF	CO_2	2023	New Brunswick	NA[b]	NE[f]
NB-LCF-05	New Brunswick Net Zero Blueprint	As part of the Net Zero Blueprint (to be developed by 2025), the contribution from natural carbon sinks will be assessed and considered in achieving net-zero.	Assess and incorporate natural carbon sinks in meeting NB's 2050 Net-Zero Commitment.	Research Planning Enabling	Planned	LULUCF	CO_2	2024	New Brunswick	NA[b]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
PE-LCF-01	Prince Edward Island Alternative Land Use Services Program	ALUS supports the maintenance, enhancement, and production of ecological goods and services (EG&S) to reduce soil erosion, improve air and water quality, enhance wildlife habitat and biodiversity, sequester carbon, and build resilient agricultural landscapes. ALUS provides financial assistance to farmers and farmland owners through a multi-year land use agreement. The agreement provides annual payments for the adoption and maintenance of beneficial management practices (BMPs) on agricultural land and for the conversion of targeted environmentally sensitive land from annual crop production to biodiverse, carbon-sequestering, perennial landscapes. PEI reviewed ALUS and updated guidelines in August 2024.	Aims to empower farmers and farmland owners in conservation and regeneration of agricultural landscapes.	Fiscal Economic Voluntary Agreement	Implemented	LULUCF Agriculture	CO_2, N_2O	2008	Prince Edward Island	NE[f]	NE[f]

ID	Name	Description	Objectives	Type of instrument	Status	Sector(s) affected	Gas(es) affected	Start year of implementation	Implementing entity or entities	Est. emission reductions (kt CO_2 eq) 2022 achieved	Est. emission reductions (kt CO_2 eq) 2030 expected
PE-LCF-02	PEI Buffer Zone Buy Back Program and 2 Billion Tree Program	An allocated $500,000 to go towards a new buffer zone buyback and restoration project that will increase greenspaces and benefit Island ecosystems, and $1M to support the province's efforts to plant over one million trees a year, an important step toward meeting the province's 2040 net-zero target.	Reduce GHG emissions, increase GHG sequestration.	Fiscal	Implemented	LULUCF	CO_2	2022	Prince Edward Island	NA[b]	NE[f]
PE-LCF-03	Prince Edward Island Carbon Capture Tree Planting Program	The Carbon Capture Tree Planting program is an initiative to plant native tree species on public and privately-owned, abandoned, or marginally productive agricultural land. The program covers all planting and seeding costs. To date, 469 ha of trees have been planted (approximately 1 million trees). It is funded in part by the Government of Canada's Low Carbon Economy Leadership Fund.	Sequester carbon through tree planting.	Economic Fiscal	Implemented	LULUCF	CO_2	2019	Prince Edward Island	NE[f,30]	4.95

[30] Estimated emissions reductions for 2020 was 0.22 kt.

Notes:

* Denotes a policy that was explicitly modeled in the “with measures” scenario

** Denotes a policy that was explicitly modeled in the “with additional measures” scenario

[i] Some projects that have been announced are modeled in the “with measures” scenario, whereas other funding is modelled in the “with additional measures” scenario.

[ii] Reflects projects that have already been announced, but not the full extent of the funding that is still to be distributed.

[iii] For more details on how provincial and territorial carbon pricing regimes were modelled, please refer to Annex 4.

[iv] Included implicitly but not explicitly.

NA = Not applicable

NE = Not estimated

TBD = To be determined

a) Carbon pricing is a pillar of Canada’s Emissions Reduction Plan and has been in place across Canada since 2019, through a mixture of federal, provincial, and territorial systems, aligned with common minimum national stringency requirements. As an economy-wide, market-based instrument, it works in concert with other measures, programs, and incentives. This dynamic means that it is not feasible to estimate the specific impact of carbon pricing in isolation from other measures. As indicated in *Canada’s Climate Actions for a Healthy Environment and a Healthy Economy* (2021), it is estimated that pricing will contribute over a third of the total reductions that will occur between now and 2030.

b) Measure was not in place in 2022 or was implemented with insufficient time for significant mitigation impact during that year.

c) Emissions reductions of this measure are aggregated into the estimates of another measure.

d) Measure helps achieve climate mitigation objectives by supporting an enabling environment for climate action, and where emissions reductions may be indirect or not readily attributable to the measure. Examples include measures that reduce barriers to emissions-reducing alternatives, support workers to attain the education and training needed to build skills required for a low-carbon economy, provide incentives for low carbon technology development and deployment, and address information gaps.

e) The details of the policy are still under development, so it is premature to estimate the mitigation impact.

f) The department, province or territory did not provide an estimate at the time of submission. This could include instances where decisions have not yet been made, projects have not yet been approved, or funding have not yet been distributed.

g) For a detailed reading on the impacts of GHG emissions and on the economy of the 2024–2029 implementation plan of Quebec's Plan for a Green Economy 2030, please refer to the following two documents:

- Implementation plan (available in French only)
- The associated Impact Analysis (available in French only)

A3.8 Methodology for estimating mitigation

As per MPG 86, each Party shall describe the methodologies and assumptions used to estimate the GHG emissions reductions or removals by each action, policy, and measure, to the extent available.

The estimates of mitigation impacts for individual policies and measures rely on information provided by the entities developing and implementing those policies and measures. Information on how the estimate was derived is often not available.

Emissions reduction estimates associated with provincial/territorial measures are provided by the province or territory. The Government of Canada commits to continuing to work with provinces and territories to ensure robust and transparent reporting.

For federal measures, estimates for individual policies and measures are determined by the lead department according to their own established methodology. In many cases, the estimated impacts were based on the regulatory impact analysis undertaken prior to the implementation of the respective measure.

For land-based measures, GHG fluxes were estimated as net changes in C stocks over time using the guidelines established by the IPCC and NIR data or variations on these methodologies when source specific methodologies were not available. The mitigation potential for each activity was represented as a differential rate of change compared to the BAU projection for high and low scenarios. A 5% differential rate was applied for the minimum scenario associated with grassland conversion. Mitigation potential was estimated as the difference between the BAU scenario and reduction scenarios.

To enable the transition to net-zero emissions, it is important that decision makers consider climate impacts in a rigorous, consistent, and measurable manner. These considerations should include both short and long-term climate mitigation, as well as climate resilience and adaptation. This is why the Government of Canada has developed a “climate lens” that takes into account climate and economic considerations to inform key federal government decisions. The Integrated Climate Lens was launched in the fall of 2021 and was piloted in several departments to ensure that climate-related and economic considerations informed major policy, program, and funding decisions. Building on the lessons from the pilot, work is ongoing to ensure that climate, biodiversity, and other key environmental considerations are assessed in a consistent manner across federal departments and agencies. As of April 1, 2024, the Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals was replaced by the new Cabinet Directive on Strategic Environmental and Economic Assessment (SEEA). SEEA modernizes environmental and economic analysis in the development of strategic policies, programs, and regulations submitted to Cabinet and funding requests submitted to the Prime Minister and Minister of Finance. Specifically, this applies to Memoranda to Cabinet, Treasury Board submissions, funding proposals, and regulatory proposals from federal departments and agencies. The application of the SEEA includes a standardized template, the Climate, Nature and Economy Lens (CNEL), for federal public servants to complete when conducting proposal assessments. The lens requires consideration of climate change (mitigation, adaptation, resilience), biodiversity, other environmental effects, and economic impacts when developing such proposals. Among the questions that must be asked for the CNEL are if aspects of the proposal increase or decrease GHG emissions, contribute to existing federal climate commitments or related goals, and include any quantified GHG emission increases or decreases. The additional information arising from this enhanced process will be included in future reporting where possible.

A3.9 Concluded measures from the 2030 Emissions Reduction Plan

Under the *Canadian Net-Zero Emissions Accountability Act*, Canada is required to regularly report on the implementation of all federal measures and strategies included in its Emissions Reduction Plan. The 2030 Emissions Reduction Plan (2030 ERP) was released in March 2022 and the first of three progress reports, the

2023 Progress Report, was released in December 2023. In the spirit of maintaining transparency and accountability in between reporting cycles under the Act, we have included the list of ERP measures that have concluded:

- BDG-08 – National Infrastructure Assessment (the 2030 ERP commitment to establish a Council to lead a regular National Infrastructure Assessment was completed in Fall 2024.
- ELE-07 – Smart Grids Program (NRCan completed delivery of the $100M program in 2023).
- ELE-12 – Canada Electricity Advisory Council (the Council concluded its one-year mandate by submitting its final report in May 2024).
- HVI-02 – Clean Growth Program (concluded in March 2022)
- OIG-01 – Emissions Reduction Fund (all projects under the three funding streams were concluded as of March 2024)
- OIG-01.1 – Emissions Reduction Fund: Onshore Deployment (concluded in March 2024)
- OIG-01.2 – Emissions Reduction Fund: Offshore Deployment (concluded in March 2023)
- OIG-01.3 – Emissions Reduction Fund: Offshore RD&D Program (concluded in March 2023)
- TRN-07 – Green Freight Assessment Program (concluded in March 2022)
- TRN-11.1 – Rural Transit Solutions Fund (HICC has consolidated reporting under TRN-11: Canada Public Transit Fund starting in 2024)
- TRN-11.2 – Zero Emission Transit Fund (HICC has consolidated reporting under TRN-11: Canada Public Transit Fund starting in 2024)
- TRN-11.3 – Active Transportation Fund (HICC has consolidated reporting under TRN-11: Canada Public Transit Fund starting in 2024)
- AGR-03a – Canadian Agricultural Partnership (concluded in March 2023)
- ENB-04 – Just Transition for Canadian Coal Power Workers and Communities: Task Force (concluded in 2019)
- NBS-01.3 – Nature-Based Climate Solutions Advisory Committee

A3.10 Discontinued reporting

The First Biennial Transparency Report presents an important opportunity to consider Canada's approach to reporting on policies and measures, with reference to the direction provided under MPG 80. As per MPG 80, Canada will report on the actions, policies and measures that support the implementation and achievement of Canada's NDC, focusing on those that have the most significant impact on GHG emissions and those impacting key sectors. As part of this focusing effort, Canada will not continue to report on measures where there is no substantive update from the previous cycle of reporting and where the expectation is that there will be no additional substantive changes in the future. These measures will be included in the "discontinued reporting" list. Furthermore, as Canada reports on progress according to federal domestic legislative requirements under the *Canadian Net-Zero Emissions Accountability Act*, and in the interest of transparency and consistency across reporting, Canada is aligning domestic and international reporting on climate action to the extent possible. This means that some federal measures that were reported in Canada's *Eighth National Communication and Fifth Biennial Report* (2022) will not be reported in Canada's Biennial Transparency Reports under the Paris Agreement. Some of these measures are still active but they are not considered key climate mitigation measures for Canada as identified in Canada's 2030 Emissions Reduction Plan and 2023 Progress Report.

In the spirit of transparency, we have provided a list of these federal measures below:

- Memorandum of Cooperation between the California Environmental Protection Agency and Environment and Climate Change Canada
- Strategic Assessment of Climate Change (SACC)
- Improving Access to Capital for CleanTech Companies
- Green Municipal Fund

- Federal Energy Efficient Equipment and Appliances Program
- Innovative construction materials R&D/Building Standards
- Innovation Superclusters Initiative
- Promoting Sustainable Mining Extraction and Processing
- Guidance for the Submission of Information on Best-in-Class Emissions Intensity by Oil and Gas Projects Undergoing Federal Impact Assessment
- Electric Vehicle Charging and Alternative Fuel Refuelling Infrastructure
- Energy efficiency of replacement tires
- Energy Efficient Transportation
- Greening Government Operations – Fleets Program (this is no longer reported as a stand-alone measure, but is captured under GRG-01 – Greening Government Strategy)
- ZEV Charging and Refueling Infrastructure
- Ecotechnology for Vehicles Program
- High Frequency Rail
- Invest in efficient trade and transportation corridors
- Agricultural Greenhouse Gases Program
- BC Old Growth Nature Fund
- Renewed Forest Bioeconomy Framework for Canada
- Federal-Provincial-Territorial Task Force on Heavy-Duty Vehicle Retrofits
- Impact Canada Initiative – Clean Technology Stream

We are also providing a list of provincial and territorial measures that had been reported in Canada's *Eighth National Communication and Fifth Biennial Report* (2022) that will not be reported in Canada's Biennial Transparency Reports under the Paris Agreement. As with federal measures, the choice of measures to include is informed by consideration of the reporting approach and an interest in focusing reporting on those measures that are expected to have the greatest impact and importance to climate mitigation. Measures for which there has been no substantive update from the previous cycle of reporting and where the expectation is that there will be no additional substantive changes in the future will be included in the 'discontinued reporting' list. In addition to measures that are still active but do not meet these criteria for continued reporting, the list of measures for which reporting is discontinued includes measures that have concluded or are no longer in place (for example, funding has been exhausted, programs have ended or been replaced, or legislation or regulations have been repealed). As with the federal measures for which reporting is being discontinued, many of the measures listed below will have long-term beneficial impacts on provincial, territorial, and national emissions levels. The removal of a measure from the list should not be considered an indication that the measure is not important, but rather a reflection of whether continued reporting on the measure aligns with a transparent and focused approach to reporting consistent with the intent and purpose of the Paris Agreement.

British Columbia

- British Columbia SCRAP-IT Program
- CleanBC GoElectric suite of programs to support ZEV adoption
- Sectoral emissions target – Transportation
- British Columbia Phasing Out Incentives for Efficient Gas Equipment
- Sectoral emissions target – Oil and gas
- Reframed Lab
- Sectoral emissions target – Buildings and Communities
- Sectoral emissions target – Industry

Alberta

- Alberta Renewable Electricity Program
- Mountain Pine Beetle Prevention
- Alberta GreenTRIP

Saskatchewan

- SaskPower Programs
- Saskatchewan Government Vehicles Right Sizing and Best Practice Procurement Program
- Saskatchewan Solid Waste Management Strategy
- Saskatchewan SaskPower Shand Greenhouse Seedlings

Manitoba

- Tantallon to Birtle 230 kV Transmission Line Project
- Green Transportation Strategy
- Manitoba 4R Nutrient Stewardship System
- Manitoba last coal-generating unit phase-out
- Manitoba government fleet reduction

Ontario

- Ontario Coal Phase-out (completed in 2014)
- Ontario Landfill Gas Collection and Control Regulation

New Brunswick

- New Brunswick 2016 Climate Change Action Plan
- New Brunswick Carbon Tax
- On-Farm Best Management Practices

Nova Scotia

- NS Cap-and-Trade Program

Prince Edward Island

- Prince Edward Island Climate Change Action Plan
- Prince Edward Island Greening Government
- Transit subsidy (reduced fares), school aged youth 18 and under ride free
- Biological Nitrogen Availability Trials – note: trials were run in 2021 and 2022, results were published in 2023
- Prince Edward Island Winter Cover Crop Beneficial Management Practice in Agriculture Stewardship Program
- Prince Edward Island Waste Watch

Newfoundland and Labrador

- Newfoundland and Labrador energy efficiency support – residential homes (ended in March 2024)
- Newfoundland and Labrador measures to reduce emissions from waste

Nunavut

- LED Replacement Project

We acknowledge the importance of all these measures in supporting Canada's efforts to reverse our emissions trajectory and achieve our NDC. Our contemporary efforts to further reduce Canada's emissions, fulfill our 2030 NDC commitment, and prepare our economy for the net-zero by 2050 transition all build off the essential foundation these measures have helped establish

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Annex 4: Projections of greenhouse gas emissions and removals

This section provides projections of greenhouse gas (GHG) emissions through 2040, aligned to Canada's historical emissions from 1990 to 2022 as presented in *Canada's National Inventory Report 1990–2022: Greenhouse Gas Sources and Sinks in Canada 2024* (NIR2024) and Section 2.5 of this report.

While most results presented in this section show detailed projections according to Canada's economic sector categories, Section A4.3.3 provides projections aligned with Intergovernmental Panel on Climate Change (IPCC) sectors. The relationship between Canada's economic sectors and IPCC sectors is discussed in the same section. The accounting contribution from the Land Use, Land-Use Change and Forestry (LULUCF) sector and the impact of Nature-based climate solutions (NBCS), agriculture measures (Ag. Measures), and credits purchased under the Western Climate Initiative (WCI) are reported as additional elements, not as part of economic sector categories.

While Canada presented projections out to 2035 in its *Eighth National Communication and Fifth Biennial Report on Climate Change* (NC8/BR5), this report includes projections out to 2040 (as per the latest United Nations Framework Convention on Climate Change [UNFCCC] guidelines revised at COP25 in Madrid, Spain in December 2019 [Decision 6/CP.25]). Historical emissions for 1990, 2005, and 2022 (the most recent year for which historical emissions are available) are shown in most tables to provide added context. This is true for all GHGs and air pollutants except for black carbon, for which historical data is not available before 2013. In addition, some tables and figures, when presenting comparisons to previous projections results, also include historical data from previous versions of Canada's *National Inventory Report* (NIR).

Where indicated, complete time series data for the entire period covered by the tables included in this section are available through the Government of Canada's open data portal. In addition, interactive data visualizations for a selection of data tables available on open data are also available through Canada's Greenhouse Gas Emissions Projections website.

The analysis in this report is based on scenarios of emissions projections using the Energy, Emissions and Economy Model for Canada (E3MC). The model incorporates the most up-to-date statistics on GHG and air pollutant emissions and energy available at the time that the technical modelling was completed (fall 2024).

Provincial, territorial, and federal government departments were consulted during the development of the projections and were invited to provide their input by August 2024. The majority of data and assumptions used for the modelled emissions scenarios have been subject to extensive consultations.

As with all projections, the estimates in this report should be seen as representative of possible outcomes that will, in the end, depend on economic, social, and other factors, including future government policies.

A4.1 Projections of Canada's key indicator to determine progress towards its Nationally Determined Contribution (NDC)

Environment and Climate Change Canada (ECCC) updates Canada's GHG emissions projections annually, reflecting the latest historical data and up-to-date future economic and energy market assumptions. As such, projections fluctuate over time because of changes in these data and assumptions. A discussion of major changes to these underlying assumptions is presented in Section A4.6.6.

Actual historical emissions are published annually in Canada's NIR. At the time of development of the projections, the most recent NIR emissions data for 2022 were released in April 2024 in NIR2024.

Canada's GHG and air pollutant emissions projections are derived using the E3MC model, which combines the detailed ENERGY 2020 bottom-up model with the North America Economic Model (NAEM), a bottom-up macroeconomic model. ENERGY 2020 is internationally peer reviewed and incorporates external data from consistent sources. In E3MC, energy data is allocated to individual subsectors based on data from Statistics Canada, Natural Resources Canada's (NRCan) Office of Energy Efficiency, Canada's GHG Reporting Program, the Canadian Energy and Emissions Data Centre and various oil sands reports. These subsectors are then aggregated into the economic sectors presented in this report. Macroeconomic variables such as gross domestic product (GDP), population and industry growth assumptions from the macroeconomic model are key drivers of energy use and GHG emissions in most sectors. More information about the E3MC model is available in Section A4.6.2.

Since 2011, ECCC has published annual GHG emissions projections, which can be accessed through Canada's Greenhouse Gas Emissions Projections website. These reports were published as part of either:

- Federal climate plans
  - Pan-Canadian Framework on Clean Growth and Climate Change in 2015.
  - Canada's Strengthened Climate Plan in December 2020.
  - Canada's 2030 Emissions Reduction Plan in March 2022.
- UNFCCC biennial submissions (2013, 2015, 2017, 2019, and 2022).
- Standalone domestic reports (2011, 2012, 2014, 2016, 2018, 2023).

A4.1.1 Scope of the scenarios

For its First Biennial Transparency Report (BTR1), Canada presents projections that include both a "With Measures" scenario (WM) and a "With Additional Measures" (WAM) scenario.

Canada has elected not to present projections for a Without Measures (WOM) scenario in its previous National Communications, Biennial Reports, or in this Biennial Transparency Report, as it was deemed that a very high level of effort would be required to develop appropriate assumptions to develop this counterfactual scenario, while the quality of this scenario could still not be guaranteed. For this reason, it was considered that the results from the potential WOM scenario would not provide any useful insights.

Many federal, provincial, and municipal policies and measures currently exist in Canada that are intended to reduce GHG emissions and/or energy consumption. ECCC engages in extensive consultations with other federal government departments, provinces, and territories to ensure that their initiatives are accounted for in the analysis and modelling of emissions projections.

It should be noted that provincial and territorial targets, a list of which is provided in Table 12, are not modelled in the WM or WAM scenarios. Instead, individual policies to reach the provincial targets may be included in the modelling if they meet the criteria discussed below.

For all scenarios, where program funding is set to end, the projections assume that the impacts of these programs, other than those embodied in consumer behaviour, cease when the approved funding ends.

Alternative scenarios, which have been developed to assess the uncertainty of the WM and WAM scenarios and their sensitivity to changes to assumptions such as economic and population growth, prices of oil and gas, and technology penetration are presented in Section A4.4.

A4.1.1.1 With measures scenario

Projections in the WM scenario include federal, provincial, and territorial policies and measures that were in place as of August 2024 and assume no further government action. They also include the accounting contribution from the LULUCF sector.

To be included in the WM scenario, policies and measures must:

- Have the necessary legislative and financial support.

- Have sufficient quantifiable information available for its impact to be estimated.
- Be expected to produce meaningful reductions (at least 100 kilotonnes of carbon dioxide equivalents (kt CO_2 eq) annually).

The list of policies and measures modelled in the WM scenario can be found in Table 8 and Table 9. Changes to the policy coverage of the WM scenario since the release of NC8/BR5 are discussed in Section A4.6.6.2.

A4.1.1.2 With additional measures scenario

The WAM scenario includes all federal, provincial, and territorial policies and measures from the WM scenario as well as those that have been announced but have not yet been fully implemented. This scenario also includes the accounting contribution from the LULUCF sector, in addition to the impact of NBCS, agriculture measures, and cross-border credit flows under the WCI[1].

It should be noted that the WAM scenario excludes measures that are still in the development or planning stages, but for which there is not enough information available for them to be included. For several funding programs, where specific projects to be funded are not yet known, scenarios include proxies that are based on performance of previous similar programs.

The list of policies and measures modelled in the WAM scenario, which includes a description of their underlying assumptions, can be found in Table 10 and Table 11. Changes to the policies included in the WAM scenario since the release of NC8/BR5 are discussed in Section A4.6.6.2.

As new measures are developed and implemented, their emissions reductions will be assessed and included in future projections.

A4.2 Continuous improvement

In the 2030 Emissions Reduction Plan, which was released in 2022, ECCC committed to implement improvements to increase transparency with regard to its modelling and reporting. A first update to these efforts was provided in *Canada's 2023 Greenhouse Gas and Air Pollutant Emissions Projections* report, which included an action plan for continuous improvement. The projections presented in this report continue to address items identified in this action plan. In particular, this report provides additional details regarding modelling assumptions (found in Section A4.6.7), provincial-level data for emissions from the LULUCF sector (through open data), additional sensitivity analysis, in the form of a technology scenario (Section A4.4.2) and an uncertainty analysis (Section A4.4.3). Finally, a Multi-Model Comparison Forum was set up under the umbrella of the Energy Modelling Hub (EMH) and established foundational workflows that are poised to enhance collaboration and future comparisons across Canadian models during the inaugural session. More details about the results of the Multi-Model Comparison Forum can be found on the EMH website.

A4.3 Greenhouse gas emissions projections under the with measures and with additional measures scenarios

A4.3.1 Historical trends and projections summary

For the purposes of analyzing economic trends and policies, Canada uses economic sector classification that allocates emissions to the economic sector from which they originate rather than by IPCC categories. This allocation simply recategorizes emissions under different headings and does not change Canada's total

[1] In order to formally count the net flow of WCI allowances and offset credits (imported from California to Québec) as Internationally Transferred Mitigation Outcome (ITMO) transfers into Canada under Article 6 of the Paris Agreement, a bilateral agreement authorizing transfer and use would need to be established between Canada and the United States, including submission of Article 6 reporting to the UNFCCC.

emissions. Throughout this report, the word “sector” generally refers to economic sectors as defined above, except when the expression “IPCC sector” is used, such as in Section A4.3.3.

In 2022, the last year for which historical data was available at the time of preparation of this report, Canada's emissions were 708 megatonnes of carbon dioxide equivalents (Mt CO_2 eq). When including the accounting contribution of the LULUCF sector, Canada's emissions were 720 Mt (or 5.5% below 2005).

Overall, NIR2024 incorporates upward revisions of 29 Mt in 2005 and 28 Mt in 2021, relative to the previously (2023) published inventory. These revisions reflect the implementation of the IPCC Fifth Assessment Report (AR5) Global Warming Potential (GWP) values and other methodological improvements. In particular, significant methodological improvements were implemented in the forest land category in LULUCF and in the upstream oil and gas sector (where the accuracy of methane emissions estimate was improved). The enhanced methods use Canadian-specific studies and knowledge, facilitate the adoption of new scientific data and better reflect evolving technologies and industry practices.

Between 1990 and 2022, Canada’s total GHG emissions increased from 608 Mt to 708 Mt. The Oil and Gas sector saw the most significant rise, nearly doubling from 118 Mt to 217 Mt. Transportation emissions also grew substantially, from 118 Mt to 156 Mt. Conversely, emissions from the Electricity sector decreased significantly, from 94 Mt to 47 Mt. Heavy Industry emissions dropped from 97 Mt to 78 Mt, while emissions from the Buildings sector increased from 72 Mt to 89 Mt. Agriculture emissions rose from 51 Mt to 70 Mt, and emissions from Waste and Other sources slightly decreased from 57 Mt to 51 Mt. A discussion of the underlying trends driving these changes for each economic sector is provided in Section A4.3.2.

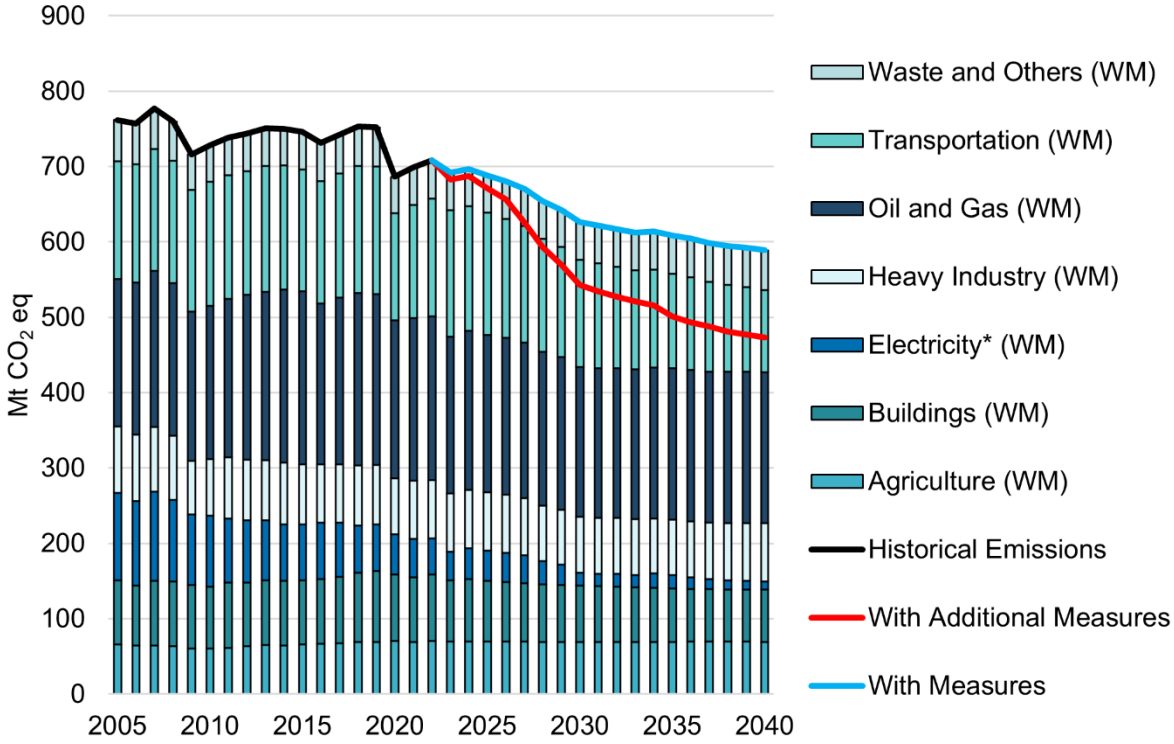
Under the WM scenario, GHG emissions are projected to decline to 626 Mt in 2030. If the LULUCF sector accounting contributions are included, 2030 emissions are projected to be 597 Mt in the WM scenario. Post-2030, emissions projected in the WM scenario continue to decline, reaching 559 Mt in 2040 (including LULUCF).

Under the WAM scenario, emissions in 2030 decline to 502 Mt, when contributions from LULUCF, NBCS, agriculture measures, and cross-border credit flows under the WCI are included. Post-2030, emissions projected in the WAM scenario (including LULUCF, NBCS, agriculture measures, and WCI Credits) continue to decline, reaching 431 Mt in 2040.

Table 13 and Figure 1 show how the projected trends in GHG emissions vary by economic sector. Table 14 provides a breakdown of projected trends in GHG emissions by IPCC sector. Figure 2 shows projections under the WM scenario and WAM scenario, as well as the projections presented in Canada's NC8/BR5.

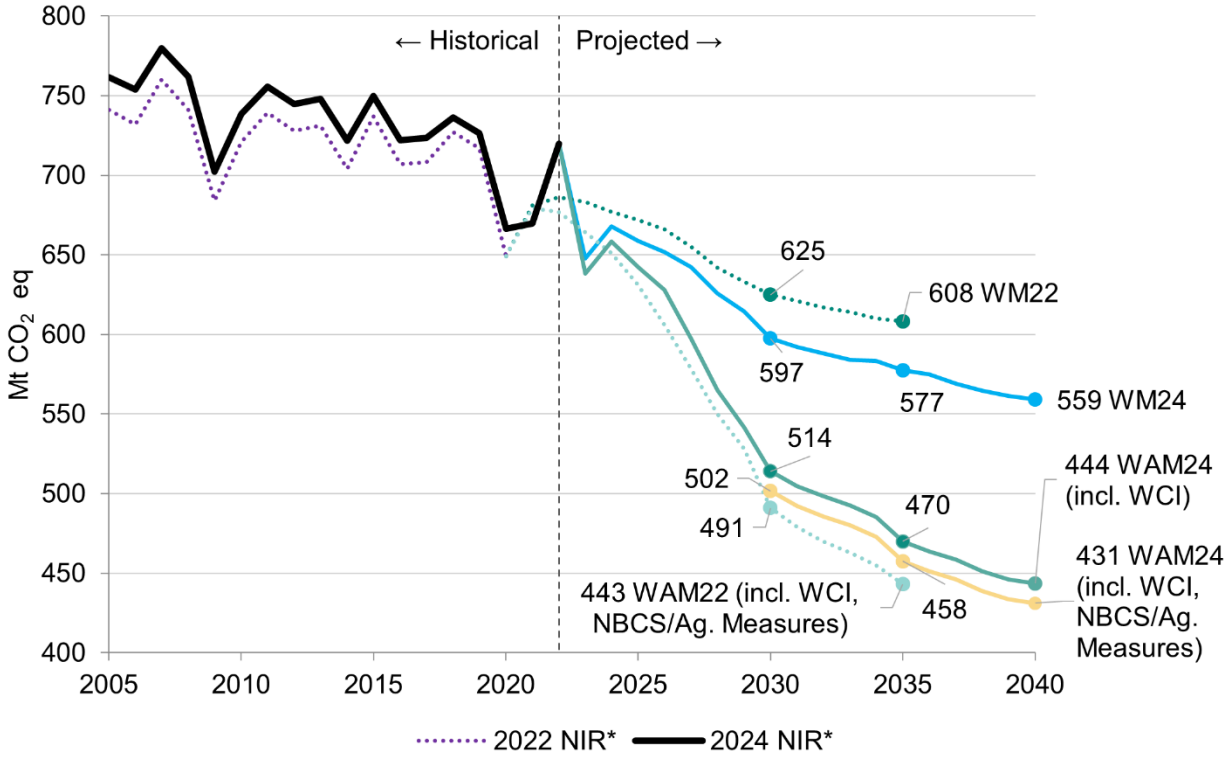
More detailed projections by economic sector and a comparison between projections by IPCC sector and economic sectors are provided in Section A4.3.2 and Section A4.3.3.

Figure 1: Economy wide emissions by economic sector (Mt CO_2 eq), WM and WAM scenarios, excluding LULUCF accounting contribution, NBCS, agriculture measures, and WCI credits, 2005 to 2040



Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.
* Electricity emissions also include the contributions of steam generation.

Figure 2: Total Canadian GHG emissions (Mt CO_2 eq), including LULUCF accounting contribution, current and previous projections (scenarios from 2022 and 2024 projections), 2005 to 2040



Note: *Historical emissions include data from NIR2022 and NIR2024, and also include LULUCF accounting contribution. Access more data.
WM24: Current With Measures scenario.
WAM24: Current With Additional Measures scenario.
WM22: With Measures scenario published in NC8/BR5 in 2022.
WAM22: With Additional Measures scenario published in NC8/BR5 in 2022.

A4.3.2 Emissions projections by economic sector

This section presents Canada's emissions broken down by the following economic sectors: Oil and Gas, Transportation, Electricity, Heavy Industry, Buildings, Agriculture, and Waste and Others (Others includes coal production, light manufacturing, construction, and forest resources).

A4.3.2.1 Oil and Gas

Production, pipeline transportation, processing, refining, and distribution of oil and gas products all contribute to the emissions of the Oil and Gas sector.

Between 1990 and 2022, emissions from this sector increased by 99 Mt. Most of the increase between 1990 and 2022 is due to considerable expansion in Canada's oil sands. Since 1990, oil sands production has increased by over 800% and emissions have increased by over 71 Mt (~470%). While fluctuations due to economic conditions (for example, crude oil and natural gas prices) caused short-term increases and decreases in emissions between 1990 and 2022, emissions from this sector have generally increased steadily from 118 Mt in 1990 to 230 Mt in 2014. From 2014 to 2019, emissions were relatively stable with some interannual variability due to economic conditions and the 2016 wildfires that affected oil sands production around Fort McMurray, Alberta. This was followed by a significant decrease of 17 Mt (-7%) between 2019 and 2020, due to the COVID-19 pandemic and global oil price war that led to a drastic drop in crude oil prices. The decrease between 2019 and 2020 can also be attributed to federal regulations to reduce methane (CH_4) emissions from the upstream oil and gas industry, which came into effect January 1, 2020, and equivalent provincial regulations in Saskatchewan, Alberta, and British Columbia. In 2021, emissions increased by 7 Mt

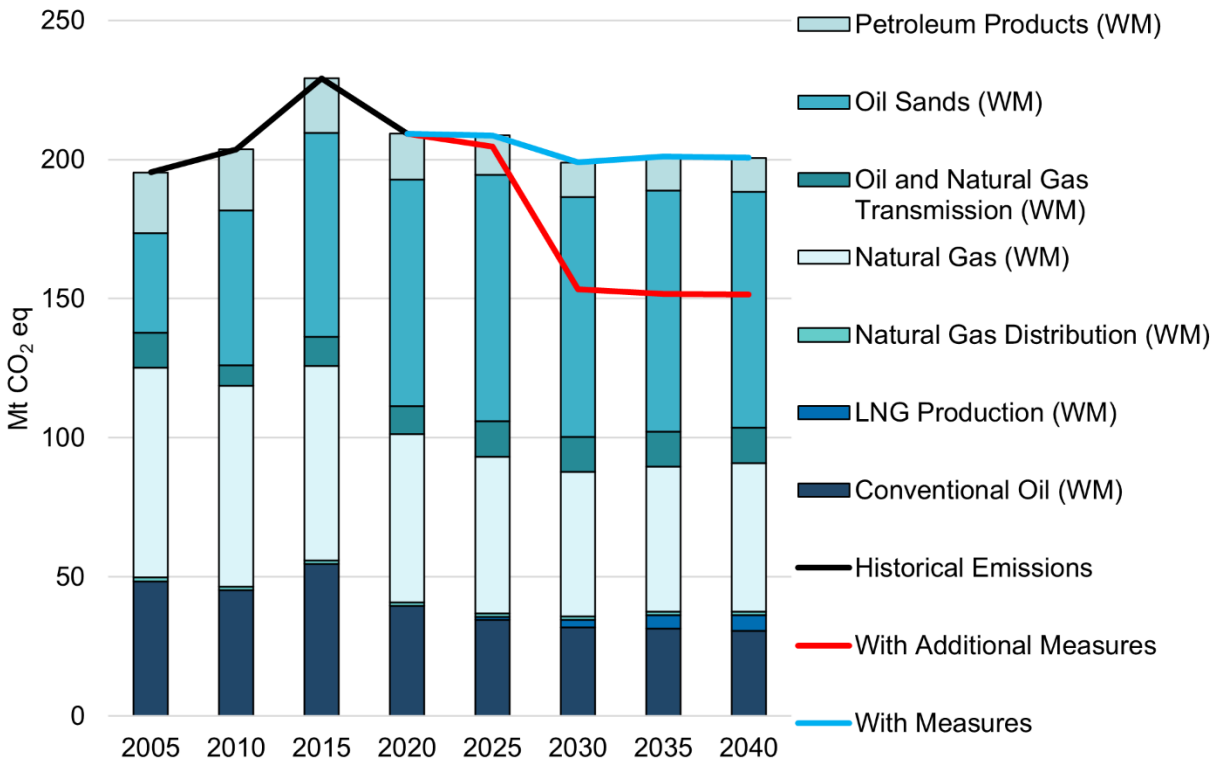
(3%) from 2020 levels as the industry rebounded from the early impacts of the pandemic. Emissions in 2022 were relatively stable with a 0.4% increase from 2021.

In 2022, emissions from the Oil and Gas sector represented approximately 31% of Canada's total GHG emissions, excluding the LULUCF accounting contribution.

For the projection period, emissions from increasing production from oil sands, natural gas, and liquefied natural gas (LNG) are partly offset by declining emission intensities throughout all subsectors of Canada's Oil and Gas sector. Government measures, such as regulations on CH_4 emissions in the upstream Oil and Gas sector, carbon pricing, and the Clean Fuel Regulations (CFR), as well as growth and deployment of carbon capture and storage (CCS) technology, are projected to constrain emissions, while oil and gas production increases further. Emission projections in the Oil and Gas sector are driven by exogenous projections of oil and natural gas prices and production from the Canada Energy Regulator (CER). This year's price and production forecasts are based on the Current Measures scenario of the CER's pre-final 2025 Energy Future (EF2025) outlook.

The WAM scenario explores how the sector could evolve in a more ambitious policy environment. In this scenario, the Oil and Gas sector experiences substantial emissions abatement due to existing and announced policies driving decarbonization, energy efficiency, and methane emissions reductions throughout the industry. A breakdown of emissions reductions in each Oil and Gas subsector can be found in sections below.

Figure 3: Oil and Gas emissions (Mt CO_2 eq), WM and WAM scenarios, 2005 to 2040



Note: Historical emissions data come from NIR2024. Access more data.

Upstream oil and gas production

The upstream oil and gas sector includes the extraction, production, and processing of both conventional and unconventional oil and gas. The emissions trajectory for the upstream oil and gas sector is a function of growing output and declining emissions intensity (Table 15).

Production grows throughout the projection period relative to historical 2023 levels in the oil sands and natural gas production and processing subsectors. Strong production growth, from unconventional sources in particular, is expected to continue throughout the projection period. This growth is driven in part by high crude oil and natural gas prices in the early-to-mid 2020s, which results in substantial investment and development in the Oil and Gas sector.

In the WM scenario, though upstream oil and gas production continues to grow in the projection period, emission intensities are projected to decline substantially because of policies such as carbon pricing, the CleanBC Climate Plan, the CFR, and various provincial methane regulations. Furthermore, growing deployment of CCS technology contributes to drive emissions reductions across the sector.

In the WAM scenario, emissions decline even further as emissions are constrained in part due to increased hydrogen use as a substitute for natural gas for stationary combustion and utilization as a feedstock. Moreover, increased deployment of solvent technology in the oil sands drives emission intensity reductions throughout the projection period. By 2025 in the WAM scenario, it is assumed that all new oil sands facilities deploy solvent technology, either through co-injection or utilization of pure solvents. Additionally, investment and funding measures such as carbon revenue (Output-Based Pricing System [OBPS] and fuel charge proceeds programs), and investments from the Clean Growth Fund additionally contribute emissions reductions, especially in the oil sands.

One of the central levers of emissions abatement in the conventional oil and natural gas production and processing sectors in the WAM scenario is the Strengthened Methane Regulation. Starting in 2027, in addition to the existing federal and provincial methane regimes, the enhanced methane regulations are expected to achieve a 75% reduction in CH_4 emissions compared to 2012 historical levels, matching the rate from the draft regulations. Emissions reductions from the Strengthened Methane Regulation are primarily concentrated in conventional oil and natural gas production and processing, as these sectors have a high proportion of fugitive CH_4 emissions relative to total sector-level GHG emissions.

This year's modelling features the recently announced Oil and Gas Emissions Cap (OGEC). The proposed regulations would set the emissions cap for each year of the first compliance period (specifically 2030 to 2032) at 27% below emissions levels reported for 2026. The emissions cap combined with a limited access to compliance flexibilities would ensure GHG emissions do not exceed a legal upper bound on emissions. This proposed regulation is expected to achieve GHG reductions while enabling the sector to increase production from historic levels in response to global demand.

It should be noted that upstream oil and gas sector shows small increases in bitumen production in the WAM scenario, compared to the WM scenario production levels. For the Steam Assisted Gravity Drainage (SAGD) oil sands subsector, increased output is a result of growing use of solvent technology. It is assumed that new SAGD facilities that deploy solvent technology will experience a 40% increase in production compared to WM scenario production levels. Furthermore, in the modelling of the Oil and Gas sector, small increases in production are a result of projected declines in the CFR credit price in the WAM scenario. In the WM scenario, upstream oil producers have a stronger need to reduce their emissions intensity in order to comply under the CFR. Conversely in the WAM scenario, the regulatory obligation from the CFR is substantially reduced, as more ambitious targets for zero-emission vehicles (ZEVs) sales in the freight subsector are met, thus increasing the supply of CFR credits and driving down their price. Diminished stringency of the CFR in the WAM scenario leads to reduced oil production costs and a slight increase in oil development and production.

As depicted in Figure 4 and Figure 5, in-situ production rises from 288 thousand barrels per day in 2005 to 1.9 million barrels per day in 2030 (i.e., 47% of total oil sands production in 2030) in the WM scenario. In the WAM scenario, in-situ production rises to 2 million barrels per day in 2030 and production volumes remain relatively flat after then.

At the same time, the share of oil sands mining in total oil sands production declines in the WAM scenario. With 1.9 million barrels per day in 2030, oil sands mining represents 46% of total oil sands production, compared to 48% in the WM scenario. These declines in production shares in oil sands mining are a result of increasing SAGD production in the WAM scenario, associated with the deployment of solvent technology.

Figure 4: Oil sands production (million bbl per day) WM and WAM scenarios, 2005 to 2040 (selected years)

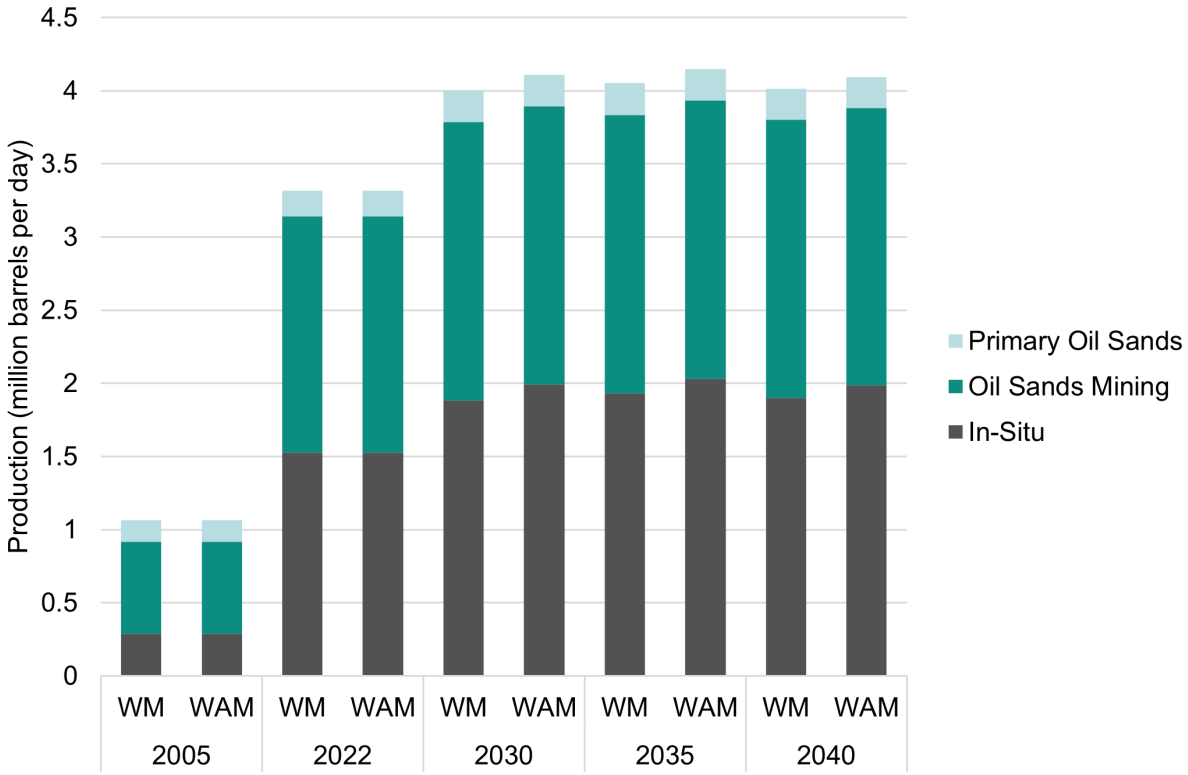
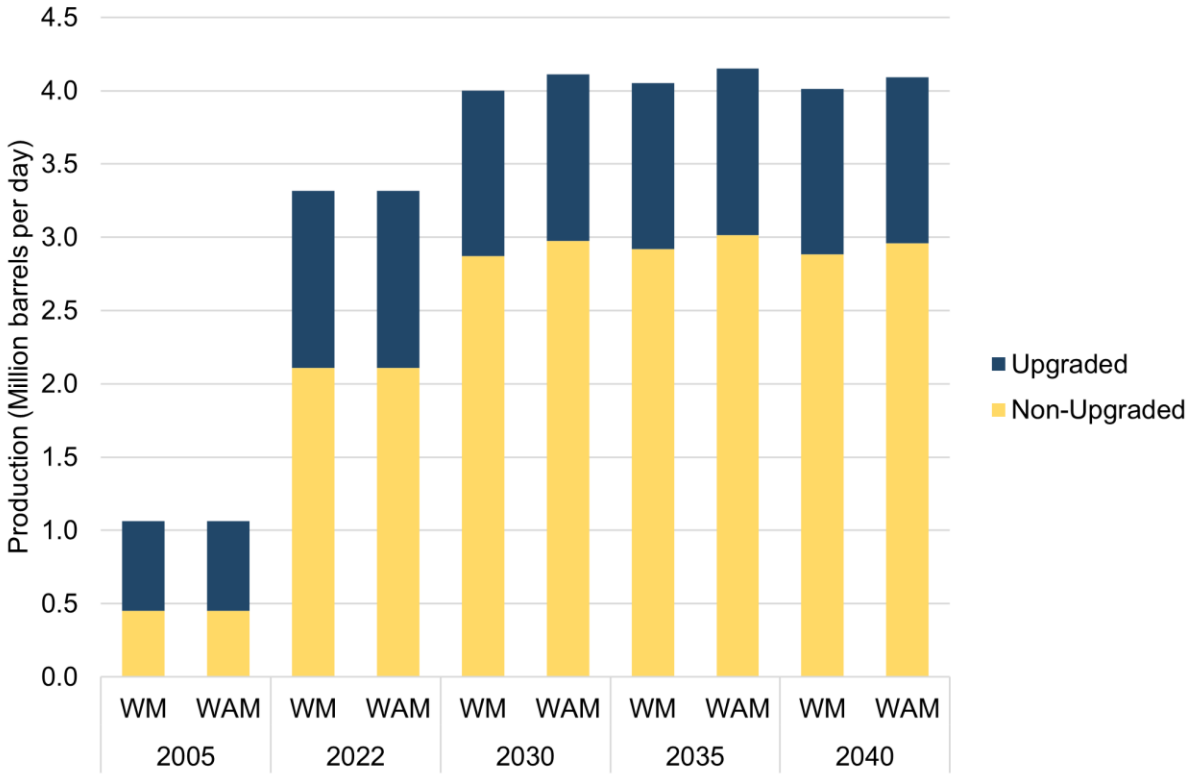
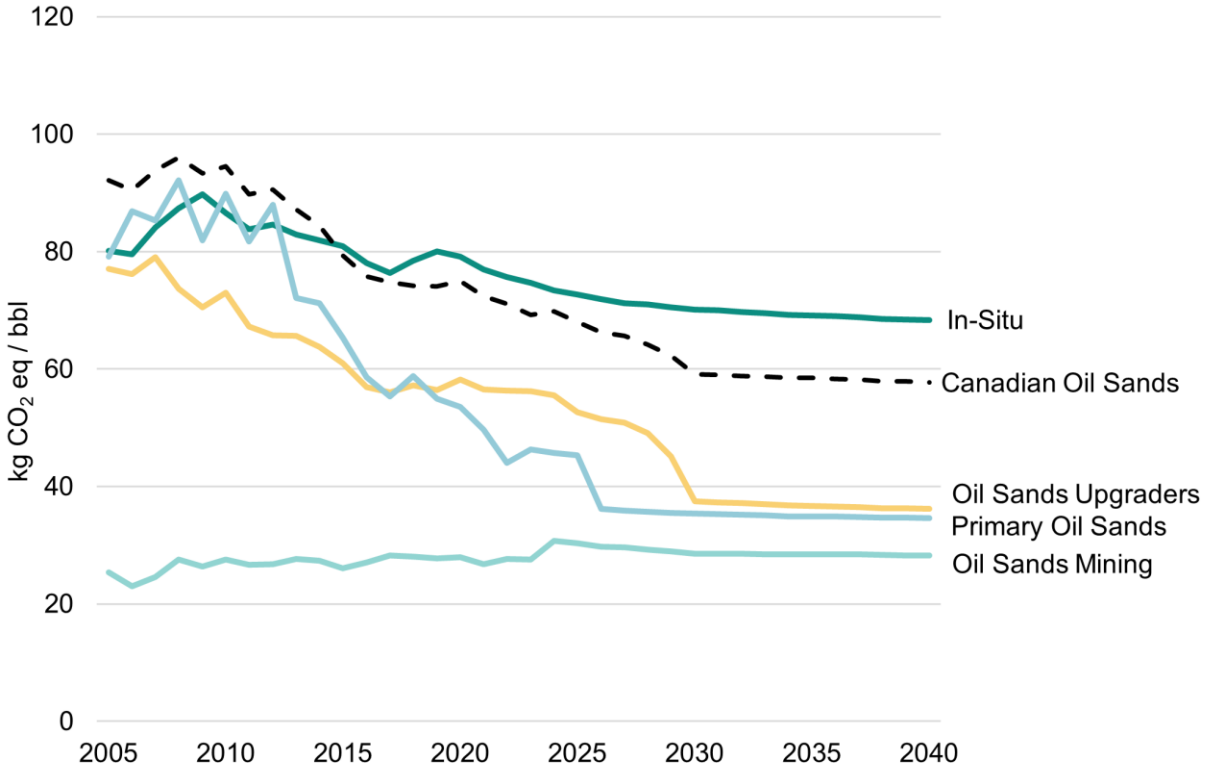


Figure 5: Share of oil sands upgraded (million bbl per day), WM and WAM scenario, 2005 to 2040 (selected years)



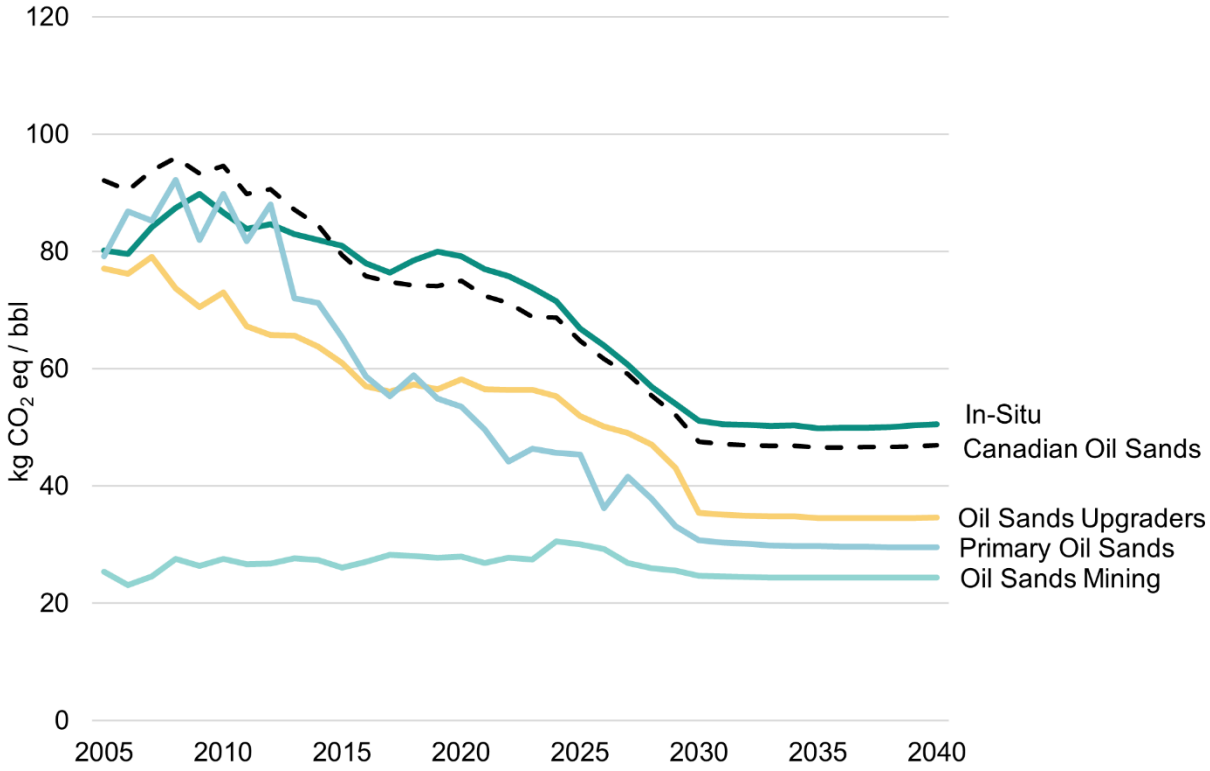
Several factors influence emissions intensities in the oil sands. In general, extracting oil from oil sands via an in-situ method (that is, using in-ground techniques to separate the oil from the sand) is more emissions intensive than oil sands mining (Figure 6). In the historical period, overall bitumen extraction emissions intensity has remained relatively flat, while bitumen production increased by about 213% between 2005 and 2023. Starting in 2024, the replacement of three aging petroleum coke-fired boilers with high-efficiency natural gas cogeneration units at Suncor's Base Plant leads to higher cogeneration emissions in the oil sands mining sector. In addition, there are some upward pressures on emissions intensity from factors such as declining reservoir quality, ageing of existing facilities, and shifts from mining operations to more emissions-intensive in-situ extraction processes. Conversely, future production growth from brownfield expansions and new greenfield facilities are expected to use more energy-efficient processes and are poised to pilot and deploy emerging technologies within the unconventional crude oil sector. Projected reductions in oil sands emissions intensity in the WM and WAM scenarios are expected to be driven by more ambitious government policy, such as the implementation of the CFR, the OGEC, enhanced methane regulations, carbon pricing, and the carbon capture, utilization and storage (CCUS) investment tax credit (ITC).

Figure 6: Canadian oil sands emissions intensity (kg CO_2 eq/bbl), WM scenario, 2005 to 2040



Note: Historical emissions data come from NIR2024. In-situ includes production from cyclic steam stimulation (CSS) and SAGD. Canadian oil sands include emissions from oil sands upgraders, but not the barrels produced from Upgraders, as this would lead to double counting of bitumen that is first extracted and then upgraded.

Figure 7: Canadian oil sands emissions intensity (kg CO_2 eq/bbl), WAM scenario, 2005 to 2040



Note: Historical emissions data come from NIR2024. In-situ includes production from CSS and SAGD. Canadian oil sands include emissions from oil sands upgraders, but not the barrels produced from upgraders, as this would lead to double counting of bitumen that is first extracted and then upgraded.

Transmission and distribution of oil and gas

Emissions from oil and natural gas transmission and natural gas distribution are projected to remain relatively flat in the WM scenario, as displayed in Table 16. The CER's Current Measures scenario assumes that infrastructure required for the transmission and distribution of oil and gas products over the long term is built as needed. As such, emissions from the transportation and distribution of oil and gas products are likely to remain constant in the medium term and grow as assumed pipeline capacity expands. Emissions are lower in the WAM scenario, primarily due to the Strengthened Methane Regulation.

Petroleum refining and upgrading

Table 17 displays emissions associated with the petroleum refining and upgrading sectors from 2005 to 2040. Emissions from upgrading oil sands bitumen and from traditional petroleum refining are expected to decrease between 2022 and 2040 in the WM scenario, which is due in part to the expanding use of CCS technology, such as the Quest Project at Fort Saskatchewan, Alberta. In addition, the 240 kilometre Alberta Carbon Trunk Line (ACTL) enhances the capture, storage and use of significant quantities of carbon dioxide. Enhance Energy, the owner and operator of the ACTL, uses carbon dioxide for Enhanced Oil Recovery from Nutrien, a fertilizer plant, and the Sturgeon Refinery.

Decreasing emissions intensity in downstream oil and gas sectors are largely driven by the deployment of CCS technology endogenously forecasted in the WM scenario, as petroleum refining and upgrading are the economic sectors with lowest-cost carbon capture capacity. By the end of the current decade, refineries and upgraders are expected to build over 9 Mt worth of CCS in the WM scenario projections. The recently announced CCS projects in Western Canada refineries will reach full capacity at the dawn of the next decade and will help reduce emissions between 2030 and 2040.

As shown in Table 17, downstream oil and gas emissions further decline in the WAM scenario as a result of Canada Growth Fund (CGF) and OBPS revenue investments, and as traditional refineries substitute clean hydrogen for natural gas as a feedstock or fuel. For Upgraders, the OGEC is also a driver of emissions reductions starting in 2030.

A4.3.2.2 Transportation

Most transport emissions in Canada are from road transportation, which includes personal transportation (light-duty vehicles [LDVs] and trucks) and heavy-duty vehicles (HDVs). The general growth trend in road transportation emissions through the time series is largely due to an increase in driving: more cars and trucks using more fuel and therefore generating more emissions. Despite a reduction in kilometres driven per vehicle, the total vehicle fleet in 2022 increased by 27% since 2005, most notably for trucks (both light- and heavy-duty), leading to more kilometres driven overall. Section 2.3.1.2 of NIR2024 discusses in more details the main historical drivers of emissions trends associated with the Transportation sector.

Overall, emissions in 2022 were the same as the 2005 levels. In addition, the Transportation sector (including passenger, freight, and residential and commercial off-road emissions) was the second-largest contributor to Canada's GHG emissions, making up 22% of overall emissions, excluding LULUCF.

Looking ahead, the WM scenario projects a rebound of emissions in 2023 following a period of low emissions in 2020 and 2021 due to the COVID-19 pandemic. Emissions are then expected to gradually decrease over time with emissions declining below 2005 levels by 2027. Decreases occur as the stock of existing vehicles is gradually turned over with more efficient gasoline and diesel vehicles, as well as with an increasing share of ZEVs on the road.

In terms of policies, the WM scenario incorporates the Regulations Amending the Passenger Automobile and Light Truck GHG Emission Regulations which require a specified percentage of manufacturers' and importers' fleets of new LDVs offered for sale in Canada to be ZEVs, reaching 100% of LDV sales in 2035.

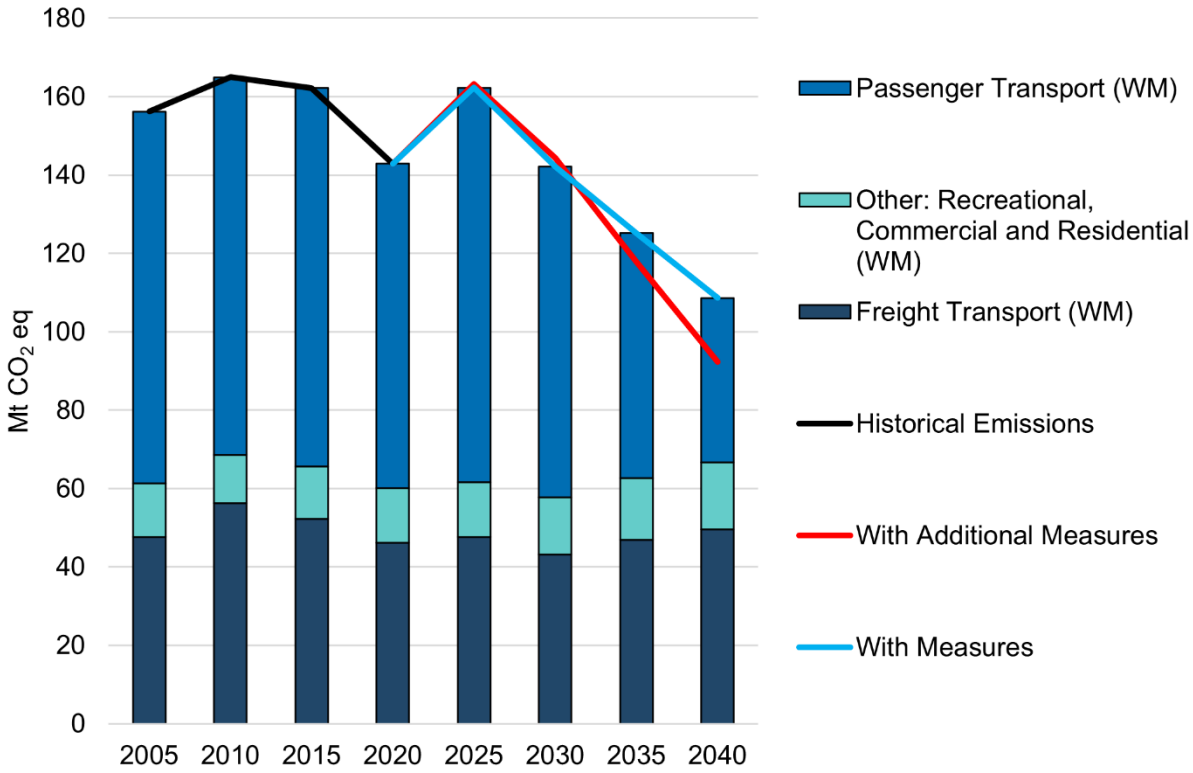
For freight, the heavy-duty vehicle and engine GHG emissions regulations contribute to increased fuel efficiency of on road freight vehicles. The revised standards set increasing stringencies for model years 2021 to 2027, maintaining model year 2027 stringencies for all subsequent years. In addition, the federal Incentives for Medium-and-Heavy-Duty Zero-Emission Vehicles (iMHZEV) program which provides incentives for the lease or purchase of medium- and heavy-duty ZEVs also contributes to reducing emissions in the road freight subsector.

In relation to results and as depicted in Table 18, the Transportation sector comprises several distinct subsectors: passenger, freight, and others and each subsector exhibits different trends during the projection period. For example, emissions from passenger and freight transportation are projected to decrease between 2005 and 2030, while emissions from off-road vehicles (for example, recreational, commercial, and residential) are projected to grow slightly over the same period. Post-2030 through 2040, passenger emissions drop further due to continued turnover of on-road fleet to ZEV vehicles, while freight emissions are projected to increase in this period as economic growth continues.

Emissions from the transportation sector decline slightly further in the WAM scenario, driven by extended efficiency gains in diesel and gasoline vehicles and increased electrification of the freight sector. In the freight subsector, emissions are pushed lower than in the WM scenario due to targets for ZEV sales share in new medium and heavy-duty vehicles (MHDVs). MHDV ZEV see their increased share of new vehicle sales take effect in later years, targeting 35% in 2030 and 100 percent where feasible by 2040, resulting in an only a small impact in 2030. As more vehicles enter the market, the impact is greater later in the projection period. Additionally, $200m in funding for retrofitting the existing stock of MHDVs and improved efficiency for marine, air, and trucks contribute to emissions reductions by 2030 in the freight sector.

In the WAM scenario, increased efficiency requirements for on road passenger vehicles aligning with US regulations further improve new vehicle on-road passenger fleet efficiency gains from ZEV uptake. Between 2024 and 2030, the sales-weighted on-road fuel efficiency for new Internal Combustion Engine (ICE) passenger vehicles is projected to improve from 8.1 L/100 km to 6.5 L/100 km, a 19% improvement, while an increasing share of ZEV vehicles pushes overall efficiency higher to 5.1 L/100 km.

Figure 8: Transportation emissions (Mt CO_2 eq), WM and WAM scenarios, 2005 to 2040



Note: Historical emissions data come from NIR2024. Access more data.

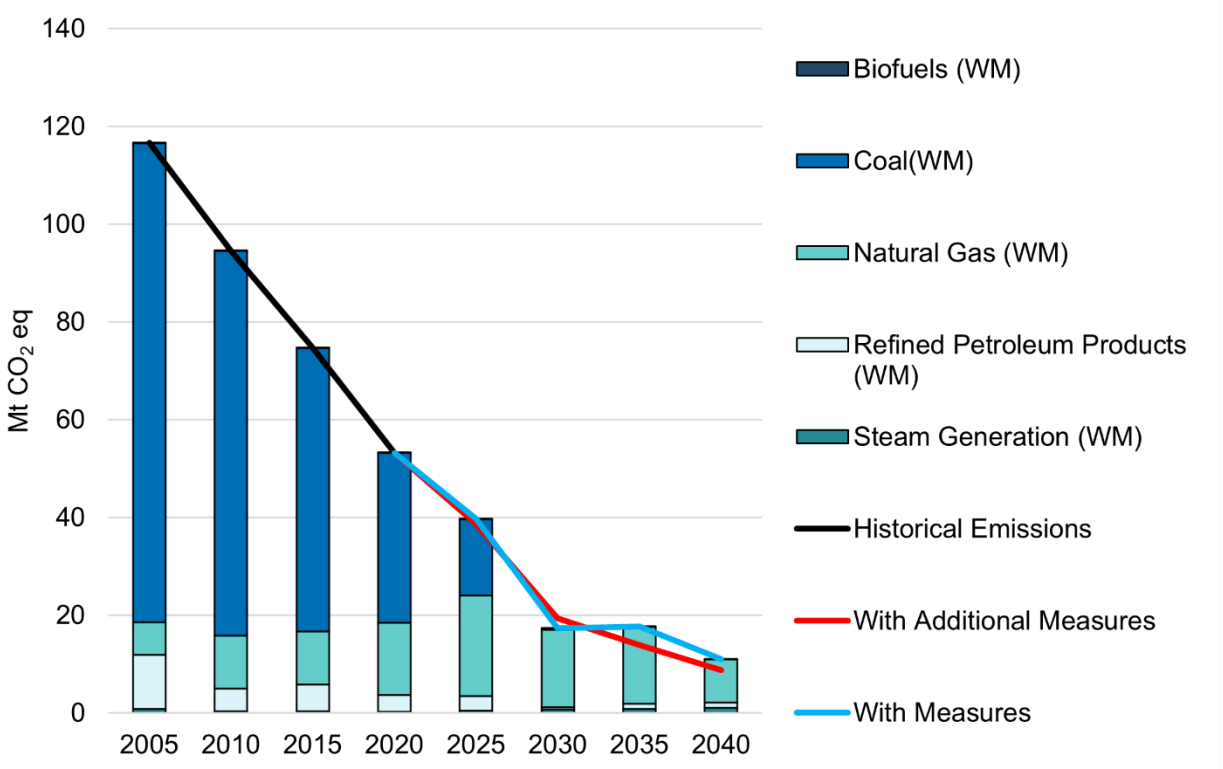
A4.3.2.3 Electricity

Between 1990 and 2022, electricity emissions peaked in 2001. However, emissions decreased by 47 Mt (-50%) globally over this period. Two opposing trends influenced the evolution of electricity emissions:

1. emissions tend to increase due to rising demand for electricity, both domestically and to satisfy exports to the United States (US), which increased power generation; and,
2. emissions tend to decrease significantly due to the reduction and elimination of coal power generation, especially in Ontario, where provincial coal phase-out regulations were implemented.

By 2022, electricity emissions had decreased by 69 Mt (-59%) since 2005, despite a 10% increase in demand. Section 2.3 of NIR2024 provides more details on the main historical drivers of emissions trends associated with electricity generation.

Figure 9: Electricity emissions (Mt CO_2 eq), WM and WAM scenarios, 2005 to 2040



Note: Historical emissions data come from NIR2024. Access more data.

As Canada moves towards a low-carbon future, the Electricity sector will play an increasingly significant role in decarbonizing the economy. Most, if not all, deep decarbonization pathways involve a clean electricity grid and electrification of other economic sectors. Since approximately 88% of the utility electricity supply in Canada is generated from non-GHG emitting sources, the Electricity sector comprised only 7% of total Canadian GHG emissions, excluding LULUCF, in 2022.

The mix of energy sources used to generate electricity varies considerably across the country, depending on regional features such as the availability of renewable energy resources like hydropower, transmission interconnections to other provinces and the US, and access to natural gas. Several provinces rely almost exclusively on hydropower, while others have highly diversified mixes of power that combine non-emitting generation from renewables and nuclear with fossil fuel generation. A few provinces currently rely primarily on fossil fuels such as coal, natural gas, and refined petroleum products.

Several Canadian provinces have achieved nearly 100% non-emitting grids by 2022. Prince Edward Island, Québec, Manitoba, and British Columbia generate over 99% of their electricity from a mix of hydro and/or other renewables and are expected to continue to develop new renewable resources in the future.

The use of on-site cogeneration (which is the simultaneous generation of electricity and heat and/or steam that can be used in industrial processes such as in-situ oil sands extraction) to meet industrial electricity and steam demands has grown and thus reduced demand for electricity generated by utilities and has further reduced emissions from the Electricity sector. In some cases, these cogeneration plants sell their excess electricity to the grid and as a result, electricity generation emissions have shifted from the utility sector to industrial sectors. In the case of Alberta, this shift between the Electricity sector and the Oil and Gas sector is substantial. For example, the Suncor Base Plant (cogeneration facility) will replace old industrial petroleum coke boilers and could displace higher-emitting utility generation.

The recent downward trend in emissions from the Electricity sector is expected to continue over the next decade due to various federal (such as the coal phase-out and Clean Electricity Regulations) and provincial governmental initiatives, while total generation is expected to continue to increase out to 2040, as shown in Table 19.

Federal regulations to reduce CO_2 emissions from coal-fired electricity came into effect on July 1, 2015, and apply a stringent performance standard to new coal-fired electricity generation units and those coal-fired units that have reached the end of their economic life. The regulations are facilitating a permanent transition towards lower or non-emitting types of generation such as high efficiency natural gas and renewable energy. With these regulations, Canada became the first major coal user to effectively ban construction of conventional coal-fired electricity generation units. To further its commitment to eliminate coal-fired electricity, the federal government accelerated the coal phase out by 2030 by introducing amendments in 2018 to the regulations, requiring coal units to comply with an emissions performance standard of 420 t CO_2/GWh. As such, coal generation is expected to be close to zero by 2030. Saskatchewan's CCS Boundary Dam 3 plant is the only power plant planned to keep burning coal after 2030, as it would operate below the performance standard limit thanks to the CCS technology. A mix of natural gas and renewable generation is expected to compensate for the decrease in coal generation. Especially in provinces with limited hydroelectric resources, firm capacity (such as natural gas) will aid in system balancing.

Several provinces have introduced significant measures to move away from fossil fuel electricity generation and towards cleaner sources of power, contributing to the declining Electricity sector emissions. Newfoundland and Labrador built a new large hydro dam (Muskrat Falls) and an underwater transmission link between Labrador and Newfoundland Island to replace aging, high-emitting heavy fuel oil generation on the Island with renewable power and to export more hydroelectricity to the Maritimes. Nova Scotia and New Brunswick decreased their Electricity sector emissions through renewable portfolio standards that required 40% of non-emitting electricity by 2020. Saskatchewan aims to reduce electricity emissions by 50% as compared to 2005 levels by 2030 while Alberta electric utilities has retired their remaining coal electricity generation in 2024, several years before the requirement of the federal regulation.

Consequently, the proportion of utility electricity generation coming from non-emitting sources, is projected to increase from 88% in 2022 to 92% in 2030 and 94% in 2040 in the WM scenario (Table 62). This increase in non-emitting generation share is due in large part to wind power increasing its share of total generation from 7% in 2022 to 15% in 2030 and 19% in 2040. The share of electricity generated from nuclear power is expected to remain stable over the same time frame, as Ontario removes some of its conventional aging nuclear reactors and small nuclear modular reactors start to be deployed in several provinces.

Overall, emissions from coal-fired generation are projected to decline between 2022 and 2030 (Table 20). Emissions from refined petroleum products such as diesel and fuel oils are also expected to decline between 2022 and 2040. Emissions from natural gas are expected to remain significant as it replaces coal in some provinces. Moreover, natural gas helps to meet growing electricity demand and supports the integration of higher levels of intermittent renewables. Thus, emissions from natural gas power generation are expected to first increase out to 2025 before decreasing in the following years.

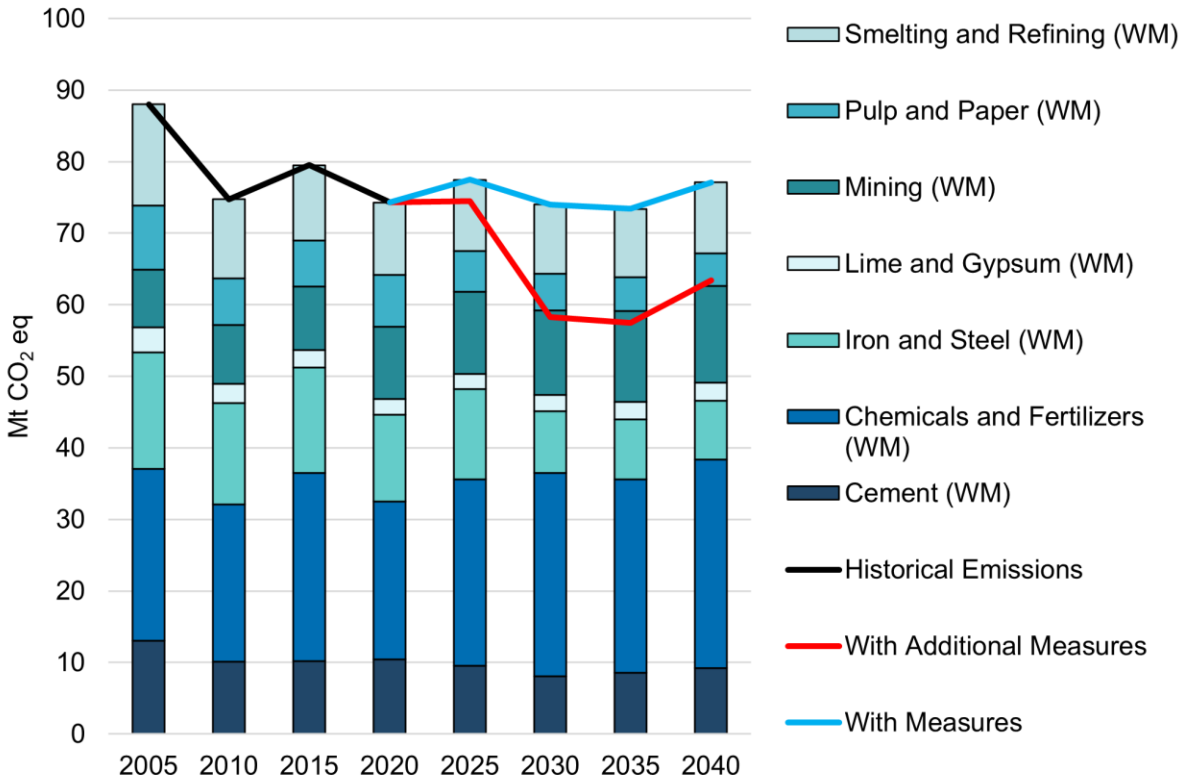
Electricity generation is higher by the end of the projections in the WAM scenario than in the WM scenario due to more ambitious electrification of the economy. Despite this, electricity emissions projections are lower in the WAM scenario after 2035. The Clean Electricity Regulations are the main reasons why emissions are lower in the WAM scenario. From 2035 to 2040, electricity emissions in WAM are reduced by 16 Mt CO_2 eq as compared to WM, a 20% decrease.

A4.3.2.4 Heavy Industry

The Heavy Industry sector includes metal and non-metal mining activities, smelting and refining, and the production and processing of industrial goods such as chemicals, fertilizers, aluminium, pulp and paper, iron and steel, lime and cement.

The sector went through some fluctuation in emissions over the 1990 to 2022 period (Table 22). Emissions from this sector represented 16% of total Canadian emissions in 1990, falling to 12% in 2005. In more recent years, emissions have fallen further because of reduced economic activity and the continued evolution of Canadian production towards other sectors and services, decreasing by 10 Mt (-11%) between 2005 and 2022. In 2022, the Heavy Industry sector contributed 11% to Canada's total emissions.

Figure 10: Heavy industry emissions (Mt CO_2 eq), WM and WAM scenarios, 2005 to 2040



Note: Historical emissions data come from NIR2024. Access more data.

Emissions are estimated to have been at their lowest point in 2009 due to the global economic crisis of 2008, following a decline in pulp and paper, iron and steel, and smelting and refining output, but then recovered somewhat with increased chemical and fertilizer production.

From 2023 to 2030, emissions are projected to decline in the WM scenario due to measures such as the decarbonization of integrated iron and steel facilities in Ontario, efforts to decarbonize the cement industry in Alberta, the impact of the OBPS, programs targeted at increasing energy efficiency, as well as the combined effect of British Columbia and Québec-specific programs targeted at reducing emissions in industrial sectors. From 2031 to 2040, GHG emissions are projected to increase relative to their 2030 levels due to growth in production but remain slightly below their 2022 levels.

In the WM scenario, GHG emissions are expected to increase relative to their 2022 levels between 2023 and 2030 in the chemicals and fertilizers subsector due to higher projected gross output within the sector. GHG emissions are also projected to increase relative to their 2030 levels between 2031 and 2040 due to higher projected gross output within the sector. However, emissions growth is constrained by the deployment of CCS within the subsector.

In the mining and smelting and refining subsectors, GHG emissions in 2030 are mostly flat relative to their 2022 levels in the WM scenario. GHG emissions growth remains essentially flat in the smelting and refining

subsector between 2031 and 2040. Meanwhile, in the mining subsector GHG emissions increase relative to both their 2030 and 2022 levels between 2031 and 2040 due to higher projected gross output within the sector.

Additionally, in the iron and steel, pulp and paper, and cement sectors GHG emissions are projected to decline in 2030 relative to their 2022 levels in the WM scenario. In the iron and steel industry, these decreases in GHG emissions are driven by the conversion of two integrated Ontario iron and steel facilities (Algoma and Arcelor-Mittal Dofasco) from blast furnace/basic oxygen furnace (BF-BOF) to electric arc furnace (EAF) based, and to natural gas based direct reduced iron (DRI) and EAF, respectively. These conversions are partially funded by the Strategic Innovation Fund – Net-Zero Accelerator (SIF-NZA) program. Similarly, in the pulp and paper subsector GHG emissions are projected to decrease relative to their 2022 levels between 2023 and 2040 due to projected energy efficiency gains. Meanwhile, in the cement subsector emissions decline relative to their 2022 levels between 2023 and 2040 primarily due to investments made by Emissions Reductions Alberta into fuel switching away from natural gas as well as the adoption of CCS at Heidelberg cement. Finally, in the lime and gypsum subsector GHG emissions are projected to decline in the early years of the projections before rising to slightly below their 2022 levels in 2030.

At the subsector level in the WM scenario, between 2031 and 2040, GHG emissions are expected to decrease slightly in the iron and steel subsector and remain stable in the pulp and paper subsector relative to their 2030 levels due to relatively flat projected gross output. In the cement and lime and gypsum subsectors GHG emissions increase slightly relative to their 2030 levels between 2031 and 2040 due to expected economic growth of the sectors. Despite the increase in GHG emissions post-2030 in the cement sector, emissions remain below or near their 2022 levels in 2040.

GHG emissions decline further in the WAM scenario, driven by the SIF-NZA program, further hydrogen adoption, and investments from the CGF and carbon revenue returns. The SIF-NZA program promotes the adoption of CCS, energy efficiency gains, and industrial electrification, all of which contribute to declines in GHG emissions in the WAM scenario relative to the WM scenario. Moreover, anticipated future domestic hydrogen projects lead to the adoption of hydrogen in various provinces, further decreasing GHG emissions.

In the WAM scenario, GHG emissions are projected to decrease between 2023 and 2030 compared to 2022 levels in the cement, mining, smelting and refining, iron and steel, and the pulp and paper subsectors. Although emissions in the chemicals and fertilizers subsector are expected to rise initially, they should return to around 2022 levels by 2030.

From 2031 to 2040, GHG emissions in Heavy Industry are projected to increase compared to 2030 levels but remain below 2022 levels. In the cement subsector, emissions are also projected to rise due to increased gross output, yet they stay below 2022 levels by 2040. In the chemicals and fertilizers subsector, emissions are projected to increase slightly from 2031 to 2040 due to higher projected gross output, but this growth is limited by the deployment of deployment of CCS technology. Similarly, emissions in the mining subsector are expected to rise compared to 2030 levels but remain below their 2022 levels, driven by higher projected gross output.

Throughout the post-2030 period, emissions in the iron and steel subsector are projected to remain relatively flat due to stable output. The same is expected for the pulp and paper and lime and gypsum subsectors. Conversely, emissions in the smelting and refining subsector are projected to decline between 2031 and 2040 due to investments into Elysis technology within the aluminum sector.

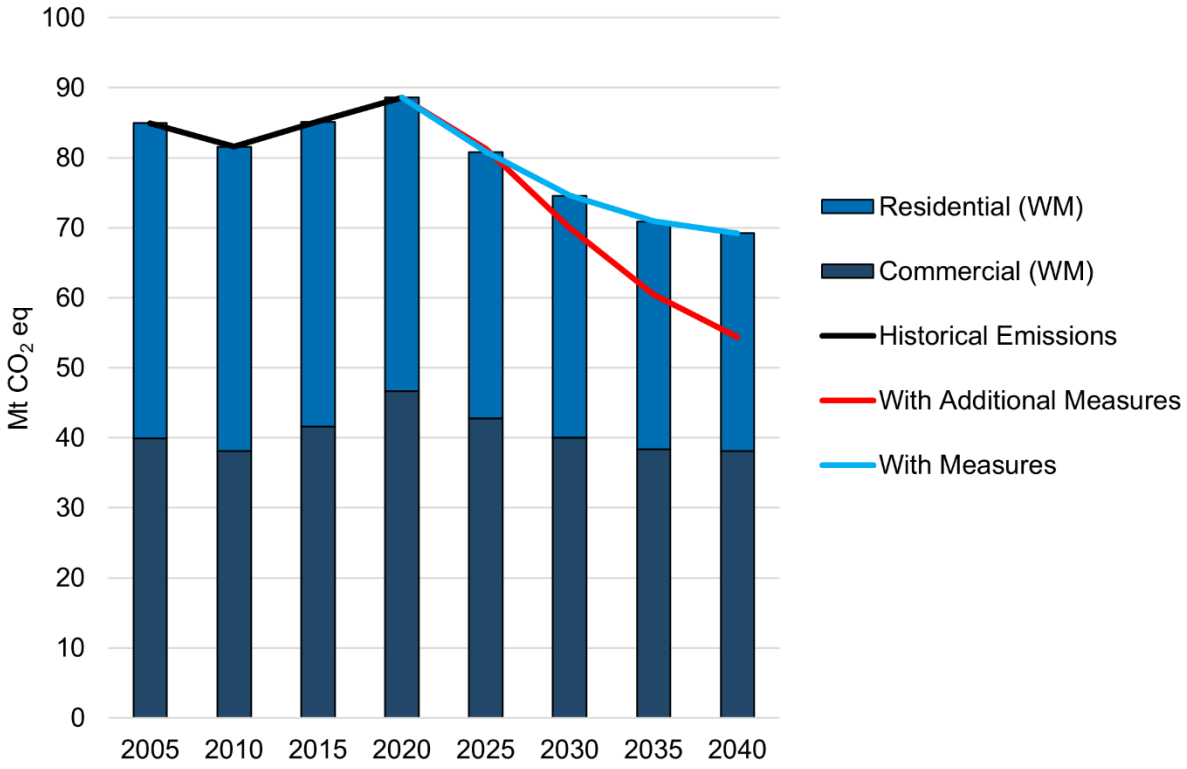
A4.3.2.5 Buildings

While residential fuel use has remained relatively steady since 1990, increases in the commercial subsector have resulted in an increase in emissions of 16 Mt (23%) between 1990 and 2022. Since 2005, emissions increased by 3.9 Mt or 4.5%. GHG emissions from the Buildings sector have increased with population growth and commercial development but, like other sectors of the economy, decreased in the 2008 to 2009

recessionary period and have remained relatively steady since then. In 2022, the Buildings sector contributed 13% to total Canadian emissions.

Despite a growing population and increasing housing and commercial/institutional building stock, energy efficiency improvements and the increasing use of heat pumps contribute to a decline in emissions in the WM scenario. Furthermore, electrification of heating equipment in the commercial subsector causes most reductions in the WM scenario. In the WAM scenario, emissions from the Buildings sector decline further than in the WM scenario, to 70 Mt by 2030, largely due to the introduction of net-zero ready building codes for new buildings. Labelling, codes, grants, and loans for retrofitting existing buildings are also a significant source of emissions reductions in the WAM scenario. Post-2030, emissions from buildings are expected to decline by a further 5.4 Mt in the WM scenario and in 2040, buildings emissions are projected to reach 54.4 Mt in the WAM scenario.

Figure 11: Buildings emissions (Mt CO_2 eq), WM and WAM scenarios, 2005 to 2040



Note: Historical emissions data come from NIR2024. Access more data.

Residential

The decline in GHG emissions in the WM scenario (Table 23) occurs despite expected growth in the number of Canadian households (a key driver of residential emissions) between 2022 and 2030. This expected growth is offset by federal and provincial measures aimed at increasing the energy efficiency of residential buildings, such as building code regulations, rebates for energy efficiency improvements and voluntary housing energy efficiency standards, which help to improve efficiencies in this subsector over time. Post-2030, emissions from residential buildings are expected to decline by a further 3.5 Mt in the WM scenario. Overall, electrification of heating equipment causes most reductions.

In the WAM scenario, residential GHG emissions decline further, to 33 Mt by 2030 because of net-zero ready building codes for new buildings and building shell efficiency improvements via retrofitting of existing buildings. Residential emissions continue to decrease after 2030 as a result of policies targeting oil- and gas-fired heating equipment.

Commercial

As shown in Table 24, both GHG emissions and commercial floor space (the principal driver of emissions from this subsector) increased between 1990 and 2022. In the WM scenario, emissions are expected to decline from their 2022 level of 46 Mt to 40 Mt in 2030 despite continuing growth of floor space. This is a result of continued efficiency improvements and the phase-down and ban on bulk imports of hydrofluorocarbons (HFCs) used in refrigeration and air conditioning. As HFCs typically used in the commercial sector have GWPs up to 3,500 times more potent than CO_2, decreasing HFC consumption has a significant impact on projected emissions. Post-2030, emissions from commercial buildings are expected to reach 38.1 Mt in 2040, 1.9 Mt lower than the level in 2030.

In the WAM scenario, commercial subsector GHG emissions decline further, to 37 Mt by 2030. As in the residential subsector, this is mostly driven by the net-zero-ready building codes for new buildings and building shell efficiency improvements via retrofitting of existing buildings. Policies targeting oil- and gas-fired heating equipment will bring commercial emissions down to 30 Mt in 2040.

A4.3.2.6 Agriculture

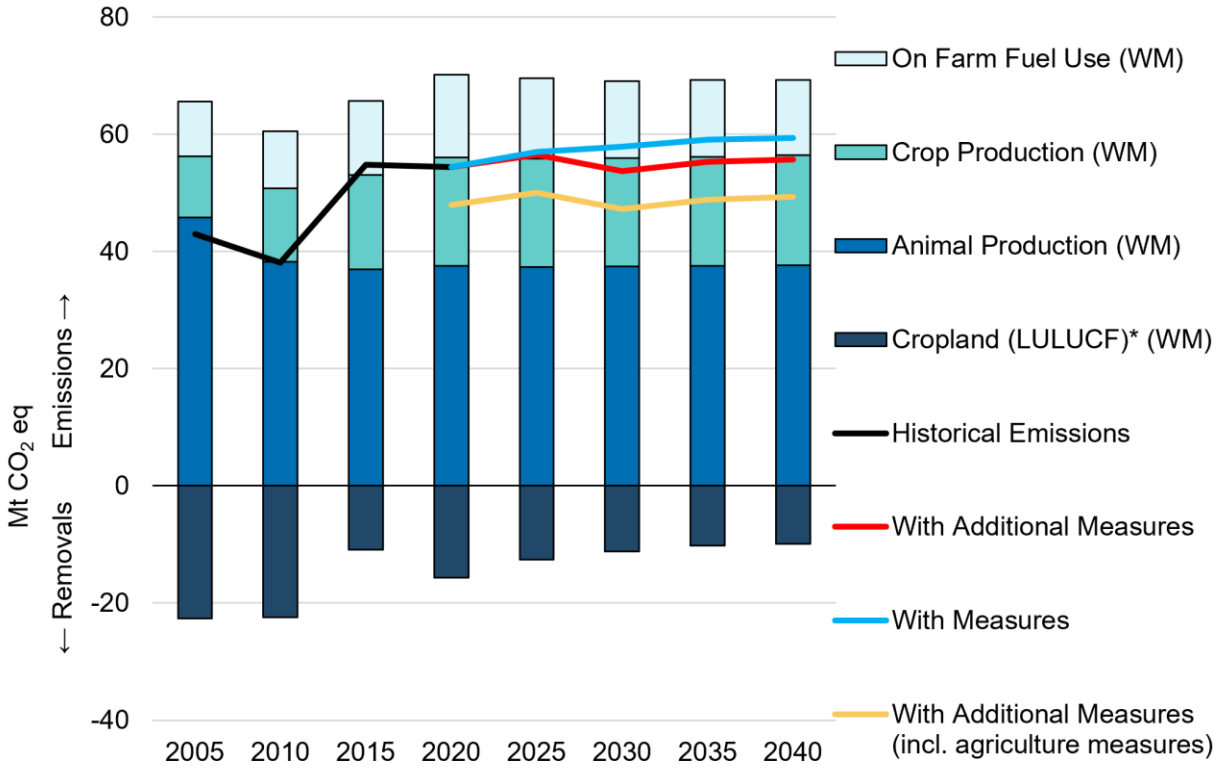
The Agriculture sector is comprised of three subsectors: crop production, animal production, and on farm fuel use. There are also CO_2 fluxes associated with agricultural lands from changes in carbon sequestered in agricultural soil that are due to changes in cropland management as well as changes in land use. These fluxes are accounted for in the LULUCF sector, and thus excluded from emissions from agriculture discussed here unless stated otherwise. More information on the GHG fluxes associated with cropland from land use and land-use change is contained in Section A4.3.2.10.

The majority of GHG emissions from agriculture are due to biological processes in animal and crop production, as well as emissions from inorganic and organic fertilizer. Most of the GHGs emitted in the Agriculture sector (on a CO_2 equivalency basis) are CH_4 and nitrous oxide (N_2O) with a smaller amount of CO_2 emissions from on-farm fuel combustion and carbon-containing fertilizers. Emissions from the Agriculture sector continued a slow upward trend throughout the historical period, rising from 51 Mt in 1990 to 66 Mt in 2005, and 70 Mt in 2022. Section 2.3 of NIR2024 discusses in more details the main historical drivers of emissions trends associated with the Agriculture sector.

The sources of emissions show a compositional shift over the historical period. In 2005, crop production emissions represented about 15% of total agricultural emissions and increased to 27% in 2022. This was due to increased use of fertilizers and was offset by a decrease in livestock production emissions, which dropped from 70% of agricultural emissions to 53% over the same period because of decreasing cattle herds. Emissions from on-farm fuel use increased slightly throughout the historical period, ranging from 14% in 2005 to 20% of total agriculture emissions in 2022.

Historical and projected emissions from agriculture (excluding LULUCF Cropland) in the WM and WAM scenarios are presented with other economic sectors in Table 13 and in Table 25 where they are disaggregated by subsector (crop production, animal production, and on-farm fuel use). In addition to crops, animals, and fuel combustion, changes in land use patterns also play a significant role in the GHG impact of the sector. Over the last decade, agricultural land in Canada has been a net carbon sink, reducing the total GHG impact of the sector. Figure 12 shows net agriculture emissions—emissions from crop production, animal production, and on-farm fuel use, as well as the net GHG flux from cropland land use (that is, soil carbon sequestration) and land-use change (such as deforestation)—from 2005 to 2040, as well as the GHG impact of agriculture measures for 2030 to 2040. For the purposes of assessing progress to emissions reduction targets, emissions/removals of carbon from agricultural soils and emissions from land use and land-use change are accounted for in accordance with the Net-net approach (see Table 50 and Section A4.3.2.10 for further information), and are included in the LULUCF accounting contribution.

Figure 12: Net agriculture sector emissions including net GHG flux from land use, land-use change on agricultural land (Mt CO_2 eq), WM and WAM scenarios, 2005 to 2040



Notes: Historical emissions data come from NIR2024. Access more data.
*Projections only include soil carbon and forest conversion components of cropland.

Projections from the WM scenario (blue line in Figure 12) show a slight decrease in emissions between 2022 and 2030, with 2030 emissions still slightly higher than 2005 levels. Emissions reductions from cross-sectoral measures such as carbon pricing and the CFR as well as the Agricultural Clean Technology (ACT) program are reflected in the WM emissions. In the WAM scenario (red line in Figure 12), agriculture emissions decline more rapidly to just below 2005 levels in 2030. The key difference between emissions in the WM and WAM Scenarios (Figure 12, Table 13, and Table 25) can be attributed to the fertilizer target (a reduction of N_2O emissions from fertilizer application to 30% below 2020 levels) announced in the 2030 Emissions Reduction Plan, through which N_2O emissions from crop production are reduced relative to the WM scenario. Further reductions from agriculture measures are represented by the yellow line in Figure 12. The combined effect of the fertilizer target and agriculture measures is a reduction of approximately 10 Mt CO_2 eq relative to the WM scenario net emissions. From 2030 to 2040, emissions from crop production, animal production, and on farm fuel use are projected to remain at stable levels in both scenarios while cropland is projected to be a slightly decreasing sink.

A4.3.2.7 Waste and Others

Subsectors included in the Waste and Others sector are waste, light manufacturing (for example, food and beverage and electronics), coal production, construction, and forest resources.

By 2022, emissions from the Waste and Others sector decreased by 6.9 Mt (-12%) since 1990 and 4.3 Mt (-7.8%) since 2005. Overall, waste emissions fluctuated and generally increased over the time series, from 21 Mt in 1990 to 23 Mt in 2022. Section 2.3 of NIR2024 discusses the main historical drivers of emissions trends associated with the Waste and Others sector in more detail.

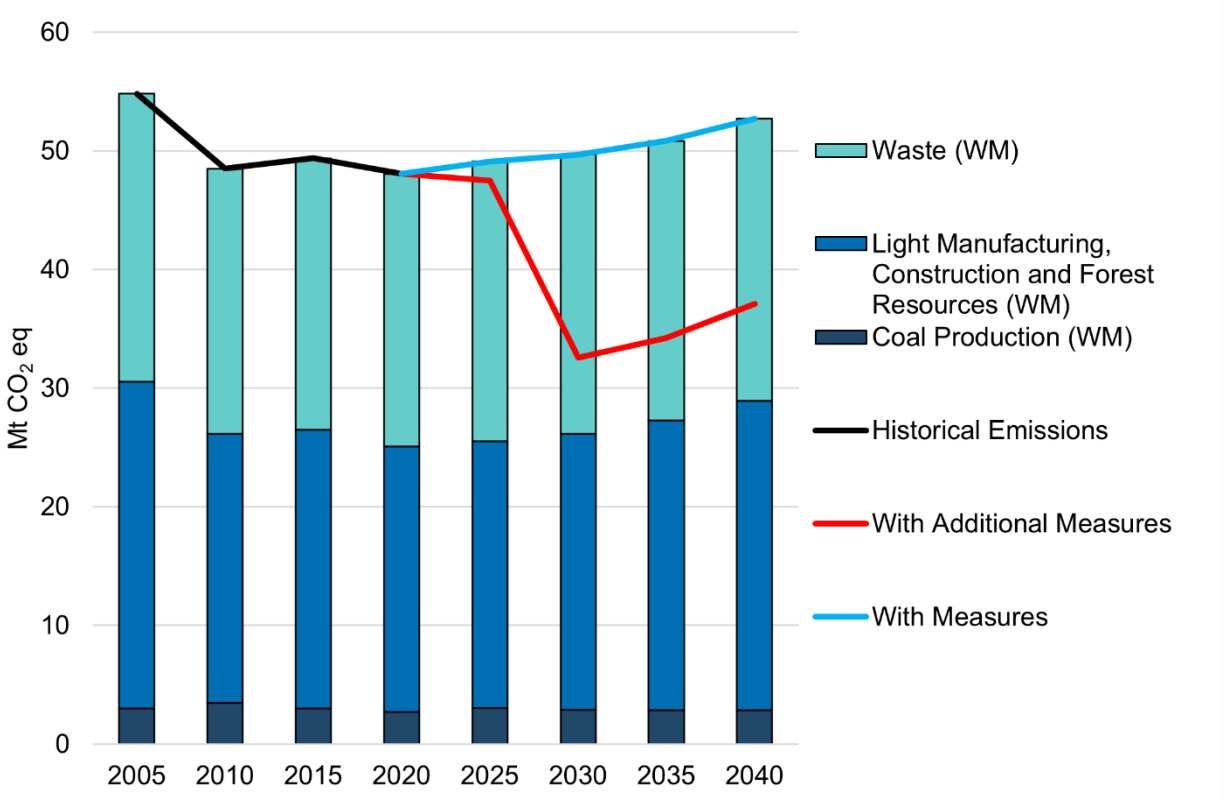
Aggregate GHG emissions from the subsectors are projected to remain fairly flat relative to their 2022 levels between 2023 and 2030 in the WM scenario. Waste emissions in the WM scenario reflect the impact of

provincial and territorial waste diversion programs and landfill gas regulations. Carbon pricing, Québec-based decarbonization programs, and programs designed to increase energy efficiency are currently the main policy measures that help contain the growth in GHG emissions from the light manufacturing and others subsectors. Relatively flat demand for coal, mostly metallurgical, helps to constrain emissions from coal production.

GHG emissions, however, are projected to increase relative to their 2030 levels between 2031 and 2040 in the Waste and Others sector, mostly in light manufacturing and other subsectors. In the waste subsector, however, GHG emissions are projected to remain flat relative to their 2030 levels out to 2040. This is, in part, due to waste diversion policies curbing the disposal of waste into landfills, even with an increasing population. Additionally, landfill gas regulations in British Columbia, Québec, and Ontario also reduce waste emissions in their respective provinces.

GHG emissions in the WAM scenario are lower than in the WM scenario, with reductions occurring primarily in the solid waste and light manufacturing subsectors. This is due to additional measures, such as the federal landfill gas regulations, SIF-NZA, and investments from the CGF and carbon revenue returns impacting the light manufacturing subsector. In 2030, GHG emissions are projected to decline relative to 2022 levels. However, GHG emissions in solid waste and light manufacturing are projected to increase from 2030 levels by 2040 but to remain below their 2022 levels. The projected increase in GHG emissions between 2030 and 2040 is due to increasing projected gross output within the light manufacturing subsector. Likewise, GHG emissions are projected to increase in forestry and construction between 2031 and 2040 due to economic growth. Concurrently, emissions from coal production are projected to increase slightly between 2030 and 2040 in the coal production subsector. In the waste subsector, emissions are projected to sharply decline relative to 2005 emissions following the implementation of the federal landfill gas regulations in 2027.

Figure 13: Waste and Others emissions (Mt CO_2 eq), WM and WAM scenarios, 2005 to 2040



Note: Historical emissions data come from NIR2024. Access more data.

A4.3.2.8 Carbon capture and storage

Incentives such as carbon pricing, the CFR, and the CCUS ITC spur development of carbon capture in the projection period. In addition to the federal CCUS ITC, the Alberta Carbon Capture Incentive Program is also included in the WAM scenario.

In the WM scenario, 21 Mt worth of CCS is built by 2030, of which 13.5 Mt comes from the Oil and Gas sector. Most government measures that provide incentives for CCS construction reach their full stringency in 2030 and taper off thereafter. Considering the assumed four-year construction time, CCS contribution to GHG emissions reductions peaks at 29 Mt in 2034 before declining to 27 Mt by 2040.

In the WAM scenario, increased electric vehicle (EV) uptake generates more CFR credits driving down the credit price and the need for upstream producers to deploy CCS technology. Less CCS construction from CFR in the WAM scenario is offset by the impact of Alberta's Carbon Capture Incentive Program, as well as the modelling of recently announced projects, including Strathcona, Shell's Polaris, and Entropy's Glacier Phase 2 CCS projects. Overall, abatement through carbon capture and storage accounts for 27 Mt in 2030 and 32 Mt in 2040 in the WAM scenario.

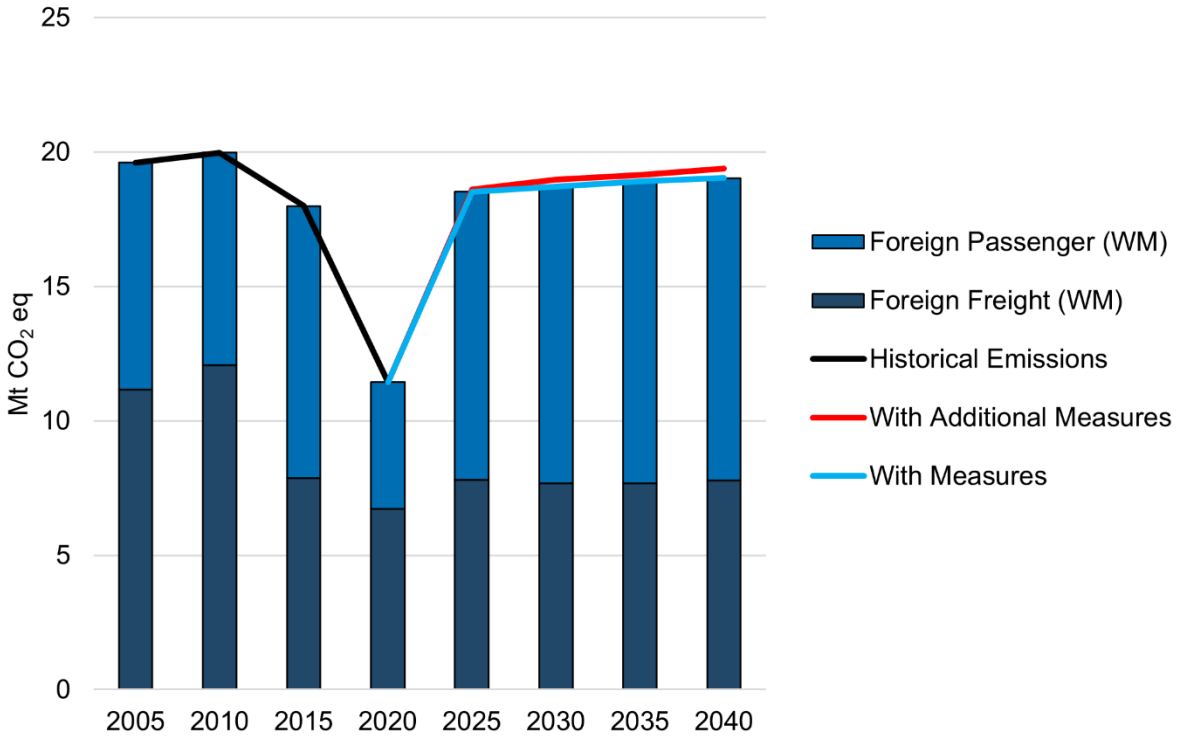
As can be seen in Table 27, in the WM scenario there are approximately 3.7 Mt of CCS related to hydrogen production in 2030 and about 3.5 Mt in 2040. This CCS is associated with facilities whose primary product is hydrogen such as the Air Products hydrogen production facility in Alberta as well as the Dow Net Zero Petrochemicals facility coming online. In the WAM scenario, there are approximately 6.2 Mt of CCS related to hydrogen production in 2030 and about 6.6 Mt in 2040. This CCS is associated with planned hydrogen production facilities primarily in Alberta and Saskatchewan.

A4.3.2.9 Foreign passenger and foreign freight

Emissions from foreign passenger and foreign freight subsectors are not included in the national total, consistent with the 2006 IPCC Guidelines for National Greenhouse Gas Inventories. As per those same guidelines, the international/domestic split is determined based on departure and arrival of each trip and not by the nationality of the air or maritime carrier.

While emissions were down in 2020 and 2021 due to COVID-19, foreign passenger emissions rebounded in 2022 and increased overall between 1990 and 2022. For the projected period, emissions continue to increase slightly but remain below 2005 levels in 2030. These projections account for energy efficiency improvements, including voluntary emissions reduction agreements in the aviation sector.

Figure 14: Foreign passenger and foreign freight emissions (Mt CO_2 eq), WM and WAM scenarios, 2005 to 2040



Note: Historical emissions data come from NIR2024. Access more data.

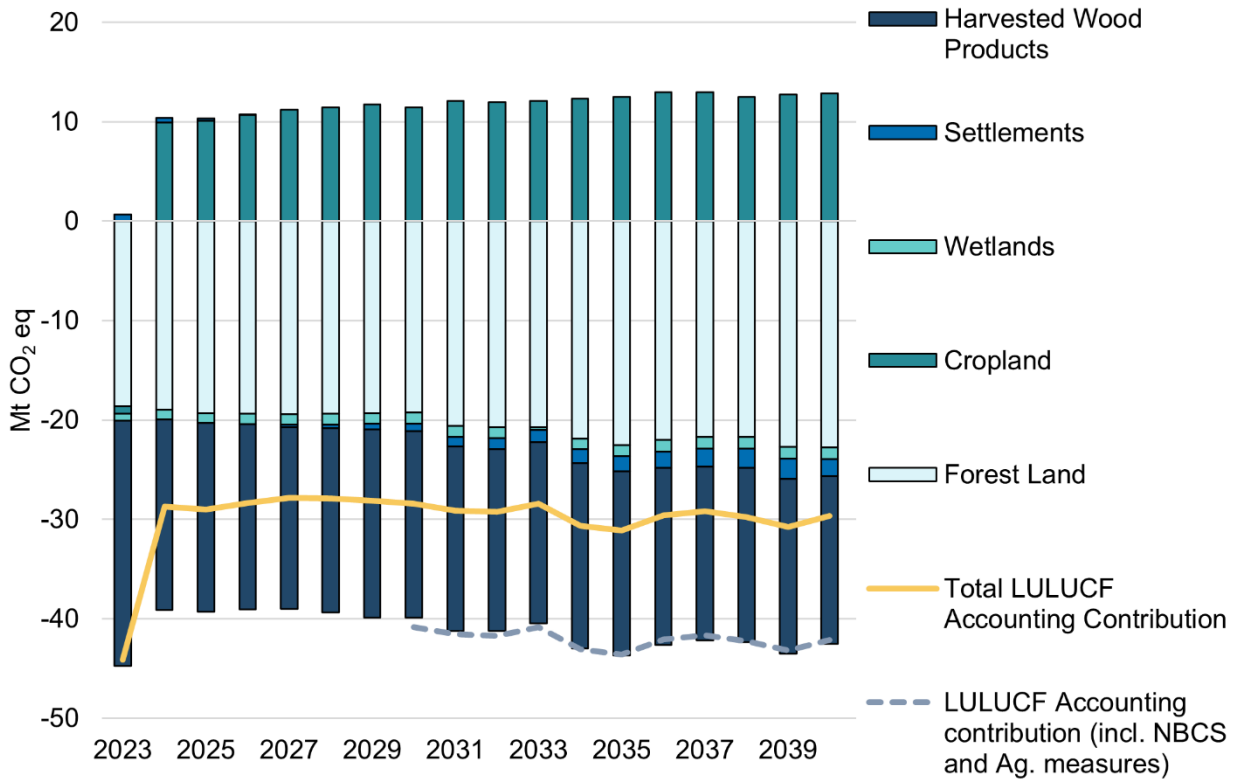
A4.3.2.10 Land-use, land-use change and forestry, nature-based climate solutions, and agriculture measures

The LULUCF sector reports GHG fluxes (that is, emissions and removals) between the atmosphere and managed lands in Canada across six land categories (i.e., forest land (FL), cropland (CL), wetlands (WL), grasslands (GL), settlements (SL), and other lands) as well as fluxes associated with land-use changes and emissions from harvested wood products (HWP) derived from these lands. Like many countries, Canada applies specific rules to account for these fluxes to assess progress towards emissions targets, referred to as "LULUCF accounting."

NBCS in forests, grasslands, wetlands, and agricultural lands can help mitigate the impacts of climate change while providing important benefits to biodiversity and communities. NBCS include the Government of Canada's commitment to plant two billion trees by 2031, restoring degraded ecosystems, improving land management practices (including on agricultural lands), and conserving land at risk of conversion to other uses.

The projected LULUCF accounting contribution and projected GHG impact of NBCS and agriculture measures can be seen in Figure 15, along with the breakdown of LULUCF accounting by land category from 2023 to 2040.

Figure 15: LULUCF accounting contribution and GHG impact of nature-based climate solutions and Agriculture Measures (Mt CO_2 eq), 2023 to 2040



Note: LULUCF accounting is included in the WM scenario. The GHG impact of NBCS and Ag Measures are added in the WAM scenario.

Table *43* presents the aggregate projected LULUCF net GHG flux for selected years from 1990 to 2040. Table *44* presents the aggregate LULUCF accounting contribution (which includes the GHG impact of the 2 Billion Trees program) for selected years from 1990 to 2040, as well as projected GHG impact of NBCS and agriculture measures for 2030, 2035, and 2040.

Historical net flux estimates

As described in Chapter 6 of NIR2024, the LULUCF sector reports GHG fluxes between the atmosphere and managed lands in Canada, as well as fluxes associated with land-use changes and emissions from HWP derived from these lands. This assessment includes emissions and removals of CO_2 associated with carbon stock changes; additional emissions of CO_2, CH_4, N_2O, and carbon monoxide (CO) due to controlled biomass burning; CO_2, CH_4, and N_2O emissions from drained organic forest soils and wetland drainage and rewetting for peat extraction purposes; and N_2O released following land conversion to cropland.

Reported fluxes in the NIR are associated with land-use and LMC and changes in the pool of carbon associated with HWP reporting aims to include all emissions and removals of CO_2 from managed lands. The following emission sources are also tracked in the NIR, but are converted and reported as a single value of CO_2 equivalent:

- Emissions of CH_4 and N_2O due to controlled biomass burning (but not emissions due to biomass used as fuel, which are reported under the economic sector in which they occur).
    - Consistent with NIR2024, GHG emissions from LULUCF shown in the tables in this section do not include carbon monoxide estimates. Carbon emissions in the form of carbon monoxide are

reported in NIR2024 (CRF Table 4) but not included in the sectoral totals and are instead reported as indirect CO_2 emissions in CRF Table 6.

- CH_4 and N_2O from wetland drainage and rewetting due to peat extraction.
- N_2O released following Land Converted to Cropland.

In 2022, the estimated net GHG flux in the LULUCF sector, calculated as the sum of GHG emissions and removals, was a net emission of 51 Mt CO_2 eq (Table 46), or about 7% of the magnitude of Canada's economy-wide GHG emissions. The time series of LULUCF sector estimates is available in Table 10 of Canada's 2024 Common Reporting Format (CRF) Table. Values are rounded to two significant figures (except for values under 1.0 kt CO_2 eq, which are rounded to the first decimal) based on the same rounding protocol used in Canada's NIR. GHG fluxes from forest land remaining forest land (FLFL) are further disaggregated by origin (depending on whether the land was initially afforested or not) since each is accounted for using a different accounting approach.

Consistent with the 2019 IPCC Refinement to the 2006 Guidelines for GHG Inventories, Canada employs a Tier 3 approach for estimating anthropogenic emissions and removals from FLFL. Under this approach, fluxes from managed forest affected by recent significant natural disturbances, such as wildfires and insect infestations, are tracked separately from anthropogenic emissions and removals. These disturbances are classified as anthropogenic only when the forest stands reach commercial maturity or pre-disturbance above ground biomass, depending on the type of disturbance. As a result, the FLFL estimates reported in Canada's NIR represent anthropogenic emissions and removals. Natural disturbances and their emissions and removals associated with significant disturbance events are also reported separately in the NIR for general information and transparency purposes. For further information, please refer to Chapter 6, Section 6.3.1 and Annex 3.5, Section 3.5.2 of NIR2024.

Net flux projections

Canada's net GHG flux projections from LULUCF are shown in Table *47* and descriptions of the modelling approaches used to produce the projections are provided in Section A4.6.4. GHG flux projections from the LULUCF sector are modelled separately from other sectors available for all LULUCF subsectors, Table *47* shows the subsectors and parts of subsectors for which projections are currently available (shading indicates where projections are not available). As a result, some of the historical information in Table *47* differs from Table *46*. Table *47* is provided to show historical information that is consistent with projections to facilitate a more complete understanding of the accounting projections (Section A4.6.4).

Currently, Canada has GHG flux projections for FLFL and associated HWP, afforestation (conversion of other land categories to forest land), forest conversion (conversion of forest land to other land categories), and sequestration of carbon in agricultural soils. Work is ongoing to increase the scope of LULUCF projections for other components (such as grasslands remaining grasslands and residential firewood from croplands or settlements) and to include GHG impacts of NBCS and Agriculture Measures in relevant LULUCF net GHG flux and accounting projections in future reports.

The LULUCF results reflect the impact of the 2 Billion Trees program in associated subsectors with best available information. The impact will be revised in future projection reports, as methodologies improve, and more data is collected from program activities.

This year, Canada will publish net GHG flux historical estimates and projections from provinces and territories by land category on open data. This data is also presented visually on Canada's Greenhouse Gas Emissions Projections webpage.

LULUCF historical and projected accounting contribution

This section presents the accounting contributions derived using the approaches described in Section A4.6.4.

- Table 48 presents the contribution from FLFL and associated HWP, showing how it is derived using the RL approach.
- Table 49 presents the contribution from all LULUCF subsectors in selected historical years based on estimates shown in Table 46 for Net-net accounting and Table 48 for RL accounting.
- Table 50 presents the projected contribution in 2030, 2035, and 2040 based on estimates shown in Table 47 and Table 48, for those subcategories for which emission projections are available.

Results from Table 49 and Table 50 cannot be compared directly due to the exclusion of subcategories for which projections are not available in Table 50.

In deriving Table 48, Table 49, and Table 50, unrounded numbers are used to calculate the accounting contributions. These results are then rounded according to the rounding protocol explained in this section.

FLFL and associated HWP provide the largest share of the overall historical accounting and show a growing contribution through to 2023 (Table 48). The Reference Level (RL) approach calculates the difference between emissions and removals from the Forest Sector (FLFL and HWP) with projected harvest rates and what would have been emitted if historical harvest rates and management practices were maintained. The projected harvest rates continue to remain below the historical average harvest levels that were used to calculate the reference level. After 2022, the projected harvest rates remain slightly below reference level harvest rates, leading to a relatively stable difference in emissions and removals between the reference level harvest rates and the projected harvest rates and as a result a stable accounting contribution from FLFL and associated HWP until 2040.

The projected accounting contribution from FLFL and associated HWP has been recalculated since Canada's NC8/BR5. Recent insect infestations and wildfires have reduced harvestable area, and thus projected harvest volume used to calculate the GHG flux has decreased. Coupled with a relatively stable reference level, this resulted in an increase of about 14 Mt CO_2 eq to the 2030 accounting credit from FLFL and associated HWP since NC8/BR5. It is important to note that a similar increased accounting credit would be manifested under alternative accounting approaches (such as Net-net).

Recalculations to historical GHG flux occurred in forest land since NIR2023, the most significant of which is due to corrections made to the pre-1990 forest land disturbance history data, i.e., wildfire or clearcut, which determine the stand origin at the initiation of simulations in 1990 (for more details, see Annex 3.5.2.5 of NIR2024). Specifically, a review of the entire harvested land base, initiated in 2018, was completed. As a result, new and updated data on historical harvest areas in Canada (1890 to 1989) were finalized for implementation in the 2024 submission. This recalculation had a minimal impact on projected accounting contribution from FLFL and associated HWP because both the projected GHG flux estimates and reference level estimates were affected similarly.

Forest conversion accounting uses a Net-net approach so changes in the contribution over time reflect trends in Forest Conversion rates since 2005. The increasing accounting contribution from 2030 to 2040 (Table 48) compared to the historical contributions in Table 49 results from projected declines in future forest conversion rates.

The historical accounting contribution from the Cropland category varies significantly due to the high variability in emissions/removals from soil organic carbon input which can be attributed to climatic factors, crop yields, and soil recovery dynamics, making these variations a natural part of the carbon cycle. The large accounting debit from Cropland remaining Cropland in 2022 (Table 49) was due to a significant drop in carbon input from crop production in 2021 due to the drought in the prairies.

The decrease in the accounting debit from Cropland observed in 2023 (Figure 15) compared to 2022 is a result of favourable growing conditions in 2022, which followed the poor conditions in 2021. As plants experience improved growing conditions, their net primary productivity increases, leading to greater carbon uptake and storage in subsequent years. This "rebound" effect is not uncommon, as ecosystems often compensate for previous carbon losses under favourable conditions. In the projection period, carbon removals in cropland are decreasing and remain below 2005 levels resulting in projected accounting debits in 2030, 2035, and 2040. Given current trends in land management, the carbon sequestration benefit (specifically, increased soil carbon) from conservation tillage is declining gradually over time as the rate of adoption begins to level off and soil carbon gains from past adoption approach a new equilibrium. Carbon gains from crop production decline through the projection period as soil carbon begins to stabilize due to static crop production levels. Moreover, in response to changes in demand (such as less meat, more plants), the shift away from perennial crops towards annual crops is expected to continue. This shift results in the loss of soil carbon and lowers the potential of carbon removals from subsequent management on that land that may enhance soil carbon storage.

Nature-based climate solutions and agriculture measures

NBCS refer to the use of natural ecosystems and processes to help mitigate or adapt to the impacts of climate change. They can include activities such as reforestation and afforestation, restoration of wetlands and grasslands, farming practices which enhance soil carbon sequestration, and coastal ecosystem restoration. These activities reduce GHG emissions, enhance carbon sequestration, and increase resilience to climate-related risks while providing important benefits for biodiversity and local communities. Agriculture measures refer to NBCS programs occurring on agricultural lands.

NBCS in Canada is comprised of two main funding frameworks:

1. Natural Climate Solutions Fund horizontal initiative, which includes three separate but related programs: NRCan’s 2 Billion Trees program, ECCC’s Nature Smart Climate Solutions Fund (NSCSF), and Agriculture and Agri-Food Canada’s (AAFC) Agricultural Climate Solutions Program.
2. The Sustainable Canadian Agricultural Partnership (Sustainable CAP) is a five-year agreement (2023 to 2028), between the federal, provincial, and territorial governments to strengthen the competitiveness, innovation, and resiliency of the agriculture, agri-food, and agri-based products sector.

Table 45 presents the projected GHG impact of NBCS (excluding 2 Billion Trees) and agriculture measures by program category for 2030, 2035, and 2040. The estimated GHG impact from these programs is not an accounting value but represents how accounting contributions could change in the presence of these programs and thus are incremental to the LULUCF accounting contribution, as presented in Table 44. The ACT program and nitrogen management components of programs listed above are no longer included in Table 45 as they are now included in the modelling of Agriculture emissions in the WM and WAM scenarios.

A4.3.3 Emissions projections by IPCC sector

According to the IPCC Guidelines, the IPCC Sectors refer to Energy; Industrial Processes and Product Use; Agriculture, Forestry and Other Land Use; and Waste. These sectors are further divided into IPCC categories and subcategories.

Adjustments that are made to the IPCC categories to calculate economic sector emissions include reallocating:

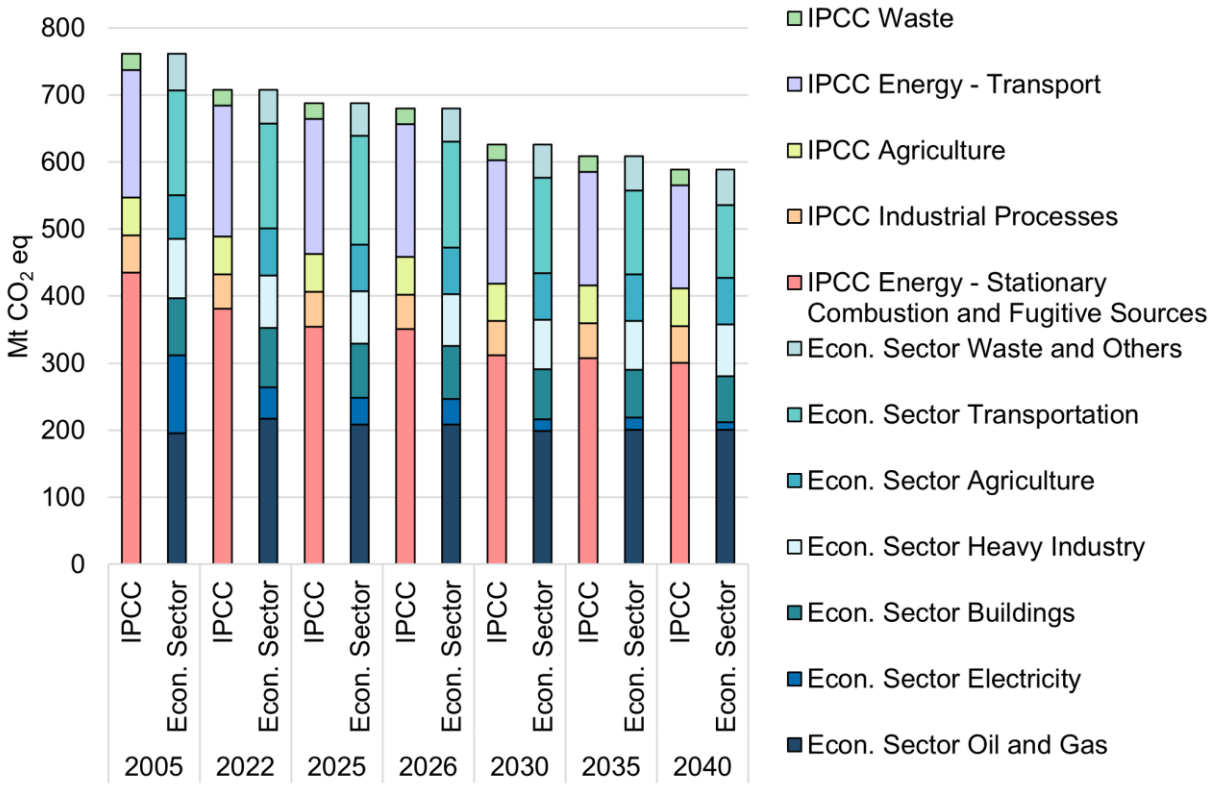
- Off-road transportation emissions related to mining operations from the IPCC transport category to the Oil and Gas sector and the Heavy Industry sector.

    - Heavy Industry subsectors include mining activities, smelting and refining, and the production and processing of industrial goods such as chemicals and fertilizers, pulp and paper, iron and steel, and cement.

- Emissions related to pipeline operations to the Oil and Gas sector.
- Some industrial process emissions to the Buildings sector.
- Stationary combustion emissions under the IPCC categorization across economic sectors, as appropriate.
- Almost all industrial processes and their fugitive emissions are aligned with the economic sector that generates them (primarily Heavy Industry and Oil and Gas).
- Landfill emissions to the Waste and Others sector.

A more detailed description of the reconciliation between economic and IPCC sectors is available in Tables A10-3 and A12-1 in NIR2024. These tables present, respectively, the relationship between Canadian economic sectors and IPCC sectors and the description of the economic sectors. Table 14 illustrates how the projected trends in GHG emissions vary by IPCC sector/category, while Figure 16 shows the distribution of emissions on an IPCC basis versus an economic sector basis.

Figure 16: Total Canadian GHG emissions, WM scenario (Mt CO_2 eq), excluding LULUCF accounting contribution – methods of categorization



Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024.

A4.3.4 Emissions intensity

Between 1990 and 2022, Canada's economy grew more rapidly than its GHG emissions. As a result, the emissions intensity for the entire economy (GHGs per unit of GDP) has continued to decline, by 42% since 1990 and by 30% since 2005. While the COVID-19 pandemic undoubtedly affected recent year emissions, the

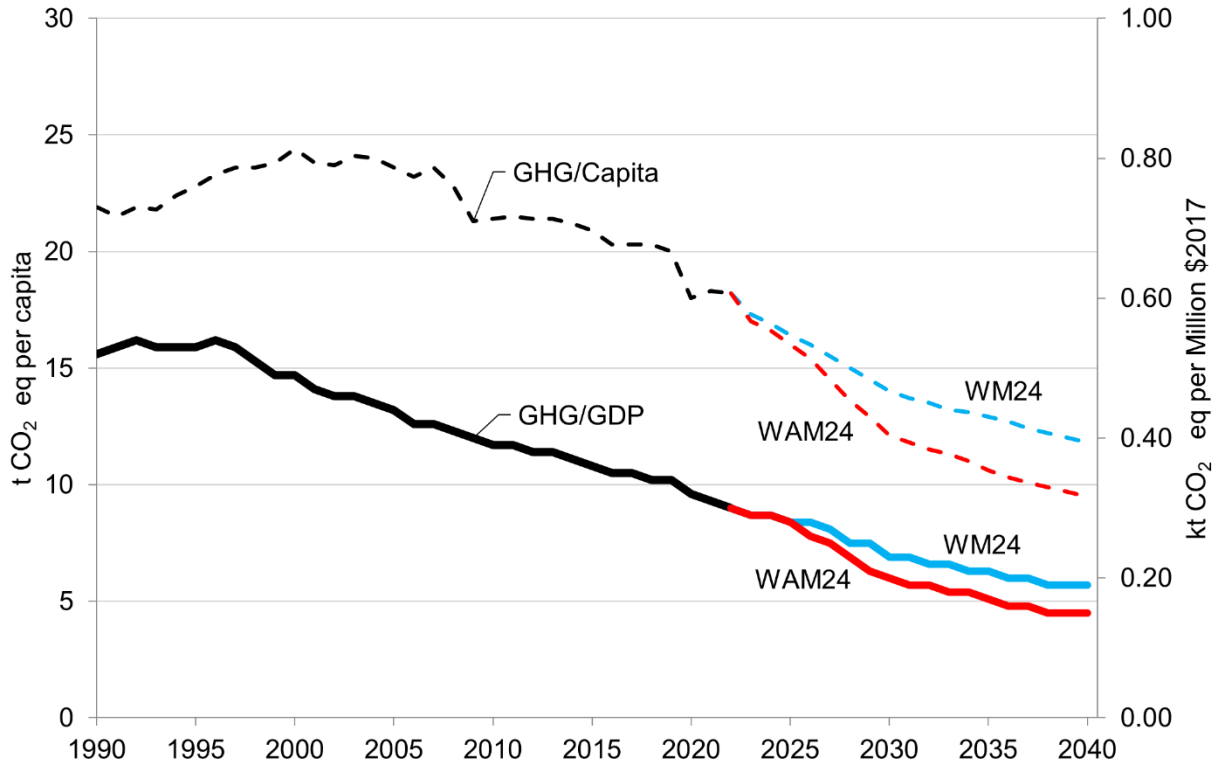
sustained decline in emissions intensity over time can be attributed to factors such as fuel switching, increases in energy efficiency and the modernization of industrial processes.

Emissions per capita (excluding the contribution of LULUCF, NBCS, and agriculture measures) were 21.9 t CO_2 eq per person in 1990. By 2022, they had declined to 18.2 t CO_2 eq per person, a 17% reduction from their 1990 levels. Canada's population growth for 2022 through 2024 (census year) has been the strongest observed since at least 1972. From 2024 to 2030, the population is expected to grow by 1.6% annually, and by 1.1% from 2031 to 2040. Nevertheless, emissions intensity per capita is expected to decrease in the WM and WAM scenarios.

Declines in emissions intensity per unit of GDP are also expected to continue in the projection period, with intensity declining faster in the WAM scenario.

Figure 17 shows the evolution of Canada's GHG emissions intensity per unit of GDP and per capita, from 1990 to 2040. Table 29 also provides details on GHG emissions intensity per capita by province and territory.

Figure 17: Canadian emissions intensity (t CO_2 eq per capita and kt CO_2 eq per unit of GDP), excluding LULUCF accounting contribution, NBCS, and agriculture measures, WM and WAM scenarios, 1990 to 2040



Note: Historical GDP and population data come from Statistics Canada. Historical emissions data come from NIR2024. Access more data. Emissions intensities in the WAM scenario include cross-border credit flows under the WCI.

A4.3.5 Emissions projections by gas

This section provides detailed emissions projections by gas and economic sectors, along with a discussion of the trends. Total Canadian GHG emissions over the projection period by gas (excluding LULUCF, NBCS, agriculture measures and WCI Credits) are presented in Table 30.

CO_2 emissions (Table 31) increased by 93 Mt between 1990 and 2022. CO_2 emissions are projected to decline by 15% between 2005 and 2030 in the WM scenario, and by 23% in the WAM scenario.

On a CO_2 eq basis, CO_2 represented 75% of total Canadian GHG emissions in 2005. By 2030, in the WM scenario, this share is expected to increase slightly to 77%, and to 81% in the WAM scenario, excluding the contributions from LULUCF, NBCS, agriculture measures, and WCI Credits. By 2040, CO_2 emissions represent 76% of total emissions in the WM scenario, and 79% in the WAM scenario. Between 1990 and 2022, CO_2 emissions increased in the Oil and Gas, Agriculture, Transportation, and Buildings sectors. During the same period, CO_2 emissions remained relatively flat in the Heavy Industry sector and dramatically declined in the Electricity sector, and Waste and Others sector. Between 2022 and 2030, CO_2 emissions are projected to decrease in all sectors in the WM and WAM scenarios. Overall, the downward trend continues in the post-2030 period, especially in the WAM scenario.

CH_4 emissions (Table 32) have risen since 1990, peaking at 152 Mt CO_2 eq in 2006, then fluctuating and decreasing to 117 Mt by 2022, matching 1992 levels and comprising 17% of the country's total emissions. In 2022, the main sources of CH_4 emissions were the Oil and Gas, Agriculture, and Waste and Others (specifically landfills) sectors. From 1990 to 2006, emissions grew mainly in these sectors, driven by increased natural gas and oil production. Between 2006 and 2019, emissions fell to 131 Mt due to better practices and lower production in the Oil and Gas sector and a decline in beef cattle populations in the Agriculture sector. A sharp drop occurred between 2019 and 2020 due to new regulations in the Oil and Gas sector, with a slight decline continuing to 2022. In the WM scenario, CH_4 emissions are projected to decrease by 9% from 2022 to 2030, with a 17% reduction in emissions from the Oil and Gas sector. Emissions from the Transportation, Electricity, Buildings, and Heavy Industry sectors are expected to remain low. The WAM scenario projects even lower emissions due to proposed federal landfill gas regulations and stronger oil and gas methane regulations. Both the WM and WAM scenarios project CH_4 emissions will stay near 2030 levels until 2040, with a 1% increase in the WM scenario, and a 2% decrease in the WAM scenario. In November 2021, Canada joined over 100 countries in supporting the Global Methane Pledge (GMP). This pledge commits members to a collective goal of reducing human-caused methane emissions by 30% below 2020 levels by 2030. In the WM scenario, CH_4 emissions are 11% lower than their 2020 level in 2030, and 41% lower than 2020 in the WAM scenario.

N_2O emissions (Table 33) accounted for 28 Mt CO_2 eq (4.0%) of Canada's emissions in 2022, down 2.3 Mt (-7.4%) from 1990 levels. The primary source of N_2O emissions is the application of nitrogen fertilizers to agricultural soils. N_2O emissions are projected to remain relatively flat between 2022 and 2030 in the WM scenario. N_2O emissions arise primarily from the Agriculture sector, whose growth in emissions is compensated by declines in the Heavy Industry, Transportation and Electricity sectors. The WAM scenario reflects the impact of achieving the 30% reduction in N_2O emissions from fertilizer application below 2020 levels in the Agriculture sector. Post-2030, N_2O emissions are projected to increase by 2% by 2040 in the WM scenario, and by 1% in the WAM scenario.

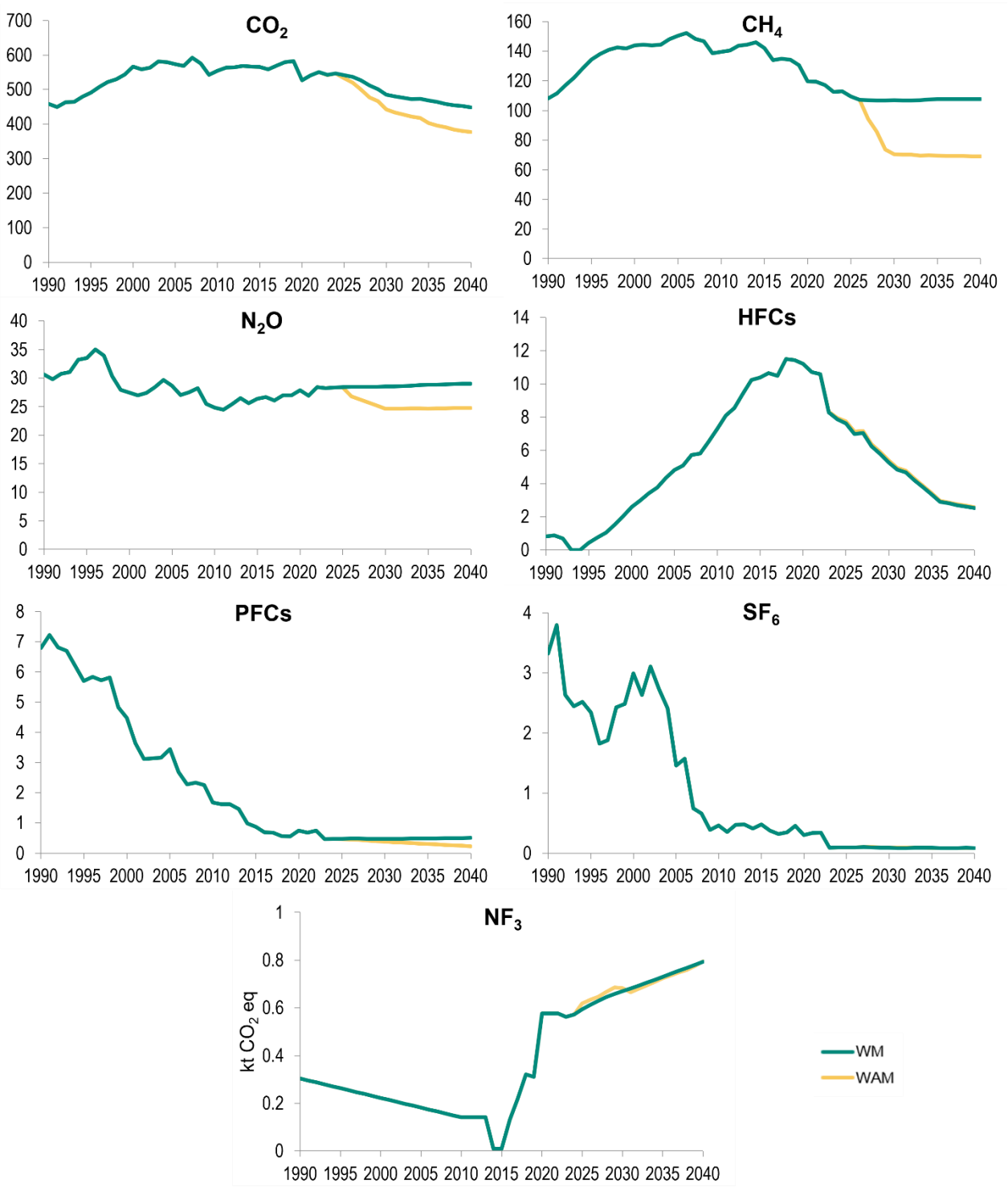
HFCs emissions (Table 34) have been increasingly used in the last decade in refrigeration and air conditioning systems as an alternative to ozone damaging hydrochlorofluorocarbons (HCFCs), which lead to 2022 emissions being 9.8 Mt CO_2 eq higher than in 1990. HCFCs are being phased out under the Montreal Protocol and the Kigali Amendment to that agreement in 2016 added the phase-down of the use and production of HFCs. As a result, emissions of HFCs are projected to peak in 2018 at 11 Mt CO_2 eq before declining to 5 Mt CO_2 eq in 2030 in the WM and WAM scenarios. Emissions are projected to decline further to 3 Mt by 2040 in the WM and WAM scenarios. Emissions of HFCs are projected to be slightly higher in the WAM scenario than in the WM scenario, due to higher investments and increased activity in the commercial sector.

Perfluorocarbons (PFCs) emissions (Table 35) and sulphur-hexafluoride (SF_6) emissions (Table 36) have both declined between 1990 and 2022, and are projected to decrease substantially over the projection period. Emissions of nitrogen trifluoride (NF_3) (Table 37) are expected to be less than 1 kt CO_2 eq during the same period in both the WM and WAM scenarios. The main releases of these gases into the environment occur during the manufacture of semi-conductors, refrigeration equipment, and the production of aluminium as well

as other industrial processes such as in the magnesium industry. Reductions are anticipated in the WAM scenario from voluntary measures in the aluminium industry, electricity transmission, and other sectors.

Additional information about the historical trends for these gases can be found in Section 2.2 of NIR2024.

Figure 18: Total Canadian emissions (Mt CO_2 eq, except for NF_3), excluding LULUCF accounting contribution, NBCS, agriculture measures, and WCI credits, by gas, WM and WAM scenarios, 1990 to 2040



Note: Historical emissions data come from NIR2024. Access more data.

GHG emissions projections by sector and by gas under the WM and WAM scenarios, excluding LULUCF accounting contribution, NBCS, agriculture measures, and WCI Credits are presented in Table 31 through Table 37.

A4.3.6 Emissions by province and territory

Historical emissions vary considerably by province and territory and these differences are driven by diversity in population size, economic activity, and resource base, among other factors. Provinces and territories where the economy is oriented more toward resource extraction tend to have higher emissions while more manufacturing or service-based economies tend to have lower emissions. Electricity generation sources also vary in different provinces and territories. Those that rely on fossil fuels for their electricity generation tend to have higher emissions than provinces and territories that rely more on non-emitting sources of electricity (for example, hydroelectricity, nuclear, and wind).

Provincial and territorial projections reflect diverse economic factors and varying provincial and territorial measures to reduce GHG emissions. These include carbon pricing, energy efficiency and renewable electricity programs, legislated renewable electricity targets, and regulatory measures. Although provincial and territorial governments have announced a diverse range of measures, only measures that could be readily modelled or have an announced regulatory or budgetary dimension were included in the WM and WAM scenarios. ECCC engages in extensive consultations with other federal government departments, provinces, and territories to ensure that their initiatives are accounted for in the analysis and modelling of emissions projections. Aspirational goals and targets are not included in the projections. Provincial and territorial policies and measures modelled in the WM and WAM scenarios are listed in Section A4.6.7. Provincial emissions reductions targets, although not included in the modelling, are also listed in that section.

Table 38 displays historical and projected provincial and territorial GHG emissions, while Table 29 presents GHG emissions intensity per capita. For both tables, GHG emissions exclude both the accounting contribution of the LULUCF sector and the impact of NBCS and agriculture measures. More detailed data at the provincial and territorial level is available through open data.

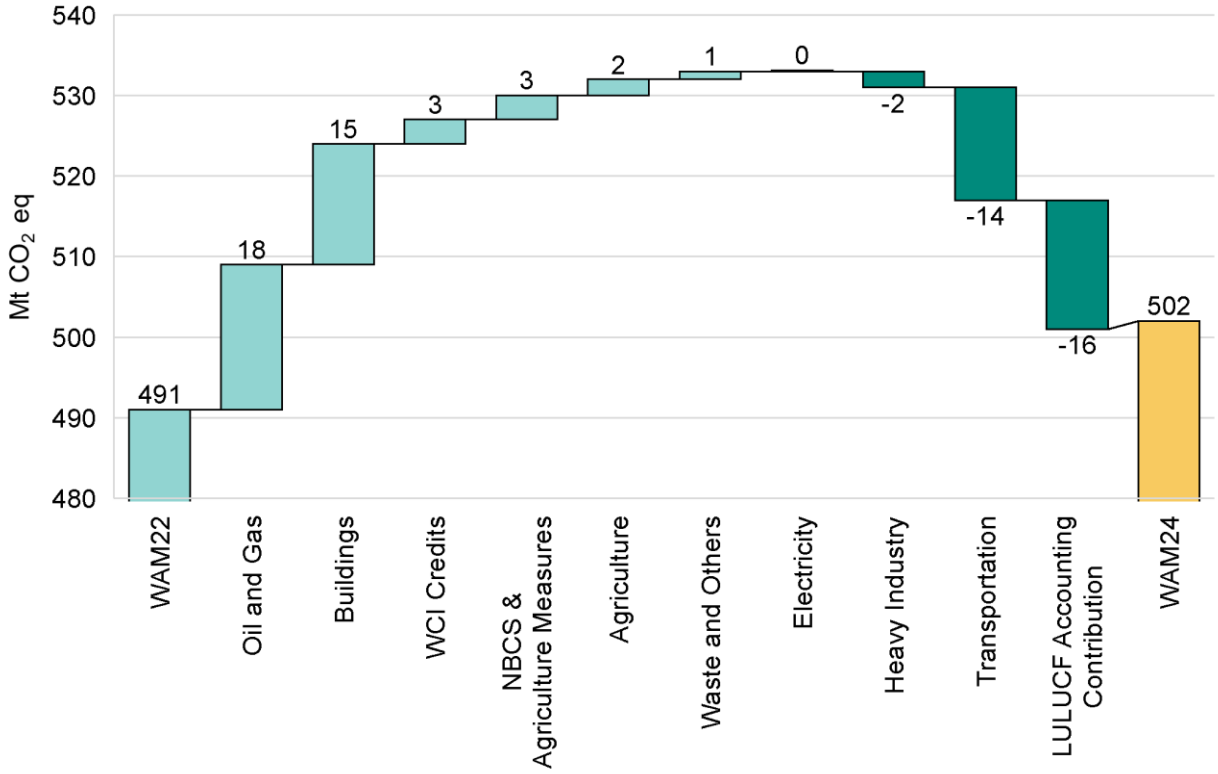
A4.3.7 Comparison to previous projections

In 2030, Canada's GHG emissions under the WM scenario (including the accounting contribution from the LULUCF sector) are projected to decline to 597 Mt, or 28 Mt below the WM scenario of 625 Mt presented in Canada's NC8/BR5. Not only have projected emissions changed, but historical emissions have also changed because of improvements and refinements to data sources and methodologies, as discussed in Section A4.6. These revisions go back to 2005.

In the WAM scenario, Canada's GHG emissions (including LULUCF, NBCS, agriculture measures, and WCI Credits) are projected to be 502 Mt in 2030, 11 Mt higher than the WAM projections included in NC8/BR5.

Figure 19 illustrates the projected emissions reductions of each sector to in 2030. Table 39 presents changes at the economic sector level between the WM and WAM scenarios. The changes to the projections for each sector shown in this figure are discussed in more detail in Section A4.1.

Figure 19: Contribution to differences in level of emissions in 2030 (Mt CO_2 eq), current WAM scenario compared to the WAM scenario from NC8/BR5



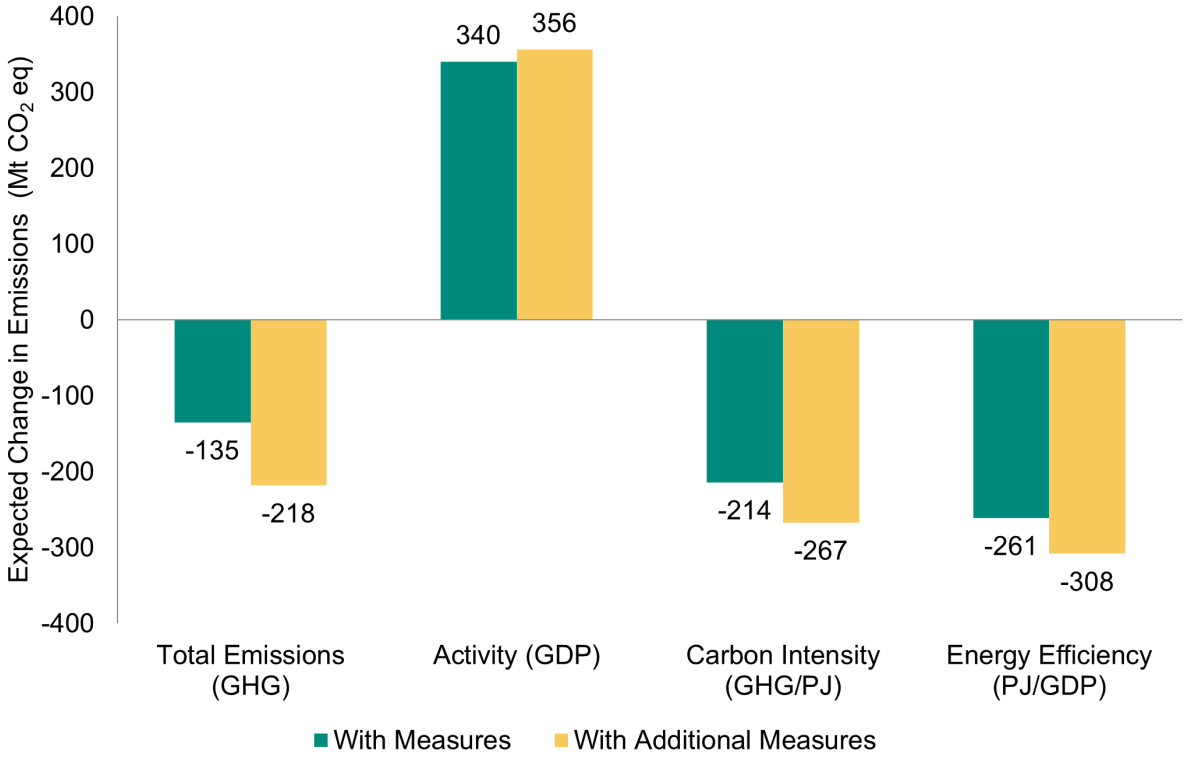
A4.3.8 Decomposition of projected change in Canada's GHG emissions

The following explores how different factors contribute to trends in historical and projected emissions through a decomposition analysis of Canada's GHG emissions for the 2005 to 2030 period under the WM and WAM scenarios (Figure 20).

The decomposition shows that over the period from 2005 to 2030, there is a significant decoupling of economic growth and combustion emissions: upward pressure on GHG emission projections arising from GDP growth is offset by the switch to cleaner and more efficient energy use. In the WAM scenario, the impact of economic activity, which adds 356 Mt, is more than offset by a combined reduction of 575 Mt from lower carbon intensity and greater energy efficiency.

- The **Activity Effect** measures the impact of economic growth is estimated to be 56% over the 2005 to 2030 period. On its own, this growth is projected to lead to 340 Mt of additional GHG emissions in 2030 in the WM scenario and 356 Mt in the WAM scenario.
- The **Carbon Intensity Effect** measures changes in the carbon emission coefficient of energy. The shift to cleaner fuels such as the replacement of coal-fired electricity with cleaner sources, as well as measures to reduce fugitive and process emissions, are projected to have a significant impact, reducing emissions by 214 Mt in 2030 in the WM scenario and 267 Mt in the WAM scenario.
- The **Energy Efficiency Effect** measures changes in energy efficiency at the subsector level. The analysis shows that the uptake of energy-efficient technologies, induced by policies, consumer responses to energy prices, and stock turnover, reduces emissions by 261 Mt in 2030 in the WM scenario and 308 Mt in the WAM scenario.

Figure 20: Decomposition of emissions growth, excluding LULUCF accounting contribution, NBCS, agriculture measures, and WCI credits, WM and WAM scenarios, 2005 to 2030



A4.3.9 Analysis of the impacts of key measures

Canada's climate policies have both complimentary and overlapping effects and are designed to work together to achieve the nation's climate goals. Overall, the interactions between these policies make it challenging to isolate the impact of any single measure, but further modelling can help assess their effectiveness. In the future, ECCC plans to start working on the development of a methodology which would allow for the reporting of a range of impacts for a number of key measures.

A4.4 GHG emissions projections under alternative scenarios

Uncertainty is inherent in any model that looks into the future. Given the uncertainty regarding the key drivers of GHG emissions, the emissions projections for the WM and WAM scenarios should be considered as estimates within a range of plausible outcomes. Future economic growth, energy prices, and developments in technologies cannot be foreseen with certainty and typically these key uncertainties are addressed by examining alternative cases. This section examines alternative scenarios to show the sensitivity of GHG emission projections to variables such as energy prices and economic growth and the rate of adoption of various technologies. In addition, an analysis is conducted to determine the level of uncertainty associated with the projections under the WM scenario.

It is also important to note that the scenarios presented here do not consider the impact of the LULUCF accounting contribution, NBCS, agriculture measures, and WCI Credits.

A4.4.1 Sensitivity analysis

The sensitivity analysis is conducted via modelling and analysis of alternative cases that focus on variability in future economic and population growth and the prices for oil and natural gas.

Oil and gas price assumptions are derived from modifying the CER's 2018 (the last time CER published these scenarios) high and low oil and gas price scenarios, by calculating the relative difference between the 2018 high/low cases to the 2018 WM scenario price level, then applying that ratio to the most current WM scenario price level. These new price forecasts are inputted to the Oil and Gas Module, which uses changes in benchmark prices to determine alternative investment, resource development and production levels in the oil and gas sector. The fast and slow GDP assumptions imposed include an overall assumption on the total economy's relative impacts to the WM scenario. The high emissions scenario imposes the relative impact of the high to M1 population scenario released in June 2024 by Statistics Canada, and the low emissions scenario imposes the relative impact of the low to M1 population scenario. Table 1 and Table *2* present the price and growth assumptions used for this analysis. Results included in those tables show the low emissions scenario and includes low energy prices, slow GDP growth, and low population growth assumptions, and the high emissions scenario includes high energy prices, fast GDP growth, and high population growth assumptions.

Table 1: Economic and population growth rate assumptions, low emissions, WM scenario and high emissions scenarios, 2024 to 2040

	Low	WM Scenario	High
Annual GDP Growth Rate	1.03%	1.74%	2.39%
Annual Population Growth Rate	0.82%	1.28%	1.82%

Table 2: Oil and gas prices and production, low emissions, with measures scenario, and high emissions scenarios, 2025 to 2040 (selected years)

Scenario	Fuel	Units	2025	2026	2030	2035	2040
Low	Crude Oil Price (WTI)	Real 2022 US$/bbl	$70.63	$65.71	$43.43	$43.16	$42.90
	Heavy Oil (WCS)	Real 2022 US$/bbl	$56.67	$51.85	$ 29.49	$28.01	$27.79
	Crude Oil*	1000 bbl/day	5 674	5 761	5 632	5 145	4 776
	Natural Gas (Henry Hub)	Real 2022 US$/MMBtu	$ 2.49	$2.50	$2.60	$2.72	$2.91
	Natural Gas	Billion Cubic Feet	8 622	8 313	6 673	5 137	4 662
WM Scenario	Crude Oil Price (WTI)	Real 2022 US$/bbl	$80.90	$81.74	$85.07	$84.55	$84.03
	Heavy Oil (WCS)	Real 2022 US$/bbl	$65.90	$66.74	$70.07	$66.55	$66.03
	Crude Oil*	1000 bbl/day	5 674	5 835	6 133	6 275	6 217
	Natural Gas (Henry Hub)	Real 2022 US$/MMBtu	$3.50	$3.60	$4.00	$4.08	$4.15
	Natural Gas	Billion Cubic Feet	8 624	8 741	8 977	9 562	9 859
High	Crude Oil Price (WTI)	Real 2022 US$/bbl	$97.81	$106.75	$145.98	$145.09	$144.20
	Heavy Oil (WCS)	Real 2022 US$/bbl	$ 80.76	$89.48	$128.65	$122.19	$121.23
	Crude Oil*	1000 bbl/day	5 674	5 916	6 628	7 261	7 511
	Natural Gas (Henry Hub)	Real 2022 US$/MMBtu	$4.80	$4.96	$5.60	$5.59	$5.62
	Natural Gas	Billion Cubic Feet	8 622	9 121	10 285	11 594	12 345

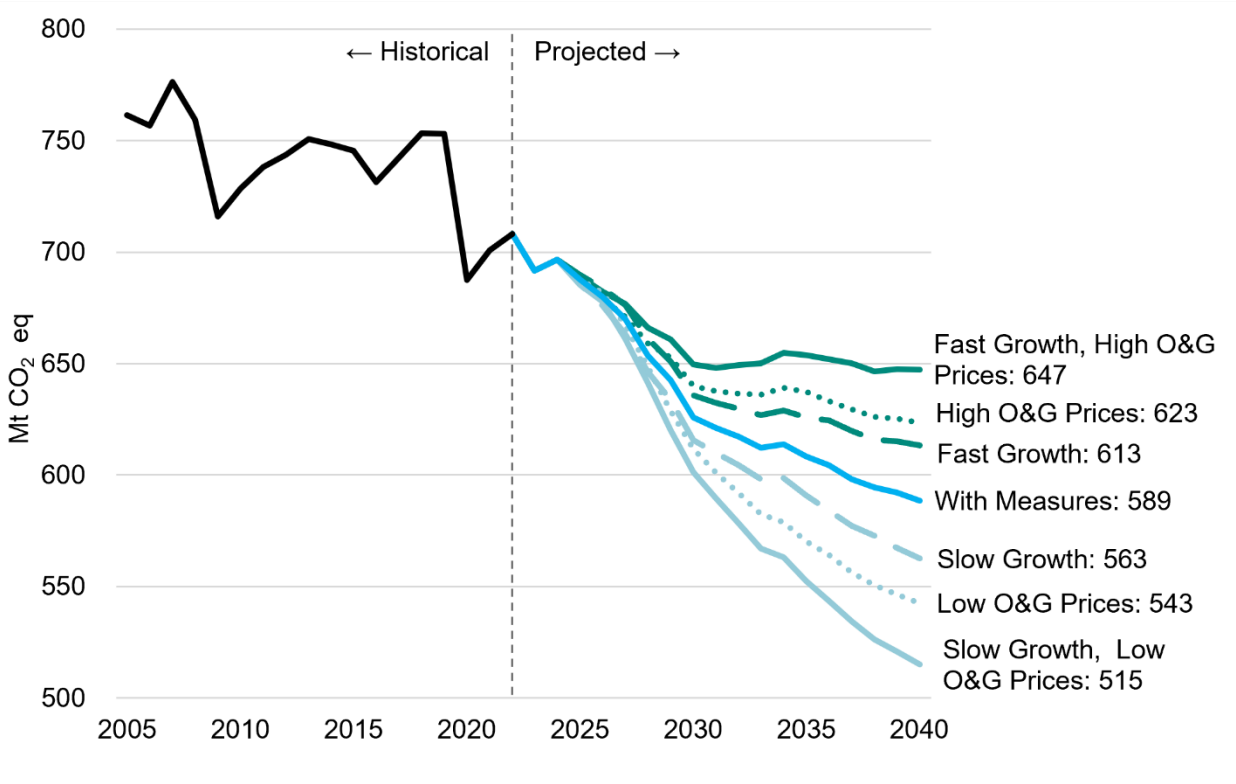
Notes: Access more data (information on production and price data is only available online for the WM scenario).
*Oil and Gas production projections include pentanes and condensates

In Table 40, the emissions outcomes of these alternative cases are presented independently and in various combinations. These alternative cases explore the interaction of energy markets and economic growth, and their impact on emissions, under a range of assumptions.

The scenario with slow GDP growth, slow population growth, and low world oil and gas prices represents the low end of the range of the sensitivity estimates that have been prepared around the central WM scenario. The high end is represented by the scenario with fast GDP growth, high population growth, and high world oil and gas prices. The difference in emissions between these two scenarios represents a range of 49 Mt CO_2 eq in 2030 and 132 Mt in 2040.

In the high oil and gas price scenario the Heavy Industry and Electricity sectors reduce their activity, increase their energy efficiency, and cut down on natural gas electricity generation due to higher prices. Conversely, the Oil and Gas sector invests in and develops new and existing assets because higher prices make it more profitable to produce and sell fossil fuels. The demand sectors react quickly to higher input costs, while the Oil and Gas sector takes longer to adjust as there is a longer lag between increasing oil and gas prices and changes in asset development and total fossil fuel output, especially in the oil sands.

Figure 21: Canadian GHG emissions (Mt CO_2 eq), excluding LULUCF accounting contribution, under the WM scenario and full range of sensitivity scenarios, 2005 to 2040



Note: Numbers may not sum to the total due to rounding.

The range of emissions from the Oil and Gas sector between scenarios is 30 Mt CO_2 eq by 2030 and 91 Mt CO_2 eq by 2040. This represents 69% of the total range of emissions in the sensitivity scenarios by 2040, reflecting the sector's overall contribution to Canadian emissions and its sensitivity to the highly uncertain world oil and gas prices. Moreover, the Heavy Industry sector experiences opposing reactions in the fast GDP and high oil and gas price scenario. Since growth of Canada's Heavy Industry sector is closely tied to that of GDP, fast GDP and population growth lead to higher emissions in the Heavy Industry sector compared to the WM scenario. However, when world oil prices are high, Canada's Heavy Industry sector emissions decline slightly due to higher fuel costs. This creates opposing impacts when GDP and commodity prices increase together in the projection period. The opposite is true for the slow growth and low-price scenarios.

A4.4.2 Technology scenarios

Two Technology scenarios explore how faster or slower technological progress could impact energy use and emissions, using the same initial assumptions as the WM and WAM scenarios. Note that the Technology scenarios do not explicitly constitute a recommendation of certain policies or technologies, or a prediction of the future, but rather a possible outcome under a set of reasonable assumptions.

The Technology scenarios explore the impact of the uptake of several emerging technologies and trends that have significant potential to reduce energy use and emissions. Table 3 shows the technological assumptions that underpin the High and Low Adoption Technology scenarios used in this report.

Table 3: Technological assumptions for the High and Low Adoption Technology scenarios

Technology	**High Adoption Technology scenario** (Assumes fast declines in the capital costs of technologies or uptake of new technologies)	**Low Adoption Technology scenario** (Assumes slow declines in the capital costs of technologies or uptake of new technologies)
CCS	Declines in capital cost were determined based on the upper range of learning rates for natural gas combined cycle with carbon capture and storage (NGCC-CCS) found in a 2021 International Energy Agency (IEA) White Paper and the projected volume of deployment based on announced projects to date.	Declines in capital cost were determined based on the lower range of learning rates for NGCC-CCS found in 2021 IEA White Paper and the projected volume of deployment based on announced projects to date.
Hydrogen production	Declines in capital costs were determined by applying a 1% increase to the baseline compound annual growth rate of cost declines assumed for each hydrogen production technology in the WAM scenario.	Declines in capital costs were determined by applying a 1% decrease to the baseline compound annual growth rate of cost declines assumed for each hydrogen production technology in the WAM scenario.
Wind, Solar, small modular nuclear reactors (SMNR), Hydro, Geothermal, Natural Gas with CCS	The capital cost difference (as compared to the WAM scenario) is derived from the "Advanced" versus "Moderate" Annual Technology Baseline, published by the US Department of Energy's National Renewable Energy Laboratory, which apply learning curves to model declining costs as technology deployment cumulates.	The capital cost difference (as compared to the WAM scenario) is derived from the "Conservative" versus "Moderate" Annual Technology Baseline, published by the US Department of Energy's National Renewable Energy Laboratory, which apply learning curves to model declining costs as technology deployment cumulates.
LDV EVs	The data for this scenario around the faster adoption of light-duty and hybrid passenger vehicles was received from Transport Canada.	Same as the WM scenario that includes the current adoption of LDV ZEVs.
HDV EVs	Declines in capital costs were determined by applying a 5% level increase to the baseline rate of cost declines assumed for MHDV ZEVs.	Declines in capital costs were determined by applying a 5% level decrease to the baseline rate of cost declines assumed for MHDV ZEVs.

Some industrial sectors have the option to reduce GHG emissions by equipping their facilities with CCS. CCS technology "captures" carbon dioxide contained in emissions streams and stores it underground. Another option for some sectors to reduce their emissions is by adopting hydrogen as a clean fuel source. There are various technologies that can be used to produce clean hydrogen including steam methane reforming equipped with CCS, autothermal reforming equipped with CCS, biomass gasification equipped with CCS, and proton exchange membrane.

The WM and WAM scenarios contain a set of parameters that define the cost of CCS for each sector. Similarly, both scenarios define the costs of each hydrogen production technology. If the capital costs associated with CCS or hydrogen production technologies undergo cost declines, this could make it less expensive for various sectors to adopt these technologies. The High Adoption Technology scenario explores a situation where this is the case. The opposite is the case for the Low Adoption Technology scenario, where the capital costs associated with CCS and hydrogen production technologies undergo slow cost declines.

The electricity generation sector can potentially achieve substantial emissions reductions through increased reliance on low-carbon technologies. In the technology scenarios, capital cost assumptions vary for low-carbon technologies, including wind, solar, geothermal, hydroelectric power, natural gas with CCS, and SMNRs, which produce little to no direct GHG emissions during operation.

Overall, the High Adoption Technology scenario shows modest emissions reductions relative to the WAM scenario in 2030. In this scenario, GHG emissions decline to 541 Mt between 2023 and 2030 whereas emissions decline to 543 Mt in the WAM scenario over this same period. This trend continues between 2031 and 2040 where GHG emissions decline to 469 Mt in the High Adoption Technology scenario and to 473 Mt in the WAM scenario.

Conversely, GHG emissions are higher in comparison to the WAM scenario in the Low Adoption Technology Scenario. In this scenario, GHG emissions decline to 545 Mt between 2023 and 2030 whereas emissions decline to 543 Mt in the WAM scenario over this same period. This trend continues between 2031 and 2040 where GHG emissions decline to 475 Mt in the Low Adoption Technology scenario and to 473 Mt in the WAM scenario.

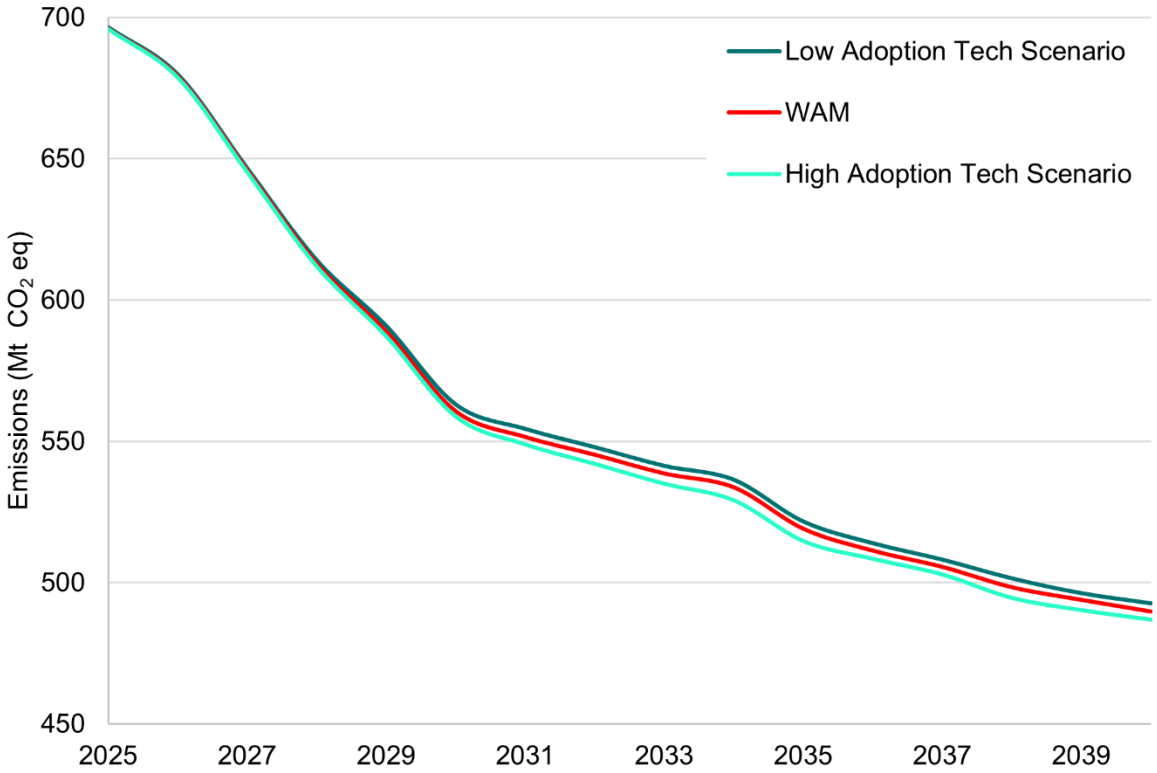
The bulk of the GHG emissions reductions in the High Adoption Technology scenario in both 2030 and 2040 are driven by higher levels of adoption of light-duty ZEV and hybrid passenger vehicles as well as medium and heavy-duty zero emission vehicles (MHDV ZEVs). This indicates that fast cost declines in the purchase price of light-duty ZEV and hybrid passenger vehicles as well as MHDV ZEVs can contribute to greater levels of emissions reductions in Canada.

Conversely, the higher levels of emissions observed in the Low Adoption Technology scenario in both 2030 and 2040 are due to lower levels of adoption of MHDV ZEVs. This indicates that slower cost declines in the purchase price of medium and heavy-duty zero emission vehicles can lower the emissions reductions in Canada. It should also be noted that in these scenarios little change is seen in hydrogen and CCS adoption overtime, apart from in the transportation sector. This indicates that the levels of capital cost decreases observed over time in each scenario have a minimal impact on the adoption of these technologies. The Electricity sector also sees minimal changes in its levels of emissions in each tech scenario compared to the WAM scenario, mostly due to Clean Electricity Regulations that are already forcing adoption of renewable and non-emitting technologies. This indicates that with the inclusion of the Clean Electricity Regulations in the WAM scenario, the levels of capital cost decreases observed over time in each technology scenario have had a minimal impact overall on the deployment of low-carbon technologies within the sector.

Overall, the results from the Technology scenarios indicate that modelling results are much less sensitive to technology assumptions than to macroeconomic growth and fuel price assumptions. In 2040, the range of results from the high technology scenarios is 6 Mt, while it is 132 Mt in the case of the sensitivity analysis (see Section A4.4.1).

Table 42 and Figure 22 illustrate results from the Technology scenarios.

Figure 22: Canadian GHG emissions (Mt CO_2 eq) under the technology scenarios



A4.4.3 Probabilistic uncertainty analysis

The WM scenario provides emissions pathway considering only one potential scenario of future population and economic growth, evolution of world oil and gas markets, etc. The sensitivity analysis presented in Section A4.4.1 and Figure 21 shows how different assumptions of future domestic economic activity and energy prices would alter GHG emissions in 2030. For the first time, a probabilistic analysis is introduced in this report and shows the statistical uncertainty arising from the uncertainty associated with future economic activity and energy prices.

Figure 21 shows the sensitivity of GHG emissions estimates to changes in economic activity and energy prices. This information is important as it indicates the extent to which the emission projections are influenced by different assumptions. However, the limitation of this analysis is the lack of information about the likelihood of these different scenarios. Monte Carlo uncertainty analysis fills this void by introducing or taking into account the probability distribution function (PDF) of both input variables. Essentially, Monte Carlo analysis consists of simulating 40,000 different scenarios obtained by varying both economic activity and energy prices based on their respective PDFs.

Figure 23 shows a frequency distribution of projected GHG emissions in 2030 coming from 40,000 economic activity/energy price simulations for the year 2030. In the figure:

- The 2030 emissions in the WM scenario (626 Mt) are shown by the vertical black dashed bar.
- The lower and upper critical values, with 95% confidence interval, are 609 Mt (-2.7% lower than the WM scenario) and 646 Mt (3.1% higher than the WM scenario), respectively; and,
- These results are comparable to the sensitivity analysis shown in Figure 21 where GHG emission in 2030 could vary between -3.9% (slow GDP, low prices) up to +3.8% (fast GDP, high prices).

- The bell curve, calculated using the mean and standard deviation of the 40,000 different scenarios, is shown to illustrate that the scenario results can be approximated by a normal distribution.

It seems reasonable to assume that the same uncertainty levels (+/- 3%) would also apply to the WAM scenario.

Figure 23: Distribution of GHG emissions for year 2030 – WM scenario

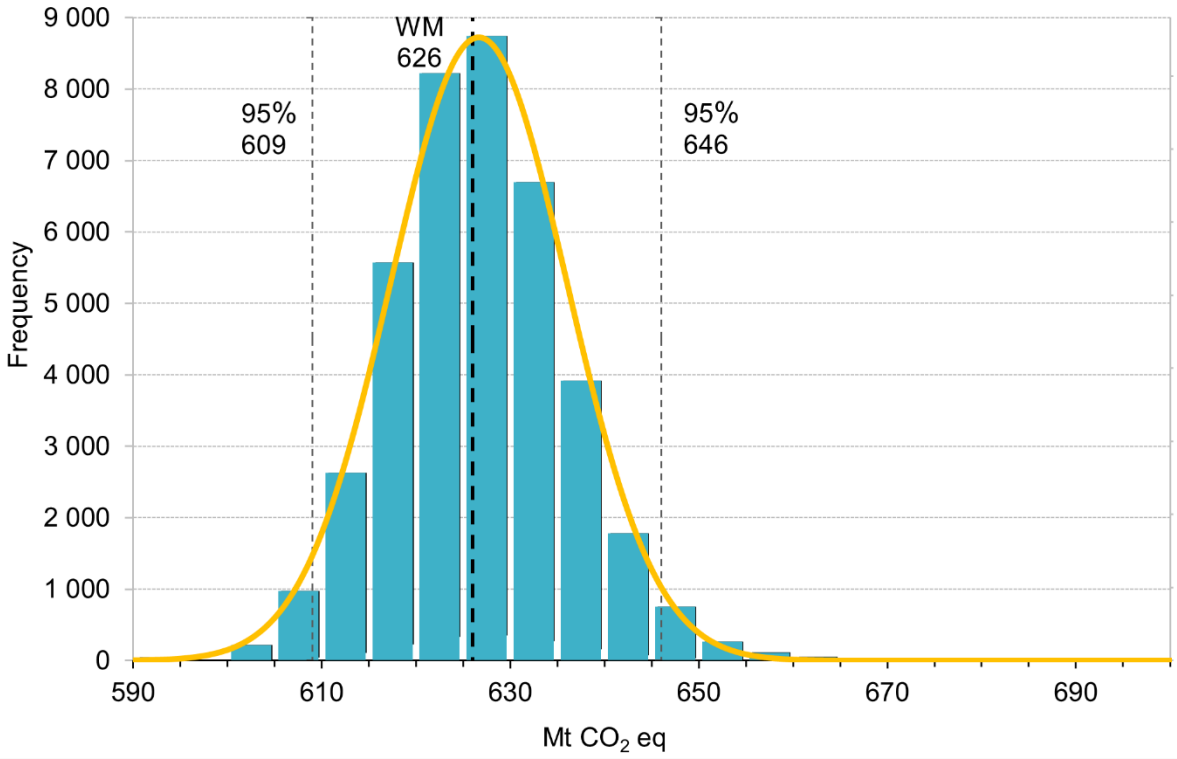
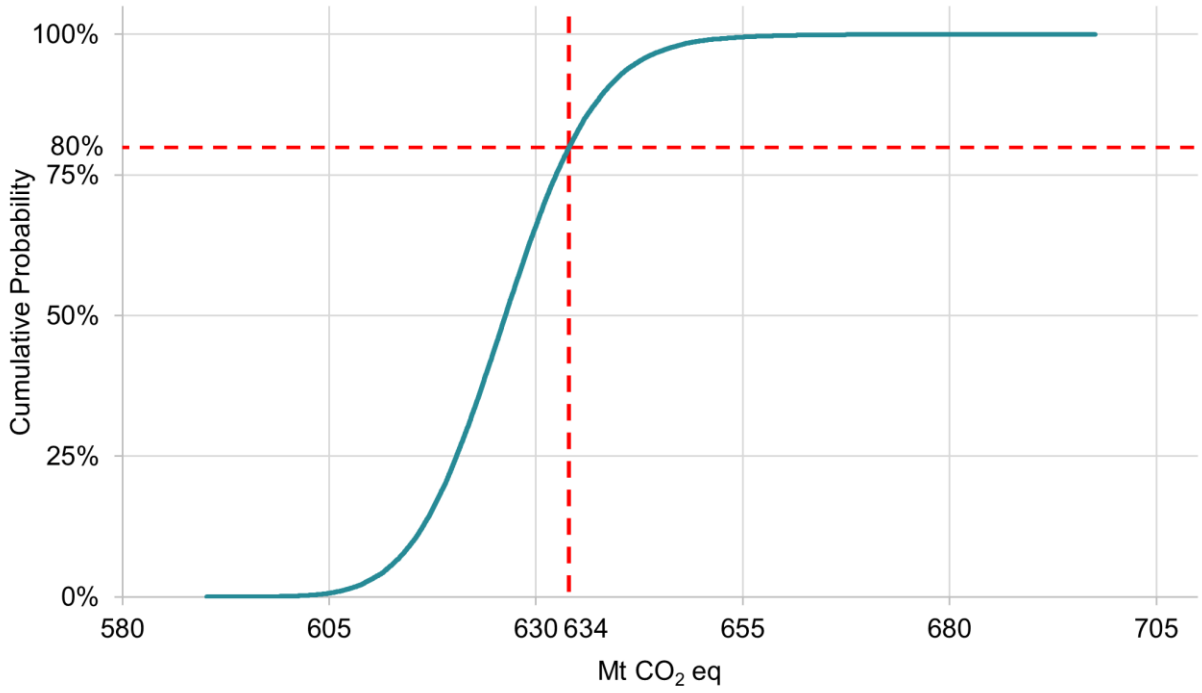


Figure 24 presents results from the same 40,000 Monte Carlo simulation in a different way, showing the cumulative probability associated with different levels of projected GHG emissions for the year 2030. The interpretation is as follows: for a given level of projected GHG emissions in 2030, the cumulative probability indicates the likelihood that the actual emission will be less than the projected level. For example, the probability that GHG emission projections are smaller than 634 Mt is 80%. Determining GHG emissions associated to a cumulative probability of 80% is often interpreted as identifying a “reasonable” worst-case scenario. It is worth noting that this “reasonable” worst-case scenario is only 1.2% higher than the value from the WM scenario.

Figure 24: Cumulative distribution of GHG emissions – WM scenario



Monte Carlo analysis is used to derive probabilistic distribution function of projected GHG emissions. As a first step, based on historical information, economic activity and energy prices probability distribution functions are defined. This renders possible the next step, which is a generation of tens of thousands (40,000 in our case) of different random scenarios for economic activity and energy prices. The third step would be to evaluate GHG emissions associated with each of these random scenarios using ENERGY 2020 model. However, given ENERGY 2020's long simulation time of several hours per scenario, an alternative method is required. Research work has shown that it is possible to approximate ENERGY 2020 GHG emission projections in presence of random scenarios for economic activity and energy prices. Indeed, it is possible to calibrate some quadratic functions that take a fraction of second to compute and can approximate sufficiently accurate results from ENERGY 2020. The method is described in Laferrière and Wang (2024).[2]

Future research on the uncertainty of projected GHG emissions will seek to apply the same method to determine uncertainty of the WAM scenario and could explore uncertainty of projected emissions from individual economic sectors and take into account uncertainty associated with historical estimates.

Other sources of uncertainty, outside the ones discussed in this section, influence the projections, including relating to the decision-making of agents under given assumptions and the pace of clean technology development and adoption. For instance, consumer adoption of emerging technologies in the future may diverge from model projections due to the influence of behavioural decision-making processes that is not

[2] Laferrière, Richard and Cheng-Marshal Wang, "From Sensitivity Analysis to Monte Carlo Simulations: Uncertainty Estimation of GHG Emission Projection with a Large Energy-Emissions Model", Analysis and Modelling, Strategic Policy Branch Environment and Climate Change Canada, 2024.

captured in the model. For example, the diffusion of EVs depends not only on relative vehicle prices, but also on consumer awareness of EVs and the availability of recharging infrastructure, both of which will evolve over time and are therefore hard to predict when looking at historical behaviour. This source of projection uncertainty is present across all economic sectors with the rapid emergence of new and cleaner technologies.

Some sources of uncertainty are also specific to sectors, several of which are listed below and that could be explored quantitatively through uncertainty analysis in the future.

- **Oil and Gas**: Canadian oil and gas production projections vary significantly depending on world price assumptions. Global prices are determined by supply and demand for oil, driven by factors like economic growth, technological developments, and geopolitics, and is set in international markets.
- **Electricity**: On the demand side, key factors of uncertainty, other than economic and population growth, include electricity demand changes arising from the electrification of vehicles or industrial processes and behavioural change. On the supply side, emissions are affected by changes to the fleet of electricity units. Therefore, assumptions on future capital costs of new electric units, availability of emerging technologies (such as intermittent renewables and energy storage), and cooperation for the construction of new interprovincial transmission lines are key sources of uncertainty.
- **Transportation**: Over the short term, vehicle kilometres travelled is the key driver of emissions, influenced by assumptions on factors such as population, fuel prices, and optimization of freight trucks (increased tonnage per kilometre) and freight transportation volume resulting from changes in economic activity. Over the medium to long term, the changing characteristics of the fleet will be important and will be influenced by government policies, different types of vehicle's respective production costs, technological development, and consumer choices.
- **Heavy Industry**: Emissions are primarily driven by expected economic growth in each subsector. Future technological developments that would affect the costs of electrification and CCS technologies, the use of clean fuels such as hydrogen, novel methods of reducing non-combustion emissions, as well as other energy efficiency improvements, would also have an impact on emissions.
- **Buildings**: Emission projections in this sector will be affected by consumer response to emerging technologies and government policies as well as future relative fuel prices and technology costs will also have an impact.
- **Agriculture**: Emissions from agriculture production are affected by production costs such as fertilizer prices and international prices of agricultural commodities that affect crop composition and livestock size.

A4.5 Air pollutant emissions projections by economic sector under the WM and WAM scenarios

Air quality is important and influences the daily life of all Canadians. It affects not only human health, but also the delicate balance of the natural environment, the integrity of buildings and infrastructure, crop production, and the overall state of the economy. Projections of air pollutant emissions play a pivotal role in guiding both domestic and international efforts aimed at improving air quality.

Canada actively collaborates with other nations to address transboundary air pollution, recognizing its substantial impact on Canadian air quality. Canada is a Party to both the Canada-US Air Quality Agreement (AQA) and the United Nations Economic Commission for Europe’s Convention on Long-range Transboundary Air Pollution (Air Convention).

The Gothenburg Protocol is the latest and most active among the eight protocols under the Air Convention. The Protocol was initially signed by Canada in December 1999 and came into force internationally in May 2005 to address pollutants responsible for acidification, eutrophication, and ground-level ozone. It was updated in May 2012 to include particulate matter (PM) and new commitments for 2020. Canada ratified the Gothenburg Protocol and its amendments in November 2017, and the Protocol entered into force in October 2019.

Canada's commitments under the Gothenburg Protocol include:

- Emissions ceilings of 1,450 kt for sulphur dioxide (SO_2), 2,250 kt for nitrogen oxides (NO_x) and 2,100 kt for volatile organic compounds (VOCs), to be achieved by 2010.
- Indicative emission reduction commitments expressed as a percentage reduction from a 2005 base year of 55% for SO_2, 35% for NO_x, 20% for VOCs, and 25% for fine particulate matter ($PM_{2.5}$), to be met by 2020 and maintained.
    - Note that the $PM_{2.5}$ commitment outlined in the Gothenburg Protocol excludes emissions from open sources. Open-source emissions refer to emissions originating from construction activities (excluding mobile and stationary off-road equipment emissions), crop production, and road dust.
- Limiting emissions in specific sectors using Canadian air pollution emission reduction regulatory instruments and measures (included in the technical annexes of the Protocol).
- Prioritizing sources of $PM_{2.5}$ that are also significant sources of black carbon in meeting its commitment of $PM_{2.5}$.

The Canada–US AQA demonstrates significant success in upholding commitments to reduce emissions of SO_2, NO_x, and VOCs, with both nations consistently meeting and surpassing these targets for an extended period. Both the AQA and the Gothenburg Protocol are currently undergoing separate revisions processes. Negotiations to amend the AQA are expected to conclude in 2026, and negotiations to amend the Gothenburg Protocol are expected to take two to five years to complete.

Canada also collaborates with Arctic countries under the Arctic Council to collectively reduce emissions of black carbon, an air pollutant known for its significant climate warming properties and serious impacts on human health. Canada and other Arctic states have agreed to a collective, aspirational goal to reduce emissions of black carbon by 25% to 33% below 2013 levels by 2025.

The following section provides projections of air pollutant emissions through 2040, aligned to Canada's historical air pollutant emissions from 1990 to 2022 as presented in *Canada's Air Pollutant Emissions Inventory Report 2024* (APEI2024) and *Canada's Black Carbon Inventory Report 2024*. This section is divided into subsections providing background information on the causes of growth or decline of projected air pollutant emissions in Canada.

Per international reporting requirements, Canada's national total emissions exclude emissions from domestic and international air transportation at cruise speed and international marine navigation emissions. These emissions are compiled under the category "Other Sources." Federal, provincial, and territorial air pollutant policies and measures that were included in the WM and WAM scenarios are provided in Section A4.6.7.

Emissions trends from 2005 to 2040 for each of the 10 pollutants, as well as their respective emissions reduction commitment or goal, where applicable, are presented in Figure 25 to Figure 37.

A summary of historical and projected emissions by pollutant is provided in Table 51. Detailed national emissions by economic sector and pollutant for select historical and projection years are provided in Table 52 through Table 61.

Based on the most recently updated historical emissions data, Canada's current percentage emission reduction commitments under the Gothenburg Protocol are equivalent to 944 kt for SO_2, 1,473 kt for NO_x,

1,834 kt for VOCs, and 215 kt for non-open-source $PM_{2.5}$, to be achieved by 2020 and maintained thereafter. Similarly, to meet Canada's share of the collective black carbon reduction target set by Arctic states under the Arctic Council, the country would need to lower its black carbon emissions to less than 27.8 kt (low commitment: 25% reduction) or 24.9 kt (high commitment: 33% reduction) by 2025.

Canada has successfully achieved these emissions reduction targets, demonstrating its environmental stewardship and adherence to international agreements. Moreover, projections from both the WM and WAM scenarios indicate that Canada is expected to consistently meet all reduction targets under the Gothenburg Protocol and the Arctic Council commitments.

A4.5.1 Nitrogen oxides (NO_x)

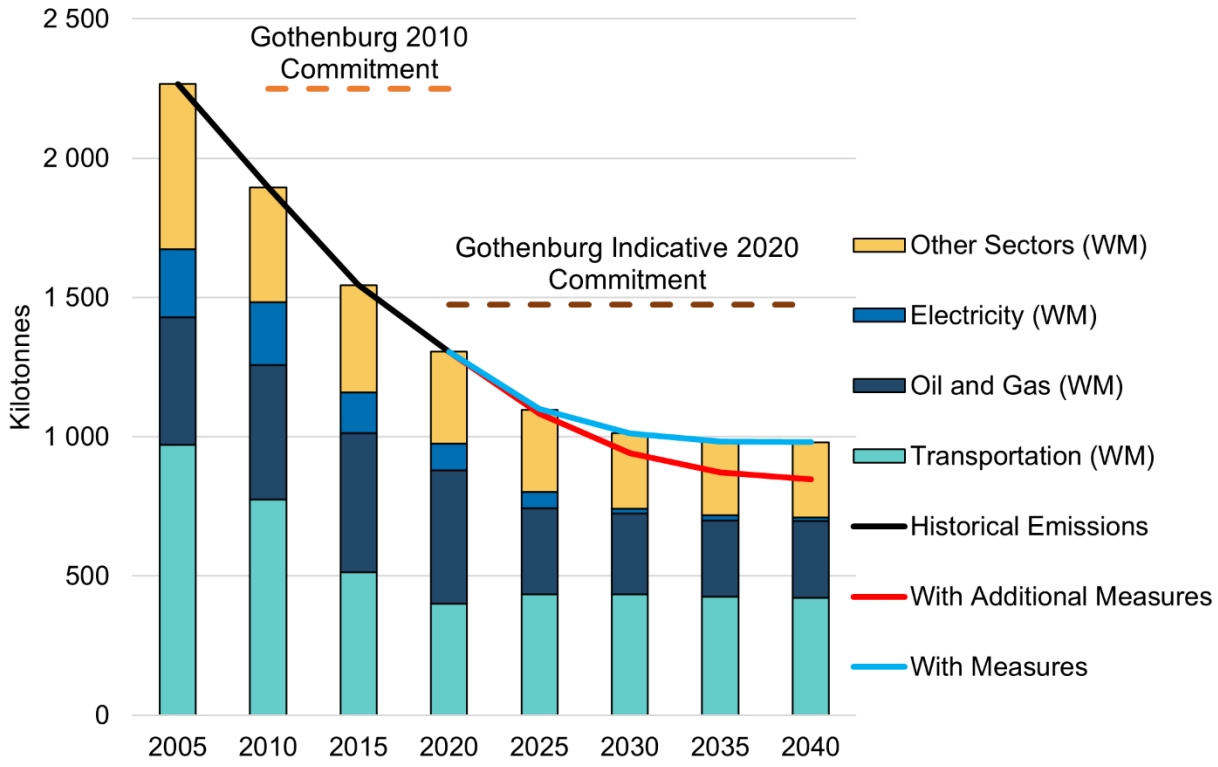
The main sources of NO_x emissions in Canada are diesel use in transportation, natural gas production and processing, oil sands operations, mining activities, and coal-fired utility electric generation.

There has been a consistent decline in NO_x emissions since 2005, and this trend is expected to continue. From 2022 to 2030, this trend is primarily driven by the phasing out of coal for electricity generation, and the implementation of the *Multi-Sector Air Pollutants Regulations* (MSAPR) aimed at various industrial facilities within the Heavy Industry and Oil and Gas sectors. Beyond 2030, this reduction is expected to continue due to a range of measures aimed at lowering overall fossil fuel consumption in the Transportation, Buildings, and Oil and Gas sectors.

In the WAM scenario, even greater reductions are projected. From 2022 to 2030, these reductions are largely attributed to decreasing fossil fuel use in the mining, natural gas, and oil sands industries. This trend is expected to continue beyond 2030, due to efficiency improvements in diesel and gasoline passenger vehicles, accelerated electrification initiatives in the Transportation and Buildings sectors, as well as the introduction of the Clean Electricity Regulations.

These combined efforts are expected to consistently keep Canada’s NO_x emissions well below the reduction commitment outlined in the Gothenburg Protocol throughout the projection period, in both the WM and WAM scenarios. This commitment aims to achieve a 35% reduction below the 2005 level, establishing an emissions ceiling of 1,473 kt for NO_x emissions starting in 2020 and beyond.

Figure 25: Nitrogen oxides emissions (kt), WM and WAM scenarios, 2005 to 2040



Note: Historical emissions data come from APEI2024. Access more data.

A4.5.2 Sulphur oxides (SO_x)

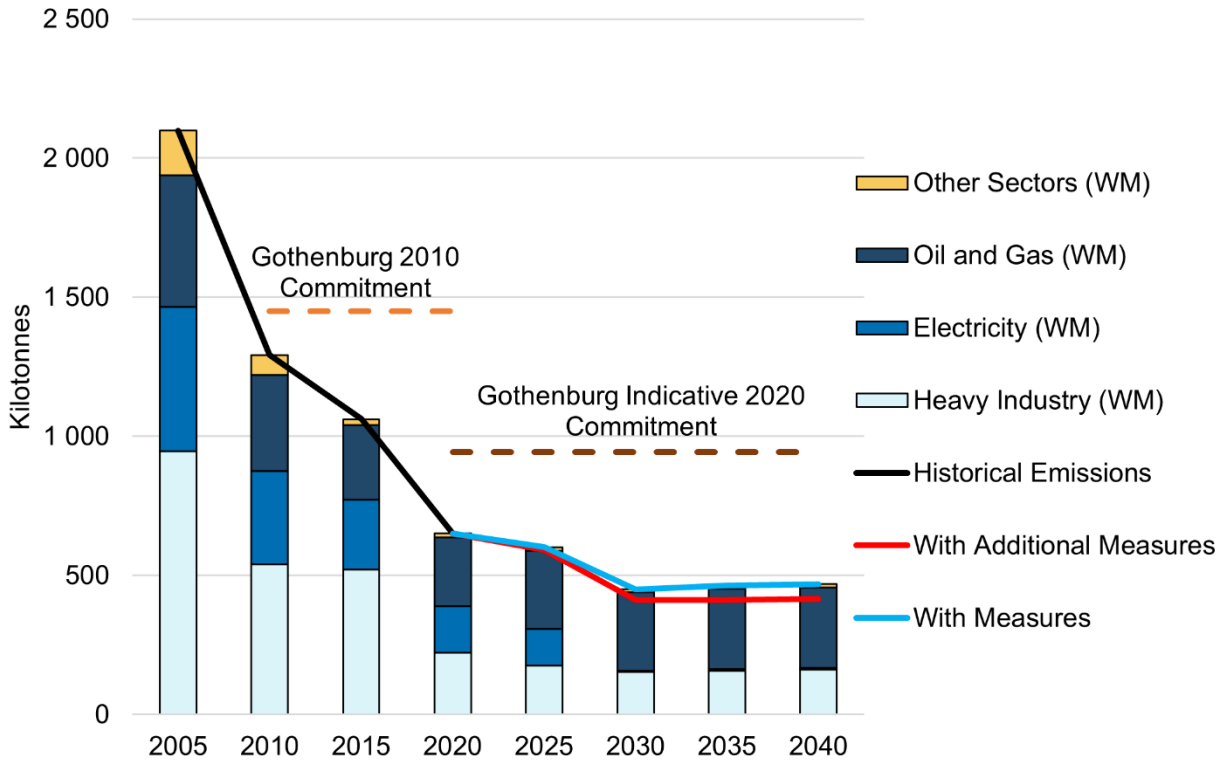
In Canada, the main sources of sulphur oxides (SO_x) emissions include the metallurgical industry, coal-fired electricity generation, natural gas processing, and oil sands operations.

SO_x emissions in Canada have declined significantly in recent years and are projected to decrease further in the future. Between 2022 and 2030, this reduction is primarily driven by the phase-out of coal in electricity generation, regulations mandating low-sulphur fuels, and the implementation of SO_x emissions standards across various industrial activities. However, a slight upward trend is anticipated after 2030. This is attributed to the expiration of many SO_x reduction measures around early 2030s and a projected rise in economic activity within the Heavy Industry and Oil and Gas sectors.

Further reductions are anticipated in the WAM scenario. Across both the pre- and post-2030 projection periods, these reductions are primarily driven by the transition to hydrogen fuel and a decline in overall fossil fuel consumption within the Heavy Industry and Oil and Gas sectors.

As a result of these collective measures, SO_x emissions in Canada are expected to remain below the reduction commitment outlined in the Gothenburg Protocol throughout the projection period in both the WM and WAM scenarios. This commitment, targeting a 55% reduction from the 2005 level, establishes an emissions ceiling of 944 kt for SO_x emissions starting in 2020 and beyond.

Figure 26: Sulphur oxides emissions (kt), WM and WAM scenarios, 2005 to 2040



Note: Historical emissions data come from APEI2024. Access more data.

A4.5.3 Volatile organic compounds (VOCs)

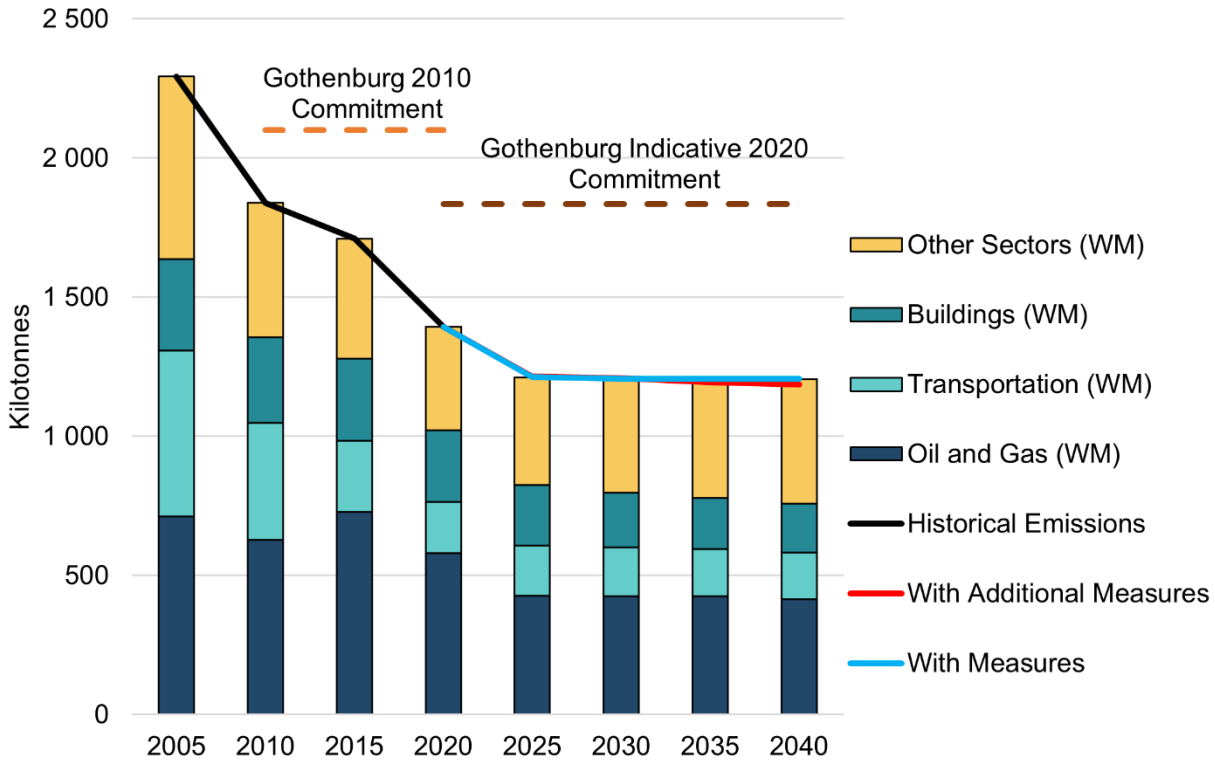
The main sources of VOCs emissions include fugitive releases from the Oil and Gas sector, light manufacturing subsector, the combustion of diesel and gasoline fuel in transportation, and biomass burning for space heating. Moreover, the widespread use of everyday consumer products in homes and commercial businesses contributes to VOCs emissions from the Buildings sector.

VOCs emissions in Canada have been declining over the years and are projected to continue decreasing in the pre-2030 projection period. This reduction is mainly driven by regulations targeting CH_4 and VOCs emissions in the upstream Oil and Gas sector, as well as the establishment of VOCs concentration limits in specific consumer products. Moreover, the expected reduction in demand for gasoline and diesel in the Transportation sector, along with reduced biomass use in residential buildings, further contribute to this positive trend. However, VOCs emissions are expected to remain stable after 2030 due to anticipated economic activity growth within the Heavy Industry sector and light manufacturing subsector.

In the WAM scenario, VOC emissions are expected to be slightly higher than those in the WM scenario during the pre-2030 projection period, primarily due to increased economic activity in the light manufacturing and commercial subsectors. After 2030, however, emissions are projected to be slightly below those in the WM scenario. This additional reduction is driven by the transition to hydrogen fuel, reduced fossil fuel reliance in the Heavy Industry and Oil and Gas sectors, and enhanced methane regulations that also curb VOC co-emissions from the Oil and Gas sector.

As a result, VOCs emissions in Canada are expected to remain below the reduction commitment outlined in the Gothenburg Protocol throughout the projection period in both the WM and WAM scenarios. This commitment aims to achieve a 20% reduction below the 2005 level, equivalent to setting an emissions ceiling of 1,834 kt for VOCs emissions from the year 2020 and beyond.

Figure 27: Volatile organic compounds emissions (kt), WM and WAM scenarios, 2005 to 2040



Note: Historical emissions data come from APEI2024. Access more data.

A4.5.4 Particulate matter (PM)

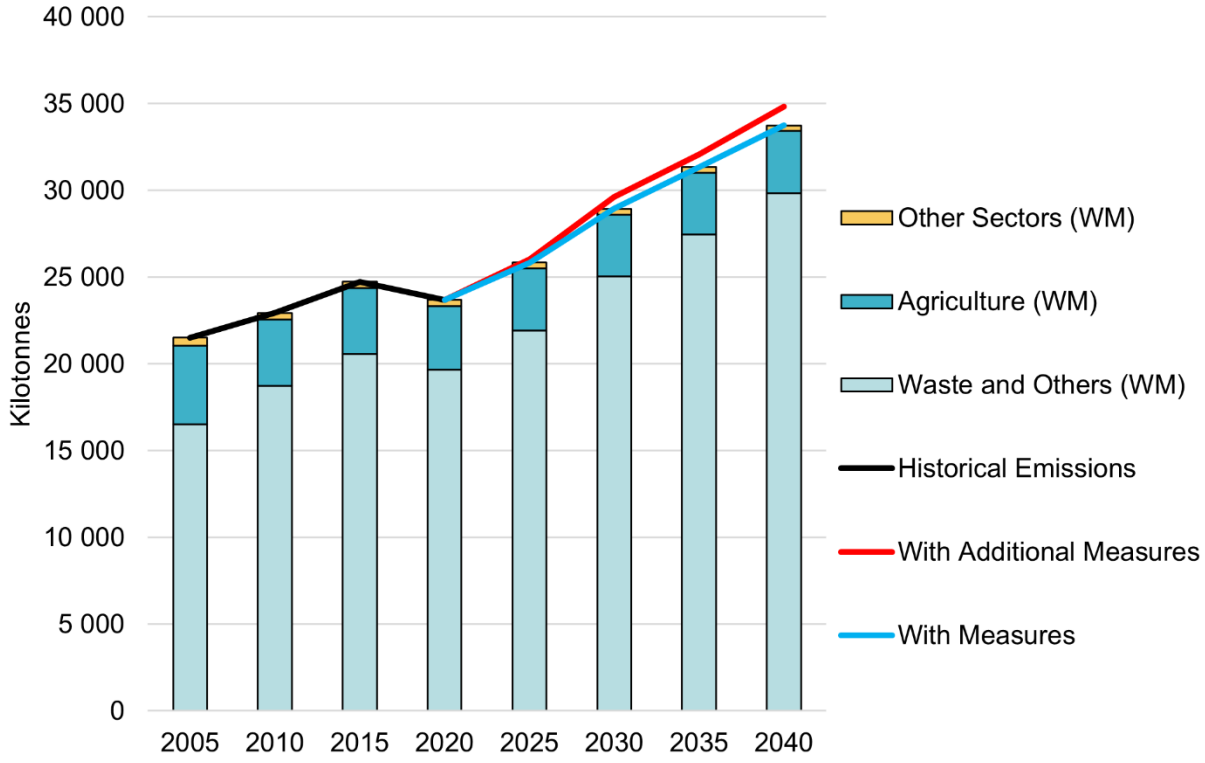
Most emissions of particulate matter (total particulate matter [TPM], particulate matter 10 [PM_{10}], and fine particulate matter [$PM_{2.5}$]) come from open sources including emissions from construction (excluding mobile and stationary off-road equipment emissions), crop production, and road dust, that account for about 98% of total PM emissions.

Other significant sources of PM emissions are coal-fired electric power generation, biomass combustion for space heating, production of non-ferrous metals, and iron ore pelletizing. Despite measures like the *Base-Level Industrial Emissions Requirements* (BLIERs) that target non-open-source PM emissions from various industrial activities, the overall PM emissions are projected to rise in the future. This trend, primarily driven by the increase in open-source emissions outpacing reductions achieved in targeted industries, can be attributed to the expected growth in transportation and construction activities, as well as crop production.

In the WAM scenario, PM emissions are projected to increase further, driven by increased freight activities that raise road dust emissions, along with a surge in energy investment projects that lead to more construction activities.

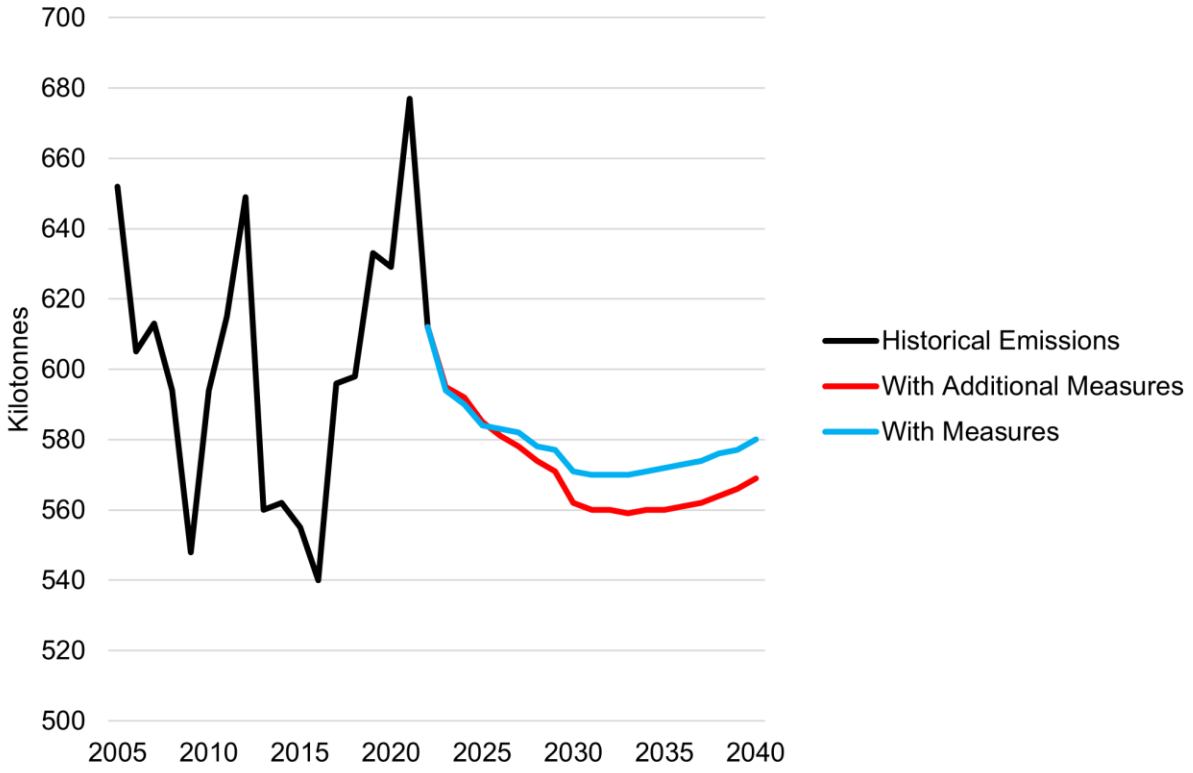
Regardless, non-open-source $PM_{2.5}$ emissions are expected to stay below the reduction commitment outlined in the Gothenburg Protocol throughout the entire projected period in both WM and WAM scenarios (Figure 33). Under this commitment, Canada aims to achieve 25% reduction below the 2005 level, establishing an emissions ceiling of 215 kt for non-open-source $PM_{2.5}$ emissions for the year 2020 and beyond.

Figure 28: Total particulate matter emissions (kt), including open sources, WM and WAM scenarios, 2005 to 2040



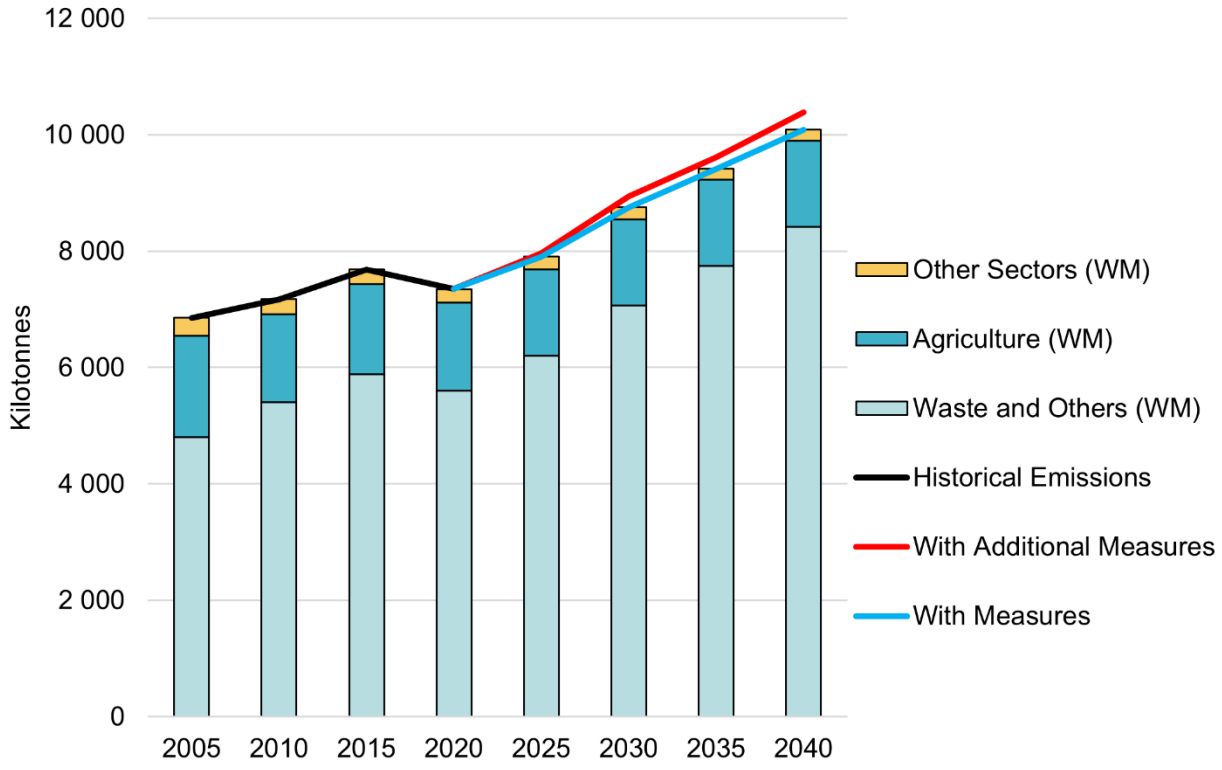
Note: Historical emissions data come from APEI2024. Access more data.

Figure 29: Total particulate matter emissions (kt), excluding open sources, WM and WAM scenarios, 2005 to 2040



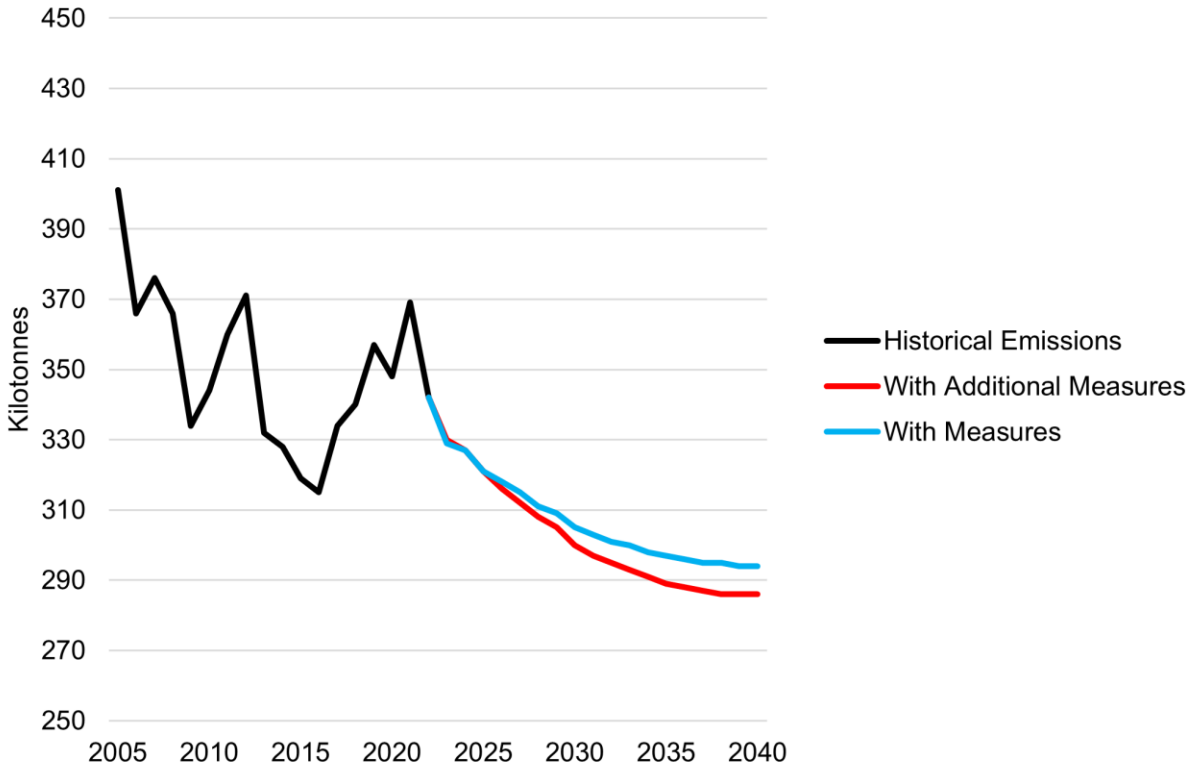
Note: Historical emissions data come from APEI2024. Access more data.

Figure 30: Particulate matter 10 emissions (kt), including open sources, WM and WAM scenarios, 2005 to 2040



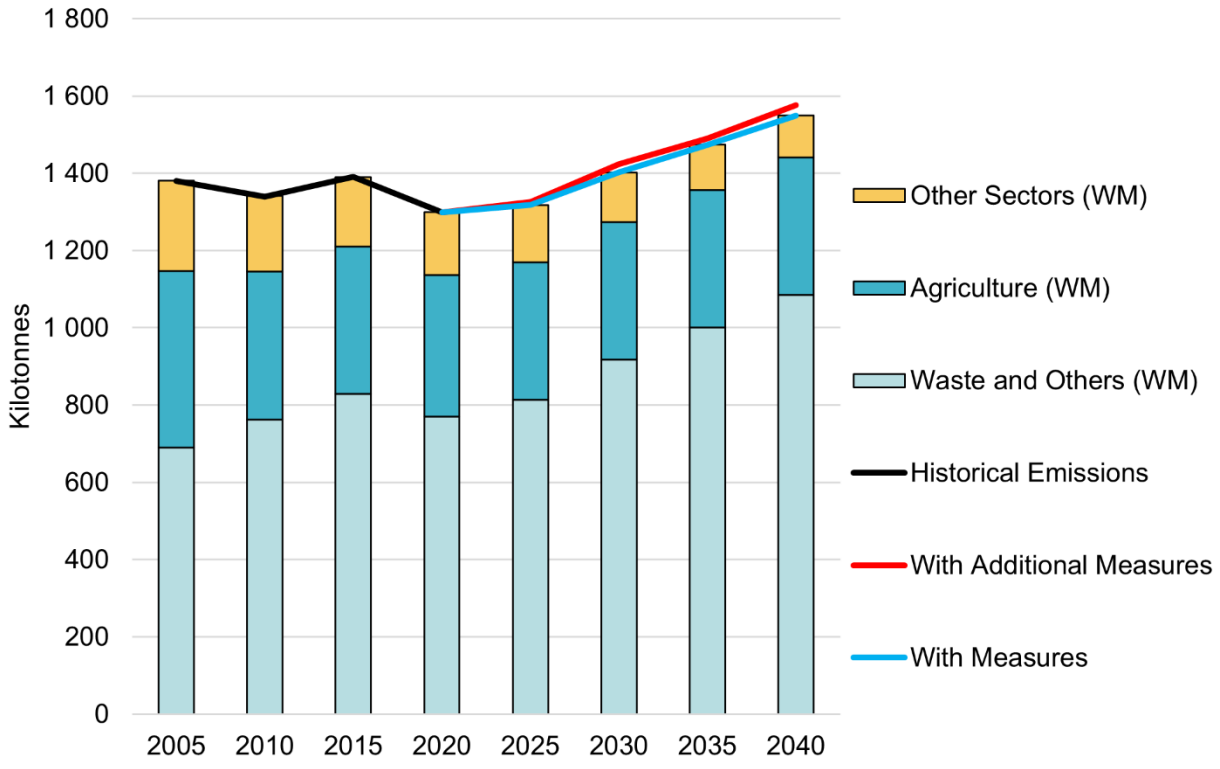
Note: Historical emissions data come from APEI2024. Access more data.

Figure 31: Particulate matter 10 emissions (kt), excluding open sources, WM and WAM scenarios, 2005 to 2040



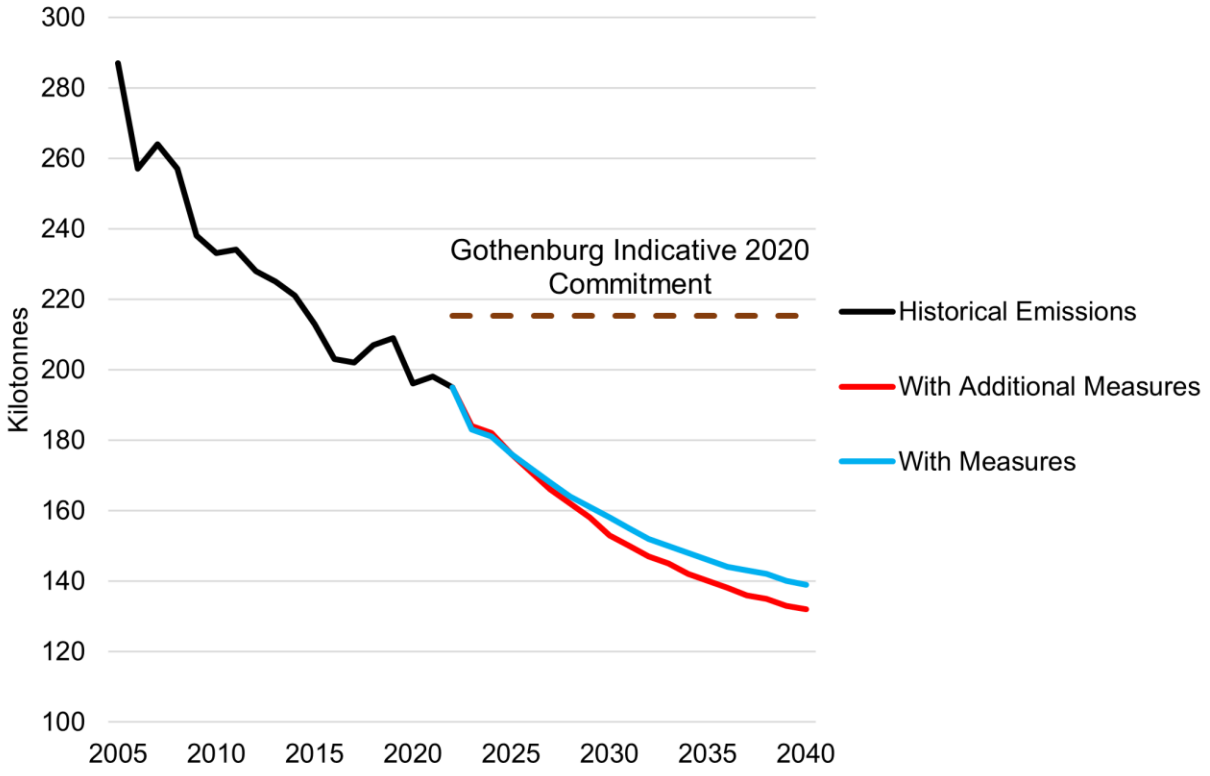
Note: Historical emissions data come from APEI2024. Access more data.

Figure 32: Particulate matter 2.5 emissions (kt), including open sources, WM and WAM scenarios, 2005 to 2040



Note: Historical emissions data come from APEI2024. Access more data.

Figure 33: Particulate matter 2.5 emissions (kt), excluding open sources, WM and WAM scenarios, 2005 to 2040



Note: Historical emissions data come from APEI2024. Access more data.

A4.5.5 Black carbon

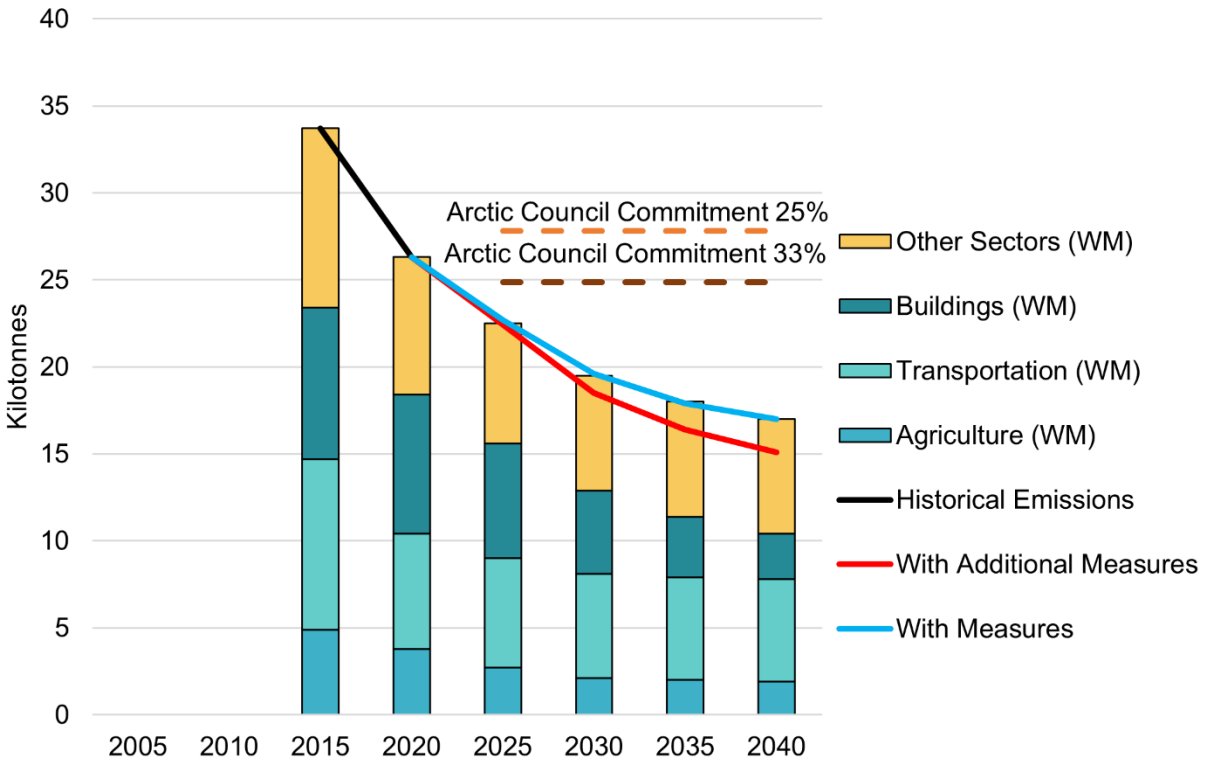
The main sources of black carbon emissions are the combustion of diesel and biomass fuels. These emissions largely result from diesel consumption within the Transportation and Agriculture sectors, as well as residential firewood burning.

Black carbon emissions have consistently declined over the years, and this trend is expected to continue in the future. This reduction is driven by several key factors, including the widespread adoption of advanced pollution-control technologies, the implementation of stringent emission standards, and the shift toward electrified residential heating systems. Collectively, these efforts are anticipated to significantly reduce black carbon emissions in both pre- and post-2030 projection periods.

Under the WAM scenario, additional reductions are anticipated. From 2022 to 2030, the decline will be largely driven by the transition to hydrogen fuel and decreased demand for fossil fuels in the Oil and Gas and Heavy Industry sectors. After 2030, the emissions are expected to decrease at a greater rate, largely due to continuous efficiency improvements in diesel passenger vehicles, along with accelerated electrification efforts in the Transportation and Buildings sectors.

As a result of these advancements, Canada's black carbon emissions are projected to decline by 39% and 40% below 2013 levels by 2025 in both the WM and WAM scenarios, respectively. Therefore, Canada is expected to meet its share of the aspirational Arctic Council goal to reduce collective black carbon emissions by 25% to 33% below 2013 levels by 2025. For more information, please consult the *Arctic Council Framework for Action on Enhanced Black Carbon and Methane Emissions Reductions*.

Figure 34: Black carbon emissions (kt), WM and WAM scenarios, 2005 to 2040



Note: Historical emissions data come from Canada's Black Carbon Inventory Report 2024. Black carbon emissions inventory starts in 2013. Access more data.

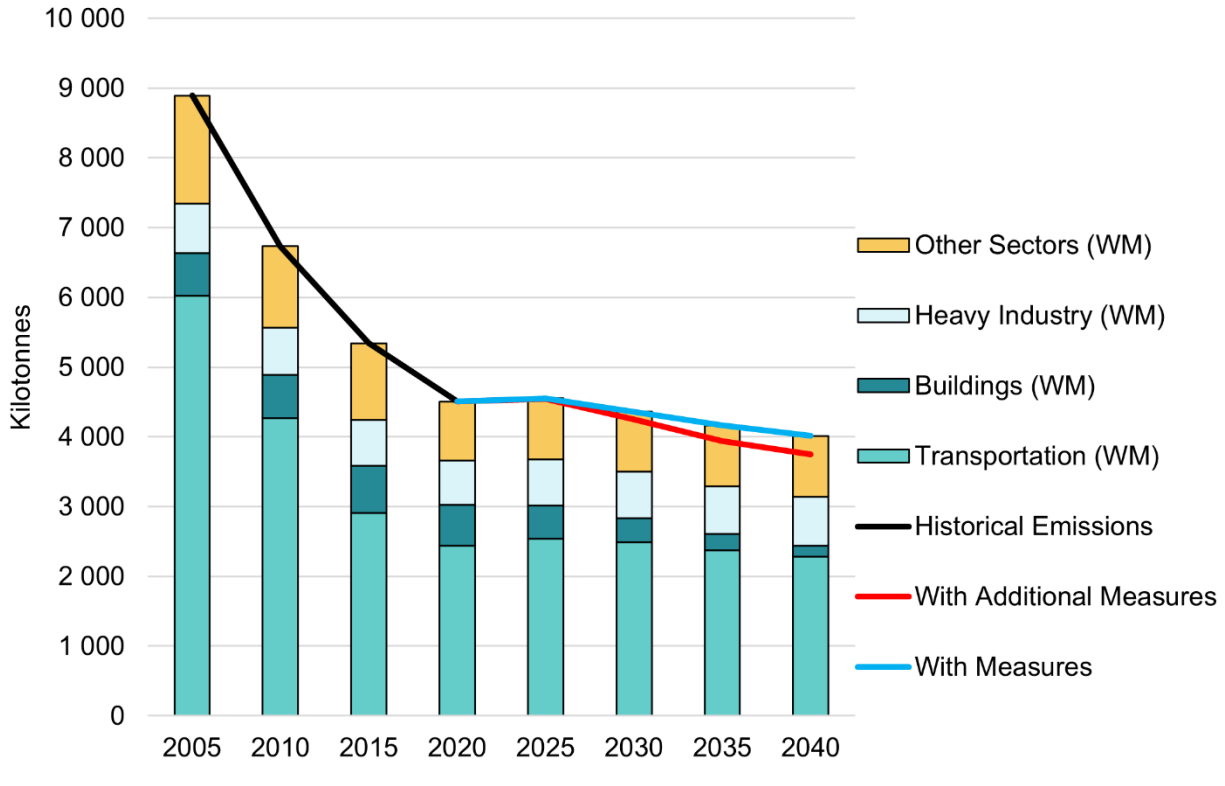
A4.5.6 Carbon monoxide (CO)

The main source of CO emissions is incomplete combustion of hydrocarbon-based fuels, primarily from mobile sources. The wood industry, smelting and refining operations, and residential wood heating are also significant but lesser sources of CO emissions.

Since 2005, CO emissions have consistently trended downward and are projected to continue declining throughout the projection period. Between 2022 and 2030, this reduction is largely driven by the growing adoption of electric residential heating equipment. Beyond 2030, continuous efficiency improvements and electrification efforts in the Transportation sector are anticipated to play a significant role in further reducing CO emissions. However, the continued electrification of residential heating systems is also expected to remain a key driver of emissions reductions in the post-2030 period.

Under the WAM scenario, further reductions in CO emissions are anticipated. Across both the pre- and post-2030 projection periods, this trend is primarily driven by the shift in the Heavy Industry and Oil and Gas sectors from hydrocarbon-based fuels to cleaner energy sources. Additionally, accelerated efficiency improvements in diesel and gasoline passenger vehicles, coupled with enhanced electrification efforts in the Transportation and Buildings sectors, are also expected to significantly reduce CO emissions beyond 2030.

Figure 35: Carbon monoxide emissions (kt), WM and WAM scenarios, 2005 to 2040



Note: Historical emissions data come from APEI2024. Access more data.

A4.5.7 Mercury

The main sources of mercury emissions include iron and steel production, smelting and refining operations, cement manufacturing, mining activities, coal-fired electric power generation, waste incineration, as well as various commercial, residential, and institutional sources.

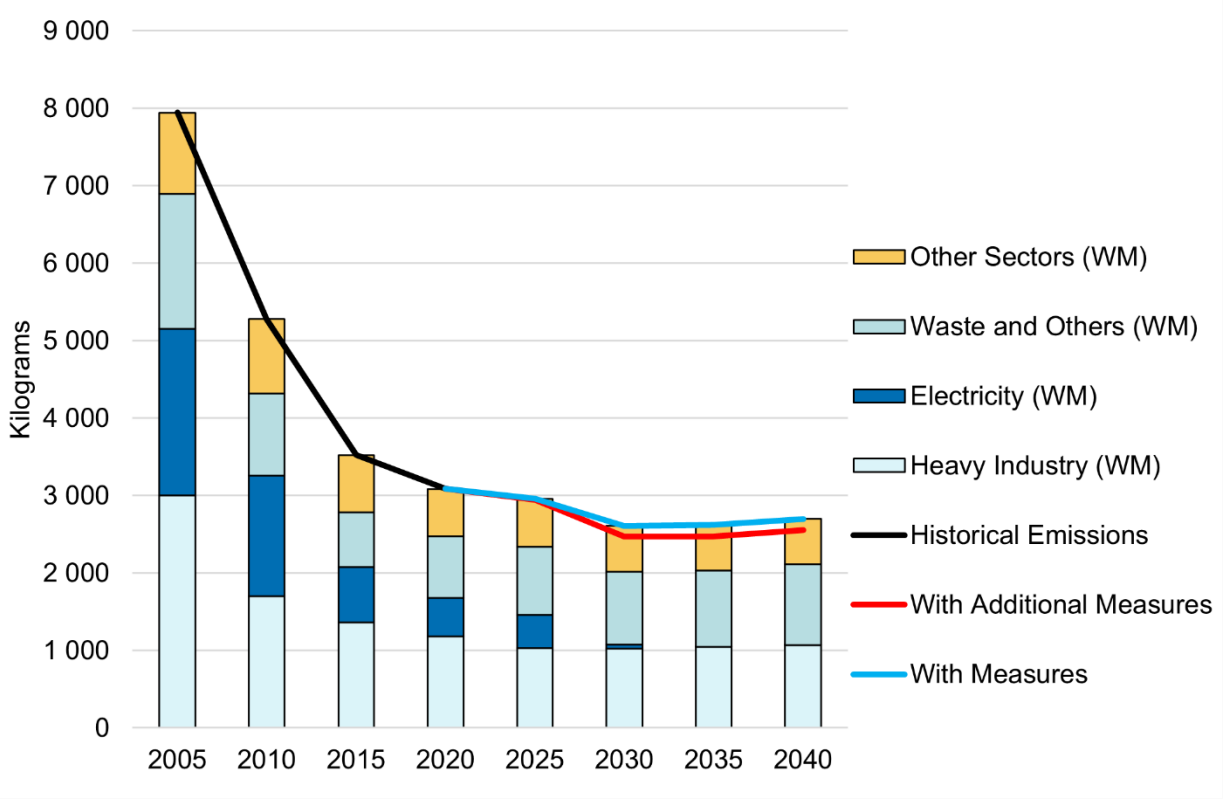
Mercury emissions in Canada have declined significantly over the years, driven by reduced activity in the Heavy Industry sector, improved waste management practices, and a decreasing reliance on coal-fired

electricity generation. Between 2022 and 2030, emissions are expected to continue declining due to the ongoing transition away from coal-fired power plants.

However, beyond 2030, mercury emissions are projected to show a slight upward trend. This is primarily attributed to population growth, increasing mercury releases from waste incineration and rising economic activity in the Heavy Industry sector. While complete coal phase-out in the Electricity sector and regulations limiting the use of mercury-containing products are expected to contribute to a sustained decline in overall emissions during the later forecast period, these measures alone are unlikely to fully offset the upward pressures.

Under the WAM scenario, further reductions in mercury emissions are expected. Across both pre- and post-2030 periods, the transition to hydrogen fuel and reduced reliance on fossil fuels in the Heavy Industry and Oil and Gas sectors are projected to lower mercury emissions considerably. Beyond 2030, additional reductions are anticipated through the accelerated electrification of heating systems in the Buildings sector. However, these efforts are unlikely to fully offset the upward emission trends in the later projection period, driven by population growth and expanded economic activities from the Heavy Industry sector.

Figure 36: Mercury emissions (kg), WM and WAM scenarios, 2005 to 2040



Note: Historical emissions data come from APEI2024. Access more data.

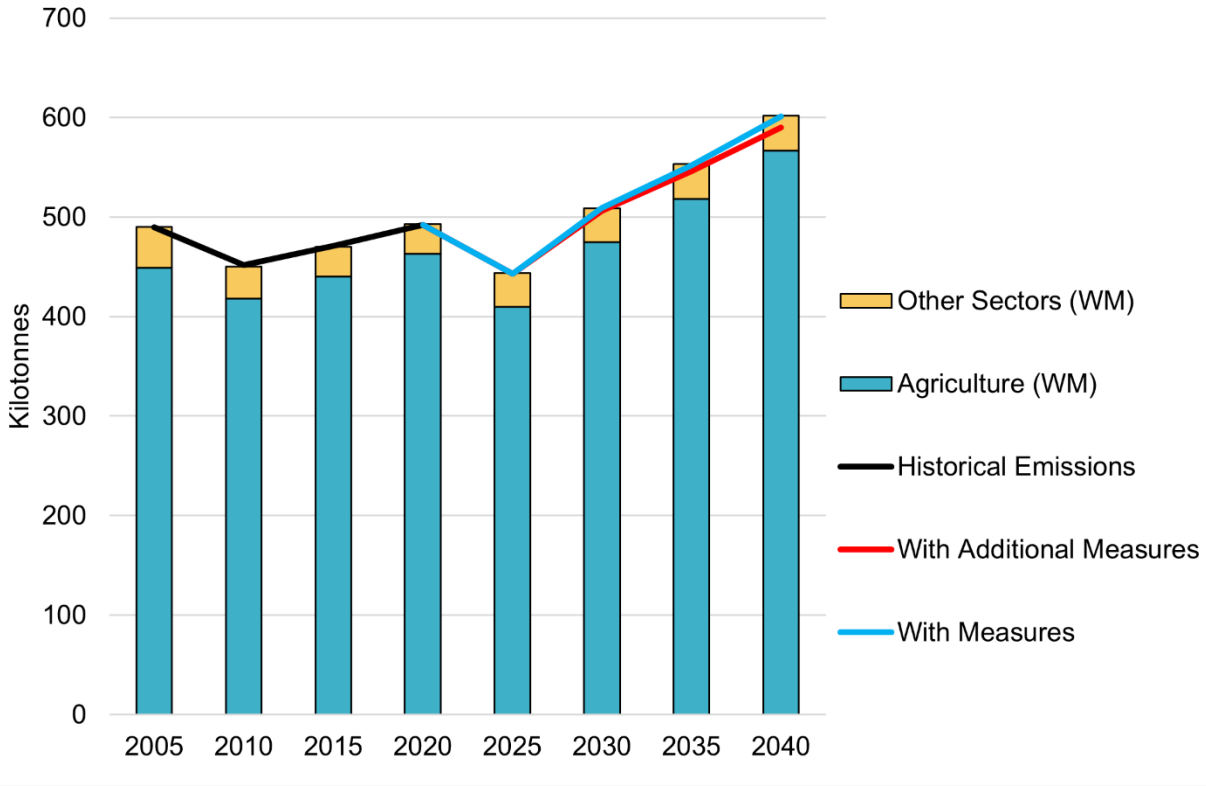
A4.5.8 Ammonia

Most ammonia emissions in Canada originate from animal and crop production activities, accounting for about 94% of total ammonia emissions in 2022. The next largest source of ammonia emissions is fertilizer production, responsible for approximately 2% of total 2022 emissions.

Historically, ammonia emissions have been relatively steady between 2005 and 2022, consistently staying below 500 kt each year. However, ammonia emissions are projected to increase gradually, driven by a steady increase in animal and crop production activities and expected increased use of nitrogen-based fertilizers.

Under the WAM scenario, ammonia emissions are projected to be slightly lower compared to the WM scenario. This reflects the indirect effects of additional funding programs and GHG mitigation measures implemented in the Agriculture sector, which contribute to a slower emissions growth trajectory for ammonia as well.

Figure 37: Ammonia emissions (kt), WM and WAM scenarios, 2005 to 2040



Note: Historical emissions data come from APEI2024. Access more data.

A4.6 Methodology

The scenarios developed to support Canada's GHG and air pollutant emissions projections 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 and clean technologies.

The emissions projections presented in this report cannot be viewed as a forecast or prediction of emissions at a future date. Rather, this report presents a simple projection of the current economic structure and policy context into the future, and cannot account for the inevitable but unknown future changes that will occur in government policy, energy supply, demand and technology, or domestic and international economic and political events.

The emissions projections have been developed following recognized best practices. They incorporate IPCC standards for estimating GHG emissions across different fuels and processes, rely on outside expert views and the most up-to-date data available for key drivers such as economic growth, energy prices, and energy demand and supply, and apply an internationally recognized energy and macroeconomic modelling framework in the estimation of emissions and economic interactions. Finally, the methodology used to develop the projections and underlying assumptions has been subject to peer review by leading external experts on economic modelling and GHG emissions projections, as well as vetted with key stakeholders.

The approach to developing Canada's GHG and air pollutant emissions projections involves the following features:

- 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 GHG and air pollutant emissions projections by IPCC and economic sectors using E3MC, a detailed, proven energy, emissions, and economy model for Canada.
- Aggregating and reporting results from external models to account for the accounting contribution of the LULUCF sector.

This section provides information on these key data sources and models, and highlights key differences in assumptions between the projections presented here and those presented in NC8/BR5.

A4.6.1 WM and WAM Modelling and underlying assumptions

The projections presented in this report were generated from ECCC's E3MC model. E3MC has two components: ENERGY 2020, which incorporates Canada's energy supply and demand structure; and Oxford Economics' NAEM, a regional macroeconomic model. This is the first time the NAEM is used to develop ECCC projections in E3MC. The main differences between the NAEM and the former macroeconomic model (The Informetrica Model) are that NAEM is solved at the regional level, rather than national, and is based on today's Canadian System of Macroeconomic Accounts, including recent Supply and Use Tables. The process imposed for developing the projections remains unchanged with the new macroeconomic model.

In addition, as discussed in Section A4.6.4, projections for the LULUCF accounting contribution are developed separately using a suite of models.

A4.6.1.1 Historical data and key assumptions

Each year, ECCC updates its models using the most recent data available from Statistics Canada's Report on Energy Supply and Demand in Canada: Explanatory Information and Canada's NIR. Historical GHG emissions are aligned to the latest NIR. For these projections, the most recent historical data available were for 2022.

In addition to the most recent historical information, the projections are based on expert-derived expectations of key drivers (such as the world oil price) and on the latest energy and economic data, with key modelling assumptions aligned with Government of Canada and provincial and territorial government views.

ECCC would like to acknowledge the efforts of our federal colleagues, without their contributions, the development of the projections would not be possible. At ECCC, special thanks go to staff of the Science and Technology Branch (historical GHG and air pollutant emissions data, HFCs, LULUCF). ECCC also wishes to thank staff from the following departments for providing data and support: AAFC (agriculture emissions, LULUCF sector), the CER (oil and gas production and wholesale prices), Finance Canada (macroeconomic forecast), NRCan (historical energy use, mining data, LULUCF sector), Statistics Canada (historical energy supply and demand data, macroeconomic data), and Transport Canada (ZEV forecast).

Many factors influence future trends of Canada's GHG and air pollutant emissions. This includes economic growth, population, household formation, energy prices (such as the world oil price and the price of refined petroleum products, regional natural gas prices, and electricity prices), technological change, and policy decisions. Varying any of these assumptions could have a material impact on the emissions outlook.

Oil and natural gas price and production projections are taken from the CER's 2025 preliminary Current Measures scenario, which will be released in Canada's Energy Future report in the spring of 2025. The CER is an independent federal agency that regulates international and interprovincial aspects of the oil, gas, and electric utility industries. The US Energy Information Administration's outlook on key parameters is also considered in the development of energy and emissions trends.

The WM scenario is designed to incorporate the best available information about economic growth as well as energy demand and supply into the future. The projections capture the impacts of future production of goods and services in Canada on GHG emissions. In constructing the emissions projections, alternate pathways of key drivers of emissions were modelled to explore a range of plausible emissions growth trajectories. The WM scenario represents the mid-range of these variations but remains conditional on the future path of the economy, world energy markets and government policy. The assumptions and key drivers are listed in this section. Alternative cases are explored in the sensitivity analysis which is presented in Section A4.4.1.

A4.6.1.2 Macroeconomic assumptions and key economic drivers

Historical data on GDP, consumer price index (CPI), labour force and population demographics are produced by Statistics Canada. Household estimates are derived through the consultation process and historical revision of the macroeconomic model's database. Economic projections (including real and nominal GDP growth, GDP inflation, exchange rate, interest rates, unemployment rate and consumer price index inflation) from 2024 to 2028 are aligned to the June 2024 Department of Finance Private Sector Survey. Economic growth estimates after 2028 are aligned to Finance Canada's long-term projections.

Population projections are based on consultation feedback or provincial/territorial population projections. For years when no such estimates are available, the provincial/territorial estimate is based on Statistics Canada medium (M1, June 2024) population growth.

The Canadian economy grew by an average of 1.7% per year from 2006 through 2023, a period that includes the 2009 global recession and the COVID-19 pandemic. Real GDP growth is expected to average 1.7% per year from 2024 to 2040.

Growth in the labour force and changes in labour productivity influence Canada's real GDP. Labour productivity is expected to increase by an average of 0.5% annually between 2024 and 2040, somewhat stronger than the 0.4% average annual growth during the period between 2006 and 2023. The increase in productivity is attributed to an expected rise in capital formation and contributes to the growth in real disposable personal income, which is expected to increase by an average of 2.1% annually between 2024 and 2040.

The population size and its characteristics (such as age and household formation, among others) have important impacts on energy demand. Canada's overall population is projected to grow on average at an annual rate of 2.3% between 2024 and 2025, slowing to 1.2% per year between 2026 and 2030 and 1.1% between 2031 and 2040. Household formation is expected to increase at similar rates as population growth (Table 63).

The WAM scenario has stronger real GDP growth than in the WM scenario through most years through 2040 due to added investment activity. Overall, real disposable income growth and labour productivity in the WAM scenario are somewhat stronger than the result for the WM scenario for years 2024 to 2040.

A4.6.1.3 World crude oil and North American natural gas prices

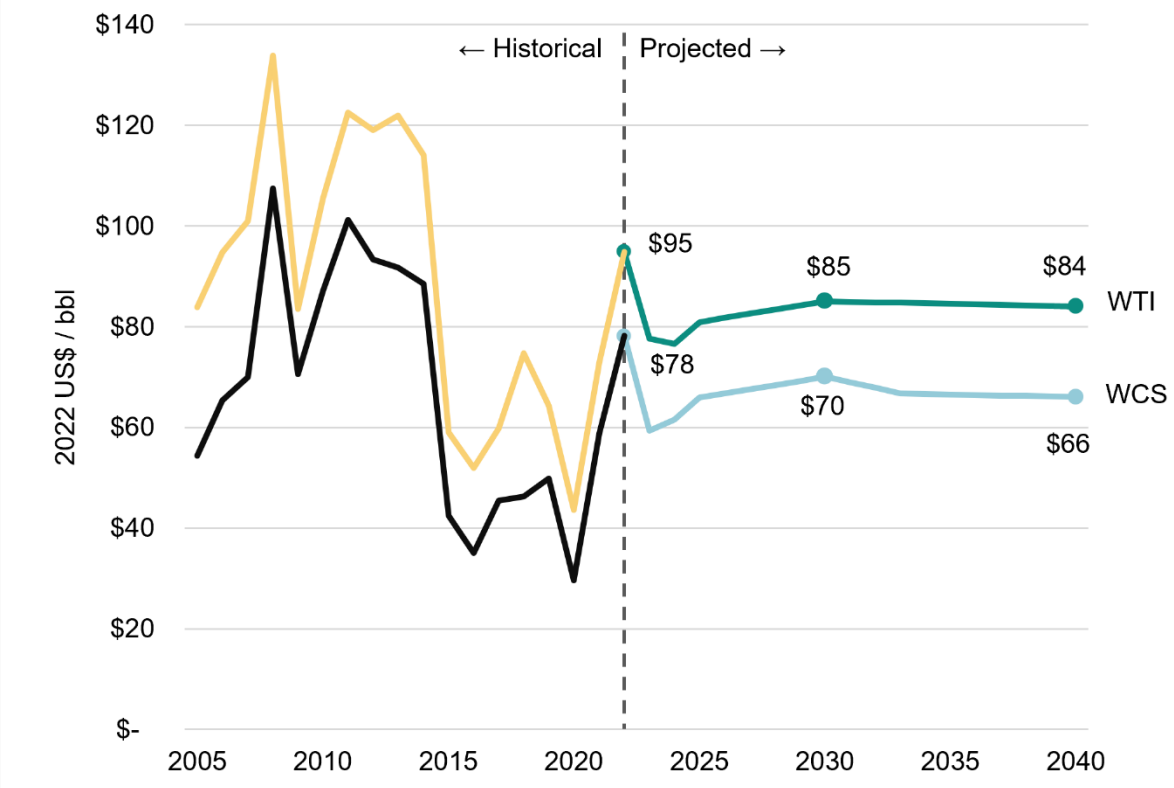
A major factor in projected GHG emissions is the assumption about future world oil and natural gas prices since it determines the level of Canadian crude oil and natural gas production. Canada is a price taker in international crude oil markets as its share of world oil production is not large enough to significantly influence international oil prices. North American crude oil prices are determined by international market forces and are most directly related to the West Texas Intermediate (WTI) crude oil price at Cushing, which is the underlying physical commodity market for light crude oil contracts for the New York Mercantile Exchange. The increase in North American oil supply and the resulting transportation bottleneck at Cushing have created a divergence between the WTI price of crude oil and the Brent price of crude oil. As such, the North American oil market is currently being priced differently from the rest of the world. Moreover, the Western Canada Select (WCS) oil, which represents heavy crude oil, trades at a further discount compared to the WTI because of its lower quality and Alberta's constrained access to markets.

The WM scenario and WAM scenario projections are anchored by the world oil price assumptions developed by the CER. According to the CER, the world crude oil price for WTI is projected to decline from about 2022 US$95 per barrel of oil (bbl) in 2022 to about 2022 US$84/bbl in 2040, as can be seen in Table 64. Higher and lower price scenarios are used for the sensitivity analysis presented in Section A4.4.1.

Figure 38 shows prices for light crude oil (WTI) and heavy crude oil (WCS). Historically the price of heavy oil (Alberta Heavy) has followed the light crude oil price (WTI) at a discount of 25% to 35%. However, in 2008 and 2009 the differentials between the prices of light and heavy crude oils ("bitumen/light-medium differential") narrowed significantly owing to a global shortage of heavier crude oil supply. This differential peaked in 2018, which led to Alberta's provincial government curtailing oil production to reduce the pricing discount of heavy crude oil. The substantial decrease in light and heavy crude oil prices in 2020 was a result of the COVID-19 pandemic and the Saudi-Russia oil price war which severely impacted energy markets. Finally, the price spike in 2022 is a result of international sanctions against Russia and the subsequent lost supply of fossil fuel exports to the global market.

The CER expects the bitumen/light-medium differential to remain constant at 2022 USD$15 until 2030 and increase to 2022 US$18 later in the projection period. Takeaway capacity in Western Canada is expected to increase from historical levels due to the completion of Enbridge's Line 3 Replacement in 2021, and the start-up of the Trans Mountain Expansion (TMX) project in 2024.

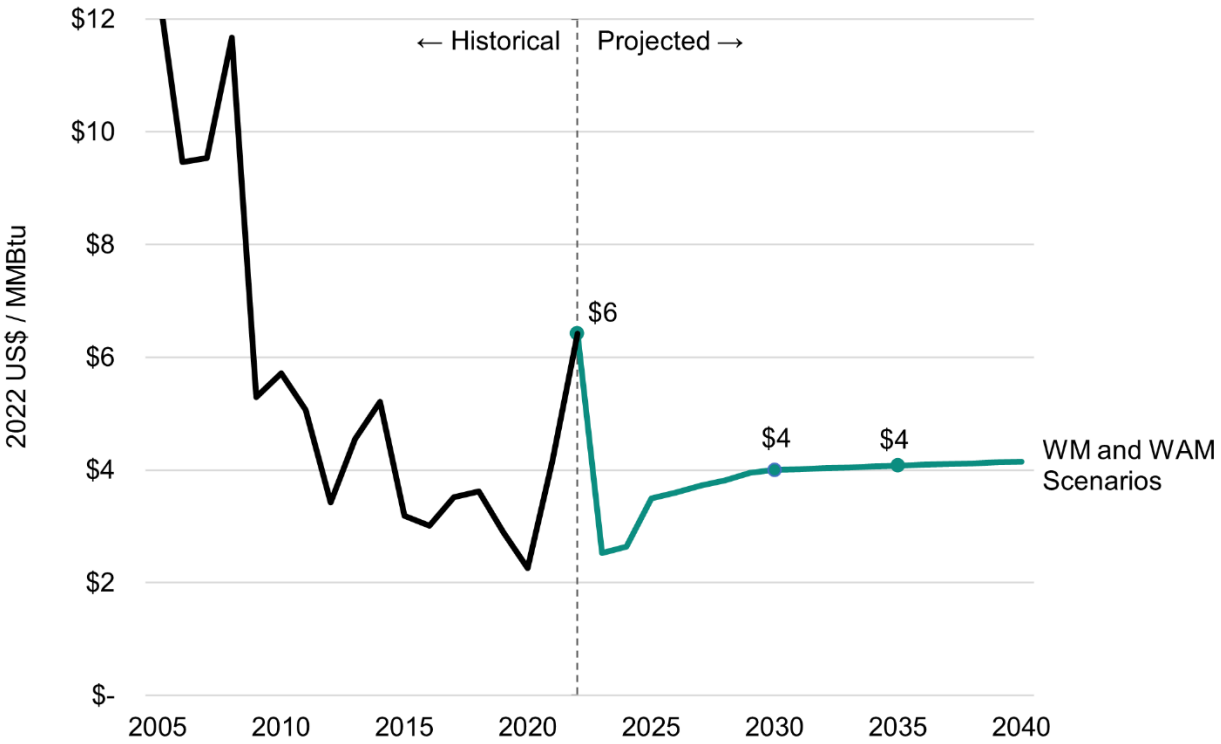
Figure 38: Crude oil price (2022 US$/bbl), light crude (WTI) and Alberta Heavy (WCS), 2005 to 2040



Note: Access more data. 2022 US$ values reported from the CER.
Source: CER's Current Measures scenario forecast (pre-final 2025 Energy Future report – EF2025)

As shown in Figure 39, the Henry Hub price for natural gas decreased significantly from 1990 to 2022 due to increased supply of natural gas, driven by decreasing costs of production, especially from unconventional extraction methods. The conflict in Ukraine and resulting international sanctions against Russian supply of fossil fuels cause the price for natural gas to peak at 2022 US$6.42/MMBtu in 2022. Eventually, supply and demand are expected to balance, and prices decrease reaching 2022 US$4.15/MMBtu by 2040.

Figure 39: Henry Hub natural gas price (2022 US$/MMBtu), WM and WAM scenarios, 2005 to 2040



Note: Access more data. 2022 US$ values are converted from the 2022 US$ values reported from the CER.
Source: CER Canada's Energy Future Data Appendices

A4.6.1.4 Oil and gas supply

Preliminary EF2025 forecasts from the CER illustrate that growth in both conventional natural gas and conventional oil production will be outstripped by unconventional extraction methods, due to declining supply of conventional resources and recent improvements to unconventional extraction methods and technology.

The new CER's production forecasts highlight increased oil sands volumes based on proposed projects coming online and company announcements. These increased volumes primarily stem from mining operations at Horizon, alongside some high-performing SAGD facilities such as Cenovus Christina Lake, Foster Creek, and MEG Christina Lake. The commissioning of the TMX pipeline also triggers drilling activity as it solves previous transportation constraints and opens Canadian oil products to new international markets. As such, it is expected that from 2022 to 2030 oil sands in-situ production will increase by about 24% and oil sands mining production will increase by 18% in the WM scenario (Table 65).

There are two main products from oil sands production: synthetic crude oil (or upgraded bitumen) and non-upgraded bitumen, which is sold as heavy oil.

Table 66 illustrates historical and CER projected oil sands disposition. Synthetic crude oil production is projected to slightly decrease from about 1.2 million barrels per day (b/d) in 2022 to about 1.1 million b/d by 2030 in the WM scenario. Non-upgraded bitumen will increase from 2 million b/d in 2022 to 2.7 million b/d by 2030 in the WM scenario and then to 2.8 million b/d by 2040. This non-upgraded bitumen is either sold as heavy oil to Canadian refineries or transported to US refineries for upgrading to refined petroleum products.

The concave shape of natural gas production in the latest CER projections is primarily due to their new gas-deliverability model, which factors in Natural Gas Liquids (NGL) revenues when assessing well profitability. As a result, even when gas prices are low, NGL prices can help sustain drilling activity. Projections from the CER in the WM scenario show gross natural gas production will increase from 7.7 trillion cubic feet (Tcf) in 2022 to

9.0 Tcf in 2030 (Table 67). Growth in natural gas production is expected primarily from non-conventional sources such as shale gas and coalbed methane that come to market and offset the continued decline in conventional gas production. After the drop in 2023, high Henry Hub natural gas prices throughout the projection period is expected to drive investment and development in the natural gas sector. Natural gas production growth continues through the projection period, in part from a growing LNG sector in Canada and the US. This results in incremental drilling and production of natural gas to serve as feedstock for an expanding LNG sector.

A4.6.1.5 Electricity supply

Electricity is generated to meet demand from other sectors of the economy; for example, space heating in the Buildings sector or charging EVs in the Transportation sector. This demand for electricity changes for each sector depending on relative fuel and electricity prices, technology choices, energy efficiency changes, policy impacts, and economic growth. The supply of electricity grows to meet the evolving demand over time. The sources of electricity supply depend on the state of each province and territory's supply mix as well as scheduled refurbishments and retirements, planned and modelled additions to capacity, growing industrial generation and interprovincial and international flows. Government actions further constrain supply choices in the projections, such as the retirement of coal units due to the amendments to the federal coal-fired electricity regulations, and renewable portfolio standards in provinces such as Nova Scotia and New Brunswick.

Total electricity demand is projected to grow 12% from 2005 to 2030 and a further 12% by 2040 in the WM scenario, as economic growth and electrification outpace energy efficiency improvements. Utility generation is projected to grow 22% from 2005 to 2030 and a further 7% by 2040. Industrial generation outpaces that of utility generation from 2005 to 2030 with 56% growth, with an additional 3% growth by 2040. Excess industrial electricity generation is often sold to the utility grid to help meet end-use demand. Over the period, both the exports and imports of electricity to the US increase but Canada always remains a net exporter.

Electricity generation in Canada is dominated by hydro. In 2022, in the WM scenario, it represents 65% of utility generation and 27% of industrial generation. The remaining utility generation is made up of nuclear (14%), fossil fuels (12%) and other renewables (8%), whereas the remaining industrial generation is comprised of fossil fuels (62%) and other renewables (10%). In the projections, the fastest source of growth is from wind and hydro. Nuclear generation is influenced by two opposing trends that result in a small increase in generation over the long term. The refurbishments and closures of nuclear plants in Ontario contribute to decreasing generation in the short term while the addition of new SMNRs compensates for it in the long term. Solar power generation increases rapidly until 2030, after which its growth slows, resulting in little contribution to overall generation growth in the mid- and long-term periods. With respect to fossil fuel generation, coal generation is phased out by 2030 while natural gas power generation remains stable to help transition away from coal and to balance the growing intermittent renewables. It is, however, expected that natural gas power generation will decrease in the long term.

In the WAM scenario, the electric demand is lower than in the WM scenario before 2035 due to reductions of the electric demand in the Heavy Industry and Buildings sectors and higher after 2035 due to a greater electrification of the Transportation sector. Starting in 2035, the Clean Electricity Regulations lead to a significant reduction in fossil fuel use for utility electricity generation despite demand growth. Hence, utility generation from natural gas and refined petroleum products decrease by 21% in 2035 and 13% in 2040 as compared to the WM scenario. Given this reduction in generation from fossil fuels and the growing electricity demand, more electricity is generated from renewables and nuclear and less is exported to the US in the WAM scenario than in the WM scenario.

A4.6.1.6 Agriculture sector assumptions

Historical and projected estimates for emissions from crop production, animal production, and on-farm fuel use produced by AAFC for the years 2020, 2030, and 2035 are used to develop annual growth rates which are applied to 2022 historical data to generate projected emissions to 2040. After 2040, animal production and

crop production emissions are assumed to be flat, with the assumption being that emission intensity improvements keep pace with growing output.

A4.6.1.7 Emissions factors

Table 69 provides a rough estimate of carbon dioxide equivalent emissions emitted per unit of energy consumed by fossil fuel type for combustion and industrial processes. These numbers are estimates based on the latest available data and specific emission factors can vary by year, sector, and province.

A4.6.2 Energy, Emissions, and Economy Model for Canada (E3MC) and ENERGY 2020

The projections presented in this report were generated from ECCC's E3MC model that has two components: ENERGY 2020, which incorporates Canada's energy supply and demand structure, and Oxford Economics' NAEM, which is a regional macroeconomic model.

ENERGY 2020 is an integrated, multi-region, multisector North American model that simulates the supply of, price of, and demand for all fuels. The model can determine energy output and prices for each sector, both in regulated and unregulated markets. It simulates how such factors as energy prices and government measures affect the choices that consumers and businesses make when they buy and use energy. The model's outputs include changes in energy use, energy prices, GHG emissions, investment costs, and possible cost savings from measures, in order to identify the direct effects stemming from GHG reduction measures. The resulting savings and investments from ENERGY 2020 are then used as inputs into the macroeconomic model.

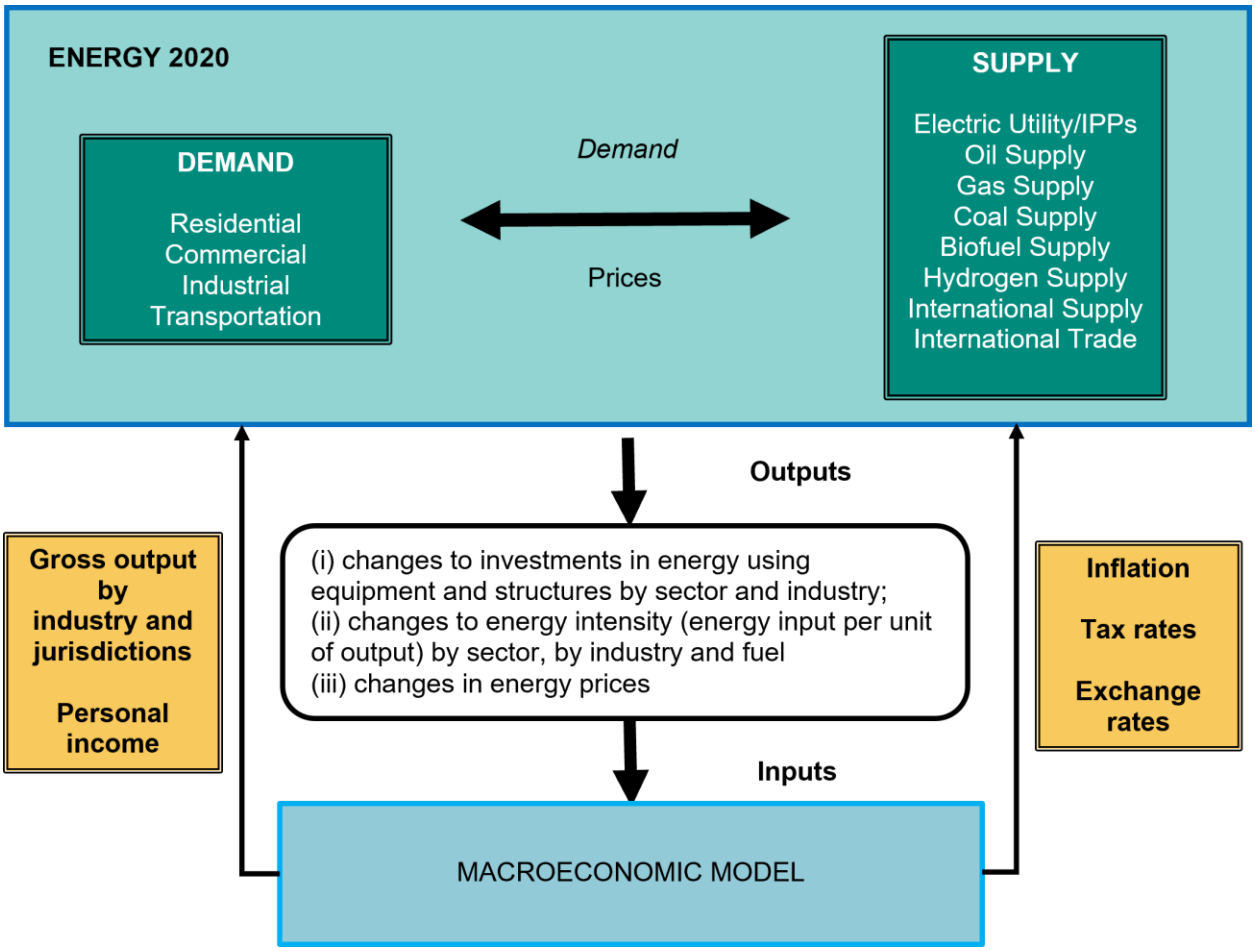
ENERGY 2020 is proprietary software supported by Systematic Solutions, Inc. and has been used by a variety of organizations, such as government agencies, climate action groups, and utilities, to develop long-term energy and emissions projections and to conduct energy and emissions-related policy analyses. ENERGY 2020 has been used by ECCC, and the CER (formerly the National Energy Board) since the early 1990s. Systematic Solutions Inc. has made documentation about the ENERGY 2020 model available on their website.

E3MC develops projections using a market-based approach to energy analysis. For each fuel and consuming sector, the model balances energy supply and demand, accounting for economic competition among the various energy sources. This ensures consistent results among the sectors and regions. The model can be run in a forecasting mode or an analytical mode. In forecasting mode, the model generates an annual energy and emissions outlook up to 2050. In analytical mode, it assesses broad policy options, specific programs or regulations, new technologies, or other assumptions.

The model's primary outputs are tables showing energy consumption, production and prices by fuel type, year, and region. The model also identifies many of the key macroeconomic indicators (for example, GDP or unemployment) and produces a coherent set of all GHG emissions (such as CO_2, CH_4, and N_2O) by sector and by province or territory.

Figure 40 shows the general structure of E3MC. The component modules of E3MC represent the individual supply, demand, and conversion sectors of domestic energy markets, and include the macroeconomic module. In general, the modules interact through values representing the prices of the energy delivered to the consuming sectors and the quantities of end-use energy consumption.

Figure 40: Energy, Emissions and Economy Model for Canada (E3MC)



A4.6.2.1 Treatment of interaction effects

The overall effectiveness of Canada's emissions-reduction measures will be influenced by how they interact. Analysis of a policy package containing more than one measure or policy would ideally consider these interactions in order to understand the true contribution that the policy package is making to emission reductions.

E3MC is a comprehensive and integrated model focusing on the interactions between sectors and policies. In the demand sectors, the fuel choice, process efficiency, device efficiency, and level of self-generation of electricity are all combined in a consistent manner. The model includes detailed equations to ensure that all the interactions between these structures are simulated with no loss of energy or efficiency. For example, the Electricity sector responds to the demand for electricity from the energy demand sectors, meaning that any policy to reduce electricity demand in the consumer sectors will affect the electricity generation sector. The model accounts for emissions in the electricity generation sector as well as for emissions in the consumer demand sectors. As the Electricity sector reduces its emissions intensity, policies designed to reduce electricity demand in the consumer sectors will cause less of an emissions reduction. The model also simulates the export of products by supply sectors.

Taken as a whole, the E3MC model provides a detailed representation of technologies that produce goods and services throughout the economy, and can simulate, in a realistic way, capital stock turnover and choices among technologies. The model also includes a representation of equilibrium feedback such that supply and demand for goods and services adjust to reflect policy. Given its comprehensiveness, E3MC covers all the GHG emissions sources, including those unrelated to energy use.

A4.6.2.2 Additionality

Additionality represents what would have happened without a specific initiative. Problems of additionality arise when the stated emissions reductions do not reflect the difference in emissions between equivalent scenarios with and without the initiative in question. This will be the case if stated emissions reductions from an initiative have already been included in the WM scenario: emissions reductions will effectively be double counted in the absence of appropriate adjustments. The E3MC model controls for additionality by basing its structure on incremental or marginal decision-making. The E3MC model assumes a specific energy efficiency or emission intensity profile at the sector and end-use point (for example, space heating, lighting, or auxiliary power). Under the E3MC modelling philosophy, if the initiative in question were to increase the efficiency of a furnace, for example, only the efficiency of a new furnace would be changed. The efficiency of older furnaces would not change unless those furnaces are retired and replaced with higher-efficiency ones. As such, any change in the model is incremental to what is reflected in the business-as-usual assumptions.

While all efforts are made to ensure that the model accurately represents the cumulative impact of all policies and measures taken into consideration, challenges can arise when trying to attribute specific reductions in emissions to overlapping individual policies and measures.

A4.6.2.3 Free ridership

A related problem, free ridership, arises when stated reductions include the results of behaviour that would occur regardless of the policy. This can occur when subsidies are paid to all purchasers of an item (for example, a high-efficiency furnace), regardless of whether they purchased the item because of the subsidy. In the E3MC model, the behaviour of free riders has already been accounted for in the WM scenario. Thus, their emissions are not counted toward the impact of the policy. Instead, the E3MC model counts only the incremental take-up of the emissions-reducing technology.

A4.6.2.4 Rebound effect

This describes the increased use of a more efficient product resulting from the implied decrease in the price of its use. For example, a more efficient car is cheaper to drive and so people may drive more. Within the model, ECCC has mechanisms for fuel choice, process efficiency, device efficiency, short-term budget constraints, and cogeneration, which all react to changes in energy and emissions costs in different periods. All these structures work to simulate the rebound effect. In the example above, the impact of extra kilometres that may be driven because of improved fuel efficiency is automatically netted out of the associated emissions-reduction estimates.

A4.6.2.5 Simulation of capital stock turnover and endogenous technological change

As a technology vintage model, E3MC tracks the evolution of capital stocks over time through retirements, retrofits, and new purchases, in which consumers and businesses make sequential acquisitions with limited foresight about the future. This is particularly important for understanding the implications of alternative time paths for emissions reductions.

The model calculates energy costs (and emissions) for each energy service in the economy, such as heated commercial floor space or person kilometres travelled. In each period, capital stocks are retired according to an age-dependent function (although the retrofitting of unretired stocks is possible if warranted by changing economic or policy conditions). Demand for new stocks grows or declines depending on the initial exogenous forecast of economic output (that is, a forecast that is external to the model and not explained by it) and the subsequent interplay of energy supply-demand with the macroeconomic module.

The E3MC model simulates the competition of technologies at each energy service node in the economy, based on a comparison of their cost and some technology-specific controls, such as a maximum market share limit in cases where a technology is constrained by physical, technical, or regulatory means from capturing all of a market. The technology choice simulation reflects the financial costs as well as the consumer and business preferences, revealed by real-world historical technology acquisition behaviour.

A4.6.2.6 Model strengths and weaknesses

While E3MC 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 E3MC model 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, E3MC has an explicit causal structure that can be used to understand the origins of the patterns of behaviour observed and 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.

While E3MC is not a computable general equilibrium model, when its energy and macroeconomic model are run in an integrated and dynamic manner, it can be classified as a general equilibrium model. That is, all markets, in both models, return to an equilibrium in response to a policy or price shock.

Limitations of E3MC include fixed relationships between industries in the macroeconomic model (North American Industry Classification System) and behavioural equations that are derived from historical patterns. In addition, the model lacks the ability to simulate an endogenous technology response. Therefore, E3MC results may not fully capture all the market dynamics when considering the endogenous response to policies that change behaviour. Thus, when assessing policies, the use of additional models is advantageous. ECCC also employs Canadian and international Computable General Equilibrium models, including an Integrated Assessment Model for policy design and analysis.

A4.6.3 North America Economic Model

This is the first time the NAEM is used to develop ECCC projections in E3MC. The macroeconomic model used in E3MC is the NAEM from Oxford Economics. As opposed the previous macroeconomic model, the NAEM is a “bottom-up” model of each Canadian province and territory as well as 10 US regions (nine US Census Divisions with California separated from the Pacific Division), with detailed behavioural modelling at the regional level and then aggregated to produce national and regional economic indicators. It is a highly disaggregated macroeconomic model designed to provide long-term economic forecasts and impacts of various energy and socioeconomic policies.

The NAEM is used to examine consumption, investment, production, and trade decisions in the whole economy. It captures the interaction among industries and regions, as well as implications for changes in producer prices, relative final prices, and income. It also factors in government fiscal balances, monetary flows, and interest and exchange rates. The model is based on detailed North American Industry Classification goods-producing industries and sectoral-level service producing industries (approximately 107 for each region, including aggregations).

Industry concepts include gross value added, gross output, investment, employment, and interregional trade. The macroeconomic model projects the direct impacts on the economy’s final demand, output, employment, price formation, and sectoral income that result from various policy choices. These permit an estimation of the effect of climate change policy and related impacts on the national economy.

A4.6.4 LULUCF projections methodology

This section describes reporting, projecting, and accounting for emissions and removals occurring in the LULUCF sector in Canada. Table 4 outlines the scope of LULUCF reporting included in Canada's NIR, as well as the scope of LULUCF accounting included in Canada's 2030 emissions reduction targets.

Previous technical reviews of Canada's National Communications and Biennial Reports noted that the information required to understand the LULUCF contribution to targets was spread over different sections of the National Communication, Biennial Report, and NIR. This section, therefore, aims to include all relevant information on LULUCF reporting, projecting, and accounting in one place, to provide a clear and

comprehensive picture of Canada's LULUCF sector. In addition, more detailed information about the models used to derive the projections is also available in this section.

Table 4: Scope of LULUCF reporting and accounting

	Reporting	**Accounting**
Purpose	**National GHG Inventory Report**	**2030 Emissions Reductions Target***
Scope	Forest Land	Forest Land
	Cropland	Cropland
	Grassland	Grassland
	Wetlands	Wetlands
	Settlements	Settlements
	Harvested Wood Products	Harvested Wood Products
	Other Lands	

Note: * Consistent with its NDC for 2030 under the Paris Agreement, Canada intends to account for LULUCF in 2030. However, projections are not yet available for all subsectors. The scope of accounting for this report therefore reflects the current availability of data (see Sections A4.6.4 and A4.6.4.4).

A4.6.4.1 General accounting approach

In its 2012 submission to the UNFCCC, Canada stated its intent to include the LULUCF sector in its accounting of GHG emissions towards its 2020 target, noting that emissions and related removals resulting from natural disturbances would be excluded from the accounting. As described in Section A4.6.4.3, since Canada's Fourth Biennial Report, submitted in December 2019, Canada has implemented an approach for estimating anthropogenic emissions and removals from FLFL where emissions and removals from forest stands dominated by the impacts of natural disturbances are now tracked separately in the NIR. Canada's enhanced NDC (July 2021) reiterated this approach to addressing emissions and subsequent removals from natural disturbances on managed lands.

When accounting for the LULUCF sector, Canada uses the UNFCCC GHG inventory categories and accounting approaches consistent with those for non-LULUCF sectors, wherever possible. As a result, for each LULUCF subsector apart from FLFL and the HWP associated with FLFL, the accounting contribution is determined as the difference between the net emissions in a given year and the net emissions in the base year (2005). This is often referred to as the “Net-net” approach.

Given the unique structure of FLFL, which is significantly impacted by the effects of past management and natural disturbances (such as the age-class legacy effect), Canada uses the RL for FLFL and the HWP obtained from it. This approach is internationally agreed upon and a scientifically credible way to focus on changes in human management over time and remove the age-class legacy effect in this complex LULUCF subsector.

In 2022, Canada began a review of its LULUCF accounting approach. This review is complete and is discussed in more detail below.

Afforested land is initially categorized in the GHG inventory as land converted to forest land (LFL) and is thus accounted for using the Net-net approach. After 20 years, this land is recategorized in the GHG inventory as FLFL and previously was accounted for using the RL approach. This recategorization of afforested land and the resulting change in accounting approach introduced inconsistency in the treatment of afforested land because the accounting approach changed simply depending on the age of the trees. Since its 2021 Emissions Projections Report, Canada began using a Net-net accounting for afforested land irrespective of whether the land is categorized as LFL or FLFL to ensure consistency in accounting for afforested land.

In this report, projections of the LULUCF accounting contribution are included for those LULUCF subsectors or parts of subsectors for which emission projections are currently available (Section A4.3.2.10). These subsectors and parts of subsectors represent most of the estimated historical emissions and removals from LULUCF reported in NIR2024. Further work is needed to develop projections for remaining LULUCF subsectors based on sound methodologies and an acceptable level of understanding of the impact of the most important drivers of change.

A4.6.4.2 Review of LULUCF GHG accounting approach

NRCan and ECCC conducted a review of Canada's GHG accounting approach for the LULUCF sector, with specific focus on FLFL and associated HWP accounting. As part of this process, the departments sought input from experts and stakeholders from December 2023 to June 2024 to inform Canada's decision on its LULUCF accounting approach.

NRCan and ECCC took a principle-based approach to guide the evaluation of accounting approaches for Canada's LULUCF sector. The departments proposed five principles that Canada's LULUCF accounting approach should embody:

1. Ensure LULUCF accounting estimates are comparable;
2. Minimize variability in the LULUCF accounting contribution;
3. Ensure alignment with the international community;
4. Be openly and clearly communicated; and,
5. Ensure Canada's calculation of progress towards its GHG targets is scientifically credible.

As part of the review, NRCan and ECCC considered three potential options for Canada's LULUCF emissions accounting approach:

1. Maintaining the current approach that applies reference level accounting to FLFL and the associated HWP and Net-net accounting to all other land categories;
2. Adopting the Net-net approach for the entire LULUCF sector; and,
3. No LULUCF-specific accounting rules applied, thus treating the LULUCF sector like all other sectors in Canada's quantified economy-wide GHG emissions reduction targets.

In evaluating the accounting options, participants provided feedback for the potential benefits and drawbacks associated with each accounting approach, considering the proposed guiding principles and the impacts on their sectors/jurisdictions. Overall, participants were divided in their support for either the current approach or the option to have no LULUCF-specific accounting rules applied, with a majority supporting the current approach. Many participants found the accounting options to be encompassing of all feasible options, though some participants proposed alternative options.

Based on internal analysis and feedback received from stakeholders and experts, the Government of Canada has made the decision to proceed with maintaining the current approach that applies reference level accounting to FLFL and the associated HWP and Net-net accounting to all other land categories, while continuing to monitor international and scientific developments related to LULUCF accounting. A critical factor in the decision was the RL approach's ability to address the forest age-class legacy effect and provide a scientifically credible baseline against which the effects of human actions can be assessed. In addition, the RL approach allows for a focus on the impacts of recent human actions and therefore enables a clearer interpretation of variability in the FLFL and associated HWP accounting contribution from year to year.

A4.6.4.3 Reference level accounting approach from FLFL and associated HWP

Canada estimates the contribution from FLFL (excluding afforested land) and associated HWP using the RL approach. This approach first involves defining the RL and then calculating the difference to historical or projected emissions. The RL is defined as a projection of emissions and removals from FLFL and associated HWP that reflects a continuation of historical forest management policies and practices, while historical or projected emissions are based on recent or projected activity data (when historical data are not yet available). For any given year, the difference between the two (specifically the accounting contribution) reflects the impact of actual management on emissions relative to the impact of the management assumed in the RL. In this way, the RL approach focuses accounting on the impacts of recent human activities, including changes to harvest rates from industrial logging, in line with the principles of accounting agreed under the UNFCCC.

The RL approach used is consistent with the methodology used in Canada's First, Fourth, and Fifth Biennial Reports, as well as Canada's enhanced NDC. The approach is also consistent with Canada's Forest Management Reference Levels, which was constructed according to UNFCCC guidance, submitted to the UNFCCC in 2011, and assessed by international review experts in 2012. Canada's RL scenario is recalculated annually to ensure consistency with the historical data used in Canada's latest available NIR.

For this report, Canada divides its RL approach into two periods: 2010 to 2020 and 2021 to 2040. The first RL period is defined based on average harvest activity from the 1990 to 2009 period while the second RL period uses average activity from the 1990 to 2016 period. This approach is consistent with international guidance for RL construction in which a "policy cut-off date" is used to ensure that only existing and implemented policies are reflected in the RL. For the first RL period, the agreed date is 2009 (as reference levels were first constructed and submitted in 2011). For the second RL period, Canada uses a cut-off date of 2016 as this was the year in which Canada ratified the Paris Agreement. Therefore, the first period (2010 to 2020) reflects changes implemented after 2009 and the second period (2021 to 2040) reflects changes implemented after 2016.

In defining its RL approach, Canada also considers assumptions for future harvest volumes over the two RL periods, consistent with policies and practices in place before the cut-off dates. The amount of allowable harvest volumes in Canada for any given year, as defined by the annual allowable cut (AAC), is significantly affected by the impacts of past disturbances, most notably mountain pine beetle outbreaks in western Canada and wildfire. If projected RL harvest volumes exceed what is determined to be a sustainable level of harvest, a "sustainability safeguard" will be applied to lower any future RL harvest value below the AAC. This is a conservative measure that avoids overestimating the accounting contribution of policy changes implemented after the cut-off date.

HWP from FLFL are included using the assumption that the HWP pool starts in 1900 and that emissions from the HWP pool are accounted using the IPCC Simple Decay approach (that is, the same as is used in the NIR). The future shares of HWP in each product category are assumed to be the same as those in the recent historical period (2000 to 2009 for the first RL period and 2007 to 2016 for the second RL period).

A4.6.4.4 Forest land

Canada's National Forest Carbon Monitoring Accounting and Reporting System (NFCMARS) builds on information in Canada's National Forest Inventory and on additional provincial and territorial forest inventory information. NRCan developed and maintains the Carbon Budget Model of the Canadian Forest Sector (CBM-CFS3) as the core model of NFCMARS. CBM-CFS3 is a Tier 3 forest carbon dynamics estimation tool that is fully consistent with the IPCC inventory guidelines.

NFCMARS provides annual estimates of GHG emissions and removals as affected by forest management, natural disturbances, and land-use change. NRCan, in collaboration with the Canadian Space Agency, uses remote sensing and other data to monitor the area annually disturbed by wildfires, and maintains a deforestation monitoring program to estimate the area annually affected by conversion of forest to non-forest land uses. NFCMARS has been in place since 2006 and is described in detail in NIR2024.

NFCMARS is used to produce the projections shown here, using assumptions about human activities in the future. This ensures that the projections are fully consistent with historical emission estimates. For FLFL, projections are based on the same methodologies used to produce Canada's FLFL estimates for NIR2024. Harvesting is the human activity with the greatest impact on this subsector. Canada has based its projections on the latest available projected harvest estimates from provincial and territorial governments. Given the high variability of natural disturbances from year to year, projections for 2023 and onward assume that wildfire occurs at the same average annual rate of area burned as in 1990 to 2022. Emissions and removals from severe natural disturbances and subsequent regrowth are tracked separately to support a focused view on impacts from human activities.

For LFL, projections are based on average historical rates, consistent with estimates reported in the NIR2024, and include the projected GHG impact of afforestation from the 2 Billion Trees program. However, as LFL activity data are not available from 2019 onward, LFL projections are based on a conservative assumption of zero afforestation from 2019 onward with the exception of afforestation funded under the 2 Billion Trees Program. This assumption is considered to be conservative because it underestimates LFL removals from 2019 onward, which in turn underestimates the contribution toward lowering Canada's GHG emissions for 2030 and 2040. As planned improvements to LFL estimates are implemented over the coming years and reflected in future NIRs, these projections are expected to change.

Wetlands subject to forest management practices are not included in the Forest Land subsector. Work is ongoing to develop suitable activity data and associated estimates.

A4.6.4.5 Cropland

AAFC generates GHG estimates for CLCL by using two models: the Canadian Regional Agricultural Model (CRAM) and the Canadian Agricultural Greenhouse Gas Monitoring Accounting and Reporting System (CanAG-MARS). CRAM is used to estimate the resource use patterns in the Agriculture sector for projections; these resource use patterns are fed into CanAG-MARS to generate emissions and removals estimates for CLCL. More details on CRAM and CanAG-MARS are presented in A4.6.4.13 below.

CRAM is a static partial equilibrium economic model that provides a detailed characterization of agriculture activities in Canada. CRAM's features include coverage of all major cropping activities, livestock production and some processing, detailed provincial and/or sub-provincial breakdown of activities and a detailed breakdown of cropping production practices including choice of tillage regime, use of summer fallow, and stubble. CRAM is calibrated to the 2016 Census of Agriculture and all resource use patterns are aligned to the census. As CRAM is a static model, crop and livestock production estimates from AAFC's Medium Term Outlook are used to set future resource use patterns for 2030 and 2040.

The amount of organic carbon retained in soil represents the balance between the rate of primary production (carbon transfer from the atmosphere to the soil) and soil organic carbon decomposition (carbon transfer from the soil to the atmosphere). How the soil is managed can determine whether the amount of organic carbon stored in soil is increasing or decreasing. The estimation procedure is based on the premise that primary production and changes in soil management influence the rate of soil carbon gains or losses in soils over time.

Carbon emissions and removals from changes in soil management on mineral soils are estimated by applying country-specific, spatially disaggregated carbon emission and removal factors multiplied by the relevant area of land that undergoes a management change. The carbon factor represents the rate of change in soil carbon per unit area for each land management change (LMC) as a function of time since the LMC. Carbon input from primary production is measured using information on crop productivity and crop residue management and information on carbon retention from the application of manure to annual cropland. The impact of crop production and crop residue management on soil organic carbon is estimated using the IPCC Tier 2 Steady State approach as described in the 2019 refinement to the 2006 IPCC guidelines for national greenhouse gas inventories. Regional factors representing the annual change in soil carbon per unit area are generated and applied to the total area of land under annual cropland management. The impact of manure application to

annual cropland is estimated using manure-induced carbon retention coefficients. These coefficients represent the average fraction of carbon input from manure that is retained in the soil.

For CLCL, projections were based on the 2020, 2030, 2035, and 2040 resource use patterns generated within CRAM. Crop yields were set to the five-year average (2018 to 2022) and remained constant over the projection period. These resource use patterns were integrated with the activity data used by CanAG-MARS to generate the emission and removal estimates reported in NIR2024. The consistency in data inputs ensures that the approach used to generate the projection estimates was consistent with that used in the NIR.

The historical CLCL emissions in Table 46 include the emission and removal of CO_2 each year by woody biomass, values provided by ECCC's Science and Technology Branch. Since no methodology has been developed to date to make projections for emissions and removals from woody biomass on CLCL, this removal is excluded from the values provided in Table 47 to avoid a methodological artifact when estimating the accounting contribution from CLCL.

There were recalculations for CLCL since NC8/BR5 that had a very minor impact (0.03 Mt CO_2 eq) in 2005 and a significant upward recalculation of 6.7 Mt CO_2 eq in 2020 due to alignment with the 2021 Census. These recalculations are described in detail in Chapter 6, Section 6.5.1.1 of NIR2024.

Projected emissions from forest land converted to cropland (LCL) are provided by ECCC's Science and Technology Branch as part of estimates for forest land converted to other subsectors (see discussion of forest conversion projections below). No methodology has been developed yet to make projections for the conversion of Grassland to Cropland.

Wetlands subject to agricultural management practices and conversion of wetlands to cropland are not reported in the historical estimates in the Cropland subsector. Work is ongoing to develop suitable activity data and associated estimates.

A4.6.4.6 Grassland

Little information is available on management practices on Canadian agricultural grassland and there is no evidence to suggest that current management practices are degrading grasslands and as such it is assumed that grasslands remain in a steady state. Emissions of CH_4 and N_2O from prescribed burning in managed grassland are reported in Canada's NIR. To date, no methodology has been developed to project GHG emissions from grassland remaining grassland (GLGL).

A4.6.4.7 Wetlands

The Wetlands category in Canada's NIR is restricted to those wetlands that are not already in the Forest Land, Cropland or Grassland categories. Fluxes of CO_2, CH_4 and N_2O from extracted peat, peatlands drained for peat extraction, rewetted peatlands, and flooded lands (hydroelectric reservoirs) are reported in Canada's NIR. To date, no methodology has been developed to project fluxes from extracted peat, peatland drainage and rewetting or from the surface of existing hydroelectric reservoirs. However, projected emissions of CO_2 from forest land converted to wetlands (LWL) (the creation of new hydroelectric reservoirs) are provided by ECCC's Science and Technology Branch as part of estimates for forest land converted to other subsectors (see discussion of forest conversion projections below).

A4.6.4.8 Settlements

The drivers of urban tree cover change are currently not sufficiently well understood to provide reliable projections of the resulting emissions and removals. However, projected impact of urban tree planting from the 2 Billion Trees program is reflected in Table 47. Projected emissions from forest land converted to settlements (LSL) are provided by ECCC's Science and Technology Branch as part of estimates for forest land converted to other subsectors (see discussion of forest conversion projections below).

A4.6.4.9 Other land

As defined in Section 6.2 of NIR2024, other land comprises areas of rock, ice or bare soil, and all land areas that do not fall into any of the other five subsectors (e.g., A to E in Table 46 and Table 47), and which are classified as unmanaged. Currently, emissions from the conversion of Other Land to flooded land and peat extraction are reported under the Wetlands category. Emissions for other land remaining other land are not currently estimated (hence the use of "NE" in the tables), whereas the conversion from other subsectors to other land does not occur in Canada (hence the use of "NO" in the tables).

A4.6.4.10 Harvested wood products

Canada has developed a country-specific model, the National Forest Carbon Monitoring, Accounting and Reporting System for Harvested Wood Products, to monitor and quantify the end use of carbon from domestic harvest. The HWP category is reported following the Simple Decay approach, as described in the 2006 IPCC Guidelines. The approach is similar to the Production Approach but differs in that the HWP pool is treated as a carbon transfer related to forest harvest proportion estimates and therefore does not assume instant oxidation of wood in the year of harvest (for further detail see NIR2024, Annex 3.5.3).

This category reports emissions and transfers to the waste stream after the use and disposal of HWP manufactured from wood coming from forest harvest on FLFL (Section A4.6.4.4) and from forest conversion (Section A4.6.4.11) in Canada, consumed either domestically or elsewhere in the world.

Emissions from HWP are projected to increase slightly over the projection period resulting from increasing projected harvest rates over time. Projected emissions from HWP use the same assumptions as used for HWP estimates for NIR2024, for example that the pool of HWP from FLFL starts in 1900 (1990 for HWP from forest conversion). These projections also reflect assumptions about future harvests (as provided by provincial and territorial governments), future forest conversion rates, and future end-uses of the harvest. The latter are based on the most recent annual (2022) share of harvest in each of the four HWP from FLFL commodity categories: sawnwood, panels, pulp and paper, and other products. HWP from forest conversion commodity categories are milling waste, pulpwood, and firewood. It is assumed that using the most recent shares will reflect important emerging trends in wood product use, e.g., the decline in the use of some types of paper.

A4.6.4.11 Forest land converted to other land categories – forest conversion

Forest conversion is not a LULUCF reporting category in the NIR, because it overlaps with the reporting subsectors of CLCL, LCL, wetlands remaining wetlands (WLWL), LWL, LSL, and HWP. Forest conversion is nevertheless reported as an information item in Canada's NIR and is therefore reported as an information item in this section. For this report, Forest Conversion includes all immediate and residual emissions from FL converted to CL, WL, and SL and from the disposal of HWP resulting from these forest conversion activities (Table 46 and Table 47).

Historical estimates for forest conversion are developed based on an earth observation sampling approach with resulting emission impacts calculated using NRCan's Carbon Budget Model and ECCC's Peat-Extraction and Hydroelectric Reservoir models. Forest conversion estimates consider activity extending from 1970 to 2022 and were developed by driver and end land use categories (Cropland, Wetlands, and Settlements).

Projected forest conversion area estimates are developed by NRCan based on a business-as-usual scenario of forest conversion activity for the 2023 to 2050 period, using the best available knowledge of drivers, policies and practices. Projections of emissions use an empirical model; model parameters were derived by driver and ecological region based on the relationship between areas converted and resulting emissions as reported in the most recent NIR submission. All emissions associated with the use and disposal of HWP manufactured from wood coming from forest conversion are derived using the IPCC Simple Decay approach (discussion of HWP in Section A4.6.4.10).

A4.6.4.12 Carbon budget model of the Canadian forest sector

CBM-CFS3 is an aspatial, stand- and landscape-level modelling framework used for international reporting of the forest carbon balance of Canada's managed forest. It is the central component of Canada's NFCMARS.

The CBM-CFS3 uses forest management information provided by users, to calculate forest carbon stocks and stock changes for monitoring or projection purposes. Tools in the model assist with importing required data from user-developed data files specifically formatted for the CBM-CFS3, or from common timber supply models such as the Remsoft Spatial Planning System. Users of the model can create, simulate, and compare various forest management scenarios to assess impacts on carbon. By considering the effects of planned activities on forest carbon stocks and stock changes, reductions in GHG emissions and increases in carbon sequestration and storage are possible.

The CBM-CFS3 simulates the dynamics of all forest carbon stocks required by the UNFCCC:

- aboveground biomass;
- belowground biomass;
- litter;
- dead wood; and,
- soil organic carbon.

The CBM-CFS3 complies with carbon estimation methods outlined in the 2003 IPCC Good Practice Guidance for Land Use, Land-Use Change and Forestry, and the 2006 IPCC Guidelines for National Greenhouse Gas Inventories.

A4.6.4.13 Canadian regional agricultural model (CRAM)

CRAM is a sectoral (that is, partial) equilibrium static model for Canadian agriculture implemented using the General Algebraic Modeling System. It is a non-linear optimization model maximizing producer plus consumer surplus less transport costs. Through a calibration process, the model calibrates exactly to production levels observed in the Census of Agriculture. The model currently reflects the baseline conditions for 2016. The model is disaggregated across both commodities and space (55 crop regions and 10 livestock regions).

CRAM covers all major production activities in the agricultural sector, including:

- Crop production of all major grains and oilseeds, special crops, forage production and pasture use.
- Livestock, including beef and hogs, dairy, and poultry production.
- Some processing activities such as biofuel, oil crushing, red meat slaughter, dairy products.
- Potato production.

Some of the key features in CRAM:

- Can provide a very detailed snapshot of before and after shocks to the model.
- Covers both land and water resources and can provide details on agri-environmental impacts of agricultural production practices.
- Can provide a detailed regional breakdown of agricultural production allowing for distributional impacts to be examined (that is, interprovincial trade).
- Offers considerable flexibility for modelling value chains specific to Canadian agriculture.

A4.6.4.14 Canadian Agricultural Greenhouse Gas Monitoring Accounting and Reporting System (CanAG-MARS)

CanAG-MARS reports on GHG sources and sinks accounting for the effects of organic carbon input and changes in land use and land management practices in Canada's agricultural sector. The estimation procedure follows a Tier 2 methodology under the 2006 IPCC Guidelines and is described in detail in Annex 3.5 of NIR2024.

A4.6.4.15 Nature-based climate solutions and agriculture measures

For NSCSF (Round 1) activities GHG fluxes were estimated as net changes in carbon stocks over time using the guidelines established by the IPCC and NIR data or variations on these methodologies when source specific methodologies were not available. Net carbon stock change approach to estimate CO_2 emissions and removals is used because changes in ecosystem carbon stocks are predominately through CO_2 exchange between the land surface and the atmosphere, specifically increases in total carbon stocks over time remove CO_2 from the atmosphere while decreases in total carbon stocks lead to CO_2 emissions to the atmosphere (IPCC, 2006). Variations in carbon pools were estimated for biomass, dead organic matter, and soils. Estimates for the extension of these activities in Round 2 are assumed to be the same as Round 1.

For programs listed under "agriculture measures," GHG abatement cost information for individual beneficial management practices (BMPs) are drawn from the studies by Nature United, Farmers for Climate Solutions, and program performance data whenever possible. Other required information, such as spending allocations, emissions factors, average project costs and maximum mitigation potentials, are drawn from the same studies along with AAFC scientists, expert opinion, and available program data. Program parameters such as administrative costs and cost-share ratios were also considered when applicable.

GHG emissions reductions from non-nitrogen management BMPs are considered permanent as these practices may be costly to revert due to large capital investments and/or farmers are expected to see definite agronomic gains within the span of the program, based on available evidence from the economic literature. Thus, these BMPs are assumed to continue to be adopted on farm after the end of the program. For nitrogen management BMPs in certain programs, it is assumed that farmers who experience an increase in net profit from BMP adoption would continue to employ the practice even after funding ceases, while farmers who experience a drop in profits (not including the program funding received) would be assumed to revert to previous practices once program funding is no longer available. Therefore, only some of emission reductions are assumed to be permanent ongoing emission reductions, while the other emission reductions are assumed to continue only for so long as program funding continues to support them. These practices are considered reversible (since they do not require capital investment and are costless for farmers to revert to previous practices) unless strong scientific peer-reviewed evidence of economic benefits to assume full permanence becomes available. The GHG reduction estimates in Table 45 include permanent reductions only.

The estimates for the reductions from some agriculture measures have been revised since Canada's NC8/BR5. In addition to updated GWPs (for N_2O and CH_4), there have been changes in the eligible practices under some programs compared to when the estimates were initially developed, with more funds being dedicated to nitrogen management. Since nitrogen management tends to higher GHG abatement cost, this shift in funding reduces the total emission reduction estimates, but increases the fertilizer-related reductions, closing the gap between funded reductions and the fertilizer target (30% reduction from 2020 level).

A4.6.5 Air pollutant emissions projections modelling

ECCC has developed and published air pollutants emissions projections since 2018. Those projections over the following pollutants:

- Carbon Monoxide;
- Mercury;
- Ammonia;
- Nitrogen Oxides;
- Sulphur Oxides;
- Particulate Matters (total particulate matter, particulate matter less than or equal to 10 microns, and Particulate matter less than or equal to 2.5 microns);
- Volatile Organic Compounds; and,
- Black Carbon.

The projections are updated annually to reflect the latest changes in assumptions in key economic drivers such as oil and gas production and macroeconomic indicators (see Section A4.6.1 for more information about these indicators).

Air pollutant emission projections are generated using the E3MC model (see Section A4.6.2) using the following process.

1. Historical air pollutant emissions data are sourced from APEI2024 and *Canada's Black Carbon Inventory Report 2024*.
2. Processing of the historical data is performed to map the historical emissions data to E3MC's economic sectors and fuels. This mapping is conducted using available information on pollutant emissions by fuel.
3. Emissions drivers are identified and calculated for each economic sector and pollutant covered by the model (see additional details below).
    a. Combustion/energy-related emissions: emissions are driven by energy use by fuel for all sectors.
    b. Non-combustion/process emissions: emissions are driven by economic drivers, which vary by sector.
        i. Buildings: Population (residential) and floor space (commercial)
        ii. Heavy Industry and light manufacturing: Gross output
        iii. Oil and Gas: Production
        iv. Transportation: Population (passenger), personal income (air passenger), gross regional product (air freight, freight, residential and commercial off-road)
        v. Waste: Number of households
        vi. Black Carbon emissions are calculated as a ratio of $PM_{2.5}$ emissions.
4. Historical emission coefficients (the ratio of emissions over driver) are calculated for each combination of pollutant, fuel, sector, and province.
5. Air pollutant emissions are projected using the last historical year's emission coefficient multiplied by the projected driver for each projection year and for each combination of fuel, sector, and province/territory.
6. Federal, provincial, and territorial air pollution regulations and policies that are either fully funded or legislated are included in the WM scenario.
    a. Estimated impacts of measures that directly target air pollutant emissions will be reflected in the projections based on their respective design.
    b. Indirect impacts of GHG measures on AP emissions will also be reflected in the projections (such as changes in energy efficiency or fuel usage).
7. Federal, provincial, and territorial air pollution regulations and policies that have been announced but have not been fully implemented will also be included in the WAM scenario.

A4.6.6 Changes in methodology

Since the release of NC8/BR5, several revisions have been made that impact the new projections. This section discusses notable changes to historical data, policy coverage, and methods.

A4.6.6.1 Historical data revisions

Table 5: Historical data revisions

Sector	Changes between Canada's NC8/BR5 and 2023 Emissions Projections Report	Changes between Canada's 2023 Emissions Projections Report and BTR1
Cross-Sectoral	*Canada's National Inventory Report 1990-2021: Greenhouse Gas Sources and Sinks in Canada 2023* (NIR2023) introduced several changes: • In NIR2023, a reallocation of fuel between on-road and off-road use has shifted fuel demand within Transportation from freight to off-road subsector and into other sectors. While this minimally affects historical GHG emissions, it impacts projected air pollutant and GHG emissions since on-road sectors face stricter emissions regulations than off-road. • Revised diesel demand data from Statistics Canada, including newly estimated biodiesel volumes, lowered historical diesel demand, primarily affecting Freight Transportation emissions. • A new category for fugitive emissions from natural gas end users added about 2 Mt of emissions in 2022, with the Buildings sector being the most impacted.	• NIR2024 includes the implementation of the AR5 GWP values, as opposed to the GWP values from Fourth Assessment Report which were used in previous NIRs. • Significant revisions to CH_4 measurement, now using atmospheric data, have increased historical CH_4 emissions.
Oil and Gas	• A revision to fugitive emission methodology lowered emissions by about 2 Mt (2010 to 2019), and a change in the emissions factor for petroleum coke affected all sectors in New Brunswick.	• Historical Oil and Gas emissions have risen throughout the period, with a 26 Mt increase in 2020. Approximately 55% of this increase is due to revised measurement methods for historical CH_4 emissions and 45% is due to changes to GWPs.
Electricity	• Historical combustion emissions for 2020 were revised downwards by 2.5 Mt, with 2 Mt from natural gas and 0.5 Mt from petroleum coke.	• Historical emissions for 2020 have been increased by 0.5 Mt, increased by 0.7 Mt from coal and decreased by 0.2 Mt for natural gas.
Transportation	• Reallocation of emissions in NIR revisions as well as the revised diesel demand resulted an emissions reduction of 16 Mt (2020). • Reductions were realized predominately by on-road fright and balanced by an increase in the off-road sector.	• Not applicable (NA)
Heavy Industry	• Historical emissions in heavy industry increased by an average of 1.7 Mt between 2010 and 2020 due to changes in on-road and off-road methodology and unintentional fugitive emissions from natural gas off-road equipment.	• NA
Buildings	• NA	• Historical emissions in 2021 have been revised downwards by 2 Mt due to changes in commercial buildings emissions.

Sector	Changes between Canada's NC8/BR5 and 2023 Emissions Projections Report	Changes between Canada's 2023 Emissions Projections Report and BTR1
Waste and others	• A revised landfill methodology has historically reduced emissions by 5 Mt to 7 Mt, which, all things equal, similarly lowers emissions projections.	• NA
Agriculture	• NA	• GWP Update (N_2O GWP went down, lowering emissions).
LULUCF	• Recalculations in the forest land and cropland categories, including corrections to activity data and alignment with the 2021 Census of Agriculture, increased net removals by 1 Mt for 1990, 1.3 Mt for 2005, and 6.6 Mt for 2020. For more details, see Sections 6.3 to 6.9 and Tables 6–3 and 8–4 of NIR2023.	• A review of the harvested landbase reduced the managed forest area and decreased carbon removals, shifting LULUCF from a net sink to a net source (1990 to 2021). This change has only a small impact on the 2030 accounting contribution.
Air Pollutants	• The 2023 Air Pollutant Emissions Inventory (APEI2023) was refined with improved methodologies, emission factors, and updated statistical information. Adjustments were made for multiple pollutants across various emission sources, including: ○ Ore and Mineral Industries ○ Oil and Gas Industry ○ Manufacturing ○ Transportation and Mobile Equipment ○ Agriculture ○ Commercial/Residential/Institutional sources ○ Incineration and Waste • For detailed impacts, refer to Annex 3 of the APEI2023 report.	• The APEI2024 was updated with improved estimation methodologies, statistics and more recent and appropriate emission factors. Notable adjustments were made to ammonia and particulate matter emissions from various sources, including: ○ Agriculture ○ Incineration and Waste ○ Construction and Road Dust • For detailed impacts, refer to Annex 3 of the APEI2024 report.

A4.6.6.2 Policy revisions

The following policies have been integrated into the projections since the release of the NC8/BR5 projections. Please note that the full list of policies and measures modelled in the WM and WAM scenarios can be found in Section A4.6.7.

Table 6: Policy revisions

Sector	Changes between NC8/BR5 and Canada's 2023 Emissions Projections Report	Changes between Canada's 2023 Emissions Projections Report and BTR1

Cross-Sectoral	• The federal carbon pricing backstop has been replaced with provincial and territorial systems in jurisdictions where these systems have been legislated. This includes:
	  ○ Ontario's Emissions Performance Standards (EPS) program in 2022.
	  ○ Alberta's Technology, Innovation and Emissions Reduction (TIER) Regulatory System with amendments in 2023.
	  ○ New Brunswick's OBPS in 2021.
	  ○ Saskatchewan's output-based performance standards system in 2022.
	  ○ Newfoundland and Labrador's performance standards system for large industrial facilities and large-scale electricity generation.
	  ○ Northwest Territories' Carbon Tax.
	  ○ British Columbia's Carbon Tax.
		• The WM scenario now includes Newfoundland and Labrador's Green Technology Tax Credit.
		• In the WAM scenario, updated modelling of the CGF to include updated proxies for energy efficiency and electrification.
		• In the WAM scenario, updated modelling of Carbon Revenue Returns to include updated proxies for energy efficiency and electrification.

Oil and Gas	• NA	• The OGEC has been added into the WAM scenario. • The start year of the Strengthened Methane Regulations is now 2027 rather than 2026. • The inclusion of the Alberta Carbon Capture Incentive Program in the WAM scenario.

Electricity	• The ITCs from Budget 2022, the 2022 Fall Economic Statement, and Budget 2023 were modelled in the WM scenario.
	  ○ This includes the CCUS, Clean Technology and Clean Electricity ITCs (the Atlantic ITC was already included).
	• The modelling of the Clean Electricity Regulations was reviewed to introduce new ways for power plants to meet the emission standards.
	  ○ To comply with the regulations, power plants can now be retired, capture carbon emissions, reduce their annual operating time and blend fossil fuels with non-emitting fuels.
		• Revisions were made to the modelling of the Clean Electricity Regulations in the WAM scenario to reflect the latest proposed changes to the regulation.

Sector	Changes between NC8/BR5 and Canada's 2023 Emissions Projections Report	Changes between Canada's 2023 Emissions Projections Report and BTR1
Transportation	• The Green Freight Program was moved into the WM scenario • Increased sustainable aviation fuel blending was added to the WAM scenario. • Air and marine fuels were added to British Columbia's Low Carbon Fuel Standard (LCFS) in the WM Scenario.	• Canada's Electric Vehicle Availability Standard was moved from the WAM to the WM scenario. • A policy on the electrification of lawn and garden equipment was removed from the WAM scenario. • A policy on sustainable aviation fuel blending was removed from the WAM scenario. • Science-Based Targets Initiative targeting voluntary reductions in the rail sector was revised targeting greater emissions reductions in the WM scenario. • ZEV sales targets in the WM scenario were revised to align with British Columbia's accelerated targets under the Zero-Emission Vehicles Act.
Heavy Industry	• Revisions were made to the SIF-NZA program, hydrogen strategy, and GHG emissions reductions from new projects. • The clean hydrogen ITC was added to the WM scenario. • Modelling of the hydrogen strategy in the WAM scenario lowered the amount of assumed blending in marketable natural gas from 7.5% to 0.45% by energy content. • The SIF-NZA program modelling in WAM also included adjusted proxies for clean fuels like renewable natural gas (RNG), reflecting energy efficiency gains and solvent adoption in SAGD oil sands. • Moreover, the WAM scenario included the addition of a proxy which assumed increasing clean hydrogen feedstock substitution where possible. • These hydrogen-related proxies stand for the potential of the hydrogen strategy. The modelling of the SIF-NZA program in the WAM scenario includes adjusted proxies as well as a new proxy designed to model the potential adoption of clean fuels such as RNG. The modified proxies are designed to reflect energy efficiency gains, and the adoption of solvents in SAGD oil sands in the Oil and Gas sector.	• Two SIF-NZA projects have been moved into the WM scenario: Dow Project (petrochemicals) and Heidelberg CCS project (cement) • In the WM scenario, the impact of several Québec based decarbonization programs have been remodelled to reflect the provincial government's updated 2024 to 2029 plan for a green economy 2030. • A natural gas demand side management program from FortisBC is now included in the WM scenario. • Electricity demand side management programs from BC Hydro and Québec Hydro are now included in the WM scenario. • In the WM scenario, updated modelling of Ontario's natural gas demand side management framework delivered by Enbridge. • In the WM scenario, updated modelling of electricity demand side management in Ontario. • In the WM scenario, updated modelling of the Energy Innovation Program (EIP) to include the potential impacts of projects funded to date. • In the WM scenario, updated modelling of the recapitalized Low Carbon Economy Fund (LCEF) to include projects funded to date through the Challenge Program and the updated impact of the Leadership Program. • In the WM scenario, updated modelling the conversion of two integrated Ontario iron and steel facilities (Algoma and Arcelor-Mittal Dofasco) from BF-BOF, EAF based, and natural gas based DRI and EAF to include the anticipated conversion timeline for the facilities.

Sector	Changes between NC8/BR5 and Canada's 2023 Emissions Projections Report	Changes between Canada's 2023 Emissions Projections Report and BTR1
		• In the WM scenario, updated modelling of the Air Products hydrogen production facility to include the anticipated production volumes from the facility. • In the WM scenario, updated modelling of the CleanBC Industry Fund to include projects funded to date. • The WM scenario now includes the impact of projects funded by Emissions Reductions Alberta in the cement and pulp and paper subsectors. • In the WAM scenario, updated modelling of the SIF-NZA program to include updated proxies for energy efficiency gains and electrification. The assumption of clean fuels adoption as a part of the SIF-NZA program has been removed from the WAM scenario. • The inclusion of the Alberta Carbon Capture Incentive Program in the WAM scenario.
Buildings	• The Oil to Heat Pump Affordability Program was added to the WM scenario. • Revisions to the Net-Zero Energy Ready Building Codes were implemented in the WAM scenario, based on estimated code adoption and compliance revisions nationwide.	• The Canada Green Buildings Strategy (CGBS) and The Highest Efficiency Standards for Space and Water Heating in British Columbia were added to the WAM scenario. • Electricity demand side management programs from BC Hydro and Québec Hydro are now included in the WM scenario. • In the WM scenario, the recapitalized LCEF was revised to include projects funded to date through the Challenge Program and the updated impact of the Leadership Program.
Waste and others	• The landfill gas collection efficiency values were updated in the WAM scenario to reflect current compliance deadlines.	• Revisions to collection efficiencies for the federal landfill methane regulations in the WAM scenario.
Agriculture	• GHG impacts of agriculture policies are revised as program data becomes available. See Section A4.6.4.15 or more information.	• Reductions from the Agricultural Clean Tech program are now included in the WM scenario.
LULUCF	• NA	• NA
Air Pollutants	• Ontario's SO_2 regulation for the nickel smelting and refining industry in the Sudbury area is incorporated into the WM scenario. • Ontario's Carbon Black Industry Standard, which will address SO_2 emissions from carbon black facilities in Sarnia and Hamilton, is included in the WAM scenario.	• The Regulations Amending the Products Containing Mercury were added into the WM scenario.

A4.6.6.3 Methodological revisions

Finally, the following improvements have been made to the modelling framework since the release of the NC8/BR5 projections.

Table 7: Methodological revisions

Sector	Changes between NC8/BR5 and Canada's 2023 Emissions Projections Report	Changes between Canada's 2023 Emissions Projections Report and BTR1
Cross-Sectoral	• All sectors are affected by a change in the calculation of fuel prices during the projection period. The impact of this change is most noticeable on the price of natural gas which is pushed upwards compared to what it would be without the change. This change to fuel prices lowers fuel demands and emissions.	• NA
Oil and Gas	• Improvements in estimating future natural gas prices for industrial consumers have increased the projected prices for all projection years. Previously, the Fuel Differential Charge was based on the last historical year's value, but now it is estimated using an average of the last five years. This change avoids anomalies from a single year but results in higher natural gas prices, encouraging industries to invest in more efficient technologies and alternative fuels. This effect is seen across all sectors consuming natural gas.	• Increase in projected gas production from the CER due to the new profitability model which accounts for NGL revenues.

CCS	• CCS reductions are higher throughout the projection period due to changes in CFR modelling.
	  ○ This is partly improvement on how we calculate EV CFR credits. Fewer CFR credits from EVs pushes up the credit price, placing a greater onus on CCS to balance CFR credit market supply and demand.
	  ○ Additionally, since the CFR policy only had an impact on oil consumed in Canada and the policy excludes oil exported internationally, the CFR policy in NC8/BR5 excluded some Oil and Gas sectors from coverage as its oil was viewed as primarily for export. For the WM scenario, sector coverage has been expanded to include all oil producing sectors, proportionately to the amount of oil produced that is consumed domestically. Therefore, there is a wider CFR policy coverage in the Oil and Gas sector for the WM scenario, leading to more CCS.
		• Updated CCS adoption cost curves.

Sector	Changes between NC8/BR5 and Canada's 2023 Emissions Projections Report	Changes between Canada's 2023 Emissions Projections Report and BTR1
Electricity	• Prior to NC8/BR5 projections, cogeneration consisted of both facility/unit-level and aggregated sector-level representation. This year the WM scenario has removed the aggregated sector-level cogeneration such that all cogeneration is now at the facility / unit-level.	• In the context of the Clean Electricity Regulations, many electricity sector parameters have been updated in both the WM and WAM scenarios (technology costs, future technology development rates, power plant operating parameters, etc.).

Transportation	• Air passenger projections rely on updated 2022 historical data and updated US Energy Information Administration fuel data.
	  ○ Activity levels are expected to return to normal by 2025 for Air Passenger.
	• For on-road passenger, updated vehicle population estimates, improved efficiency modelling, and vehicle kilometre accumulation rates has led to an adjustment of projected efficiencies under the LDV regulation.
	  ○ As a result, the projected new vehicle fleet is less efficient for years 2021 to 2026 relative to the NC8/BR5 projections. Higher sales of light-duty trucks in the historical data also contributes to a less efficient fleet, as are more trucks on the road for all projected years compared to previous projections.
	• Assumptions for ZEVs in the passenger sector rely on updated passenger vehicle sales projections.
	• Medium and heavy-duty vehicle assumptions rely on updated zero-emission sales projections.
	• CFR modelling improved with the air passenger sector now captured, an improved price trend, and increased biodiesel blending.
		• Improved methodology in modelling capital stock retirements.
		  ○ In each year new capital stock has its own vintage with respective device energy efficiency and retirement rate.
		  ○ Vintages retire a share of their capital stock each year based on their age and survival curve. New capital stock is added to replace retired capital stock and to satisfy growth in energy demand.
		  ○ This improvement allows for more accurate modelling of fleet turnover. As a result, policies such as zero-emission vehicle sales targets lead to increased reductions over the projected period.
		• Activity rates are now modelled in combination with new vintaging for the on-road freight sector. The share of total demand is now weighted following an activity curve based on capital age.
		• Assumptions for ZEVs in the passenger sector rely on updated passenger vehicle sales projections.
		• Medium and heavy-duty vehicle assumptions rely on updated zero-emission sales projections.

Heavy Industry	• The projections rely on updated data related to various hydrogen production technologies from the National Renewable Energy Laboratory's Hydrogen Analysis Production Models.	• Updated hydrogen production technology costs.
Buildings	• NA	• Vintaging: A similar approach to the transportation sector was in adopted in buildings where the model now tracks each year of buildings and their characteristics (process and device energy requirements), allowing for improved simulation of capital stock turnover.
Waste and others	• NA	• NA
Agriculture	• NA	• NA
LULUCF	• NA	• NA

Sector	Changes between NC8/BR5 and Canada's 2023 Emissions Projections Report	Changes between Canada's 2023 Emissions Projections Report and BTR1
Air Pollutants	• Air pollutant emissions projections now include emissions from inland waterway barges towed by other vessels, improving accuracy for the Transportation sector. • Additionally, a refined methodology for the Oil and Gas sector more accurately accounts for VOC emissions from specific activities, using data on active wells to better represent emissions.	• NA

A4.6.7 Policies and measures included in WM and WAM scenarios

This section lists the major federal, provincial, and territorial measures that are included in the WM and WAM scenarios. Also included in this section is a list of the emissions reductions targets announced by each province or territory.

A4.6.7.1 With measures scenario

Table 8: GHG policies and measures included in the WM scenario

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Agricultural Clean Technology Program	Canada	Agriculture	Agriculture	The ACT program ($441.4 million, 2021 to 2028) aims to create an enabling environment for the development and adoption of clean technology that will help drive the changes required to achieve a low-carbon economy and promote sustainable growth in Canada's agriculture and agri-food sector. The Adoption Stream supports the purchase and installation of commercially available clean technologies and processes with a priority given to those that show evidence of reducing GHG emissions and other environmental co-benefits. Modelled reductions are obtained through greater device efficiency in the Agriculture sector.	Efficiency	AGR-02, AGR-02.1. AGR-02.2
Canada Greener Homes Grant (CGHG)	Canada	Buildings	Energy - Stationary Combustion and Fugitive Sources	The CGHG provides up to 700,000 grants of up to $5,000 to help homeowners make energy efficient retrofits to their homes, such as better insulation. A list of eligible retrofits under the CGHG can be found online. To participate in the CGHG, homeowners must have a registered energy advisor complete pre- and post-retrofit EnerGuide evaluations of their home, for which they will be reimbursed up to a maximum of $600. The CGHG is funded to provide grants to homeowners for eligible retrofits and evaluations retroactive to Dec 2020, and until March 2027. Together, the grants and loans reduce the 2026 residential energy demand by approximately 40 PJ in comparison to a scenario without these policies.	Efficiency	BDG-04.1

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Equipment Standards	Canada	Buildings	Energy - Stationary Combustion and Fugitive Sources	Improve device efficiencies through standards and labelling programs. Standards that are more stringent and ENERGY STAR certification translate into higher device efficiency (sq. ft. per MMBtu). Energy demand is tuned by changing device efficiencies to match assumptions provided by NRCan about energy savings. ECCC combines reductions from the commercial and industrial sector. Fuel-specific targets are also modelled for electricity and natural gas (heating oil is combined with natural gas). In the residential sector, energy savings will be 59 PJ by 2030 and 115 PJ by 2040. In the commercial sector, energy demand will decrease by 31 PJ in 2030 and 53 PJ by 2040.	Efficiency	BDG-09.3
Oil to Heat Pump Affordability Program	Canada	Buildings	Energy - Stationary Combustion and Fugitive Sources	This policy simulates transition from oil to heat pumps in the residential sector and targets to low- to-median income Canadian households that currently heat their homes with oil. • Between 1 PJ and 4 PJ of cumulative annual energy savings by October 2028 (a range is used to account for different levels of oil-use reduction, for example, to account for various levels of partial and full transition from oil). • Between 0.1 Mt and 0.4 Mt of cumulative annual GHG emission reductions by October 2028 (estimated from energy savings/PJ calculations using standard emissions factors for home heating oil).	End-use fuel switching	BDG-04.4
Federal Backstop Carbon Pollution Pricing - Fuel Charge	Canada	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	Regulatory charge on fossil fuels like gasoline and natural gas, known as the fuel charge. It currently applies in Ontario, Manitoba, Yukon, Alberta, Saskatchewan, Nunavut, New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador. The federal fuel charge rates reflect an annual increase of \$15/t CO_2 eq after 2022 until the fuel charge rates reflect a carbon price of \$170/t CO_2 eq in 2030. Decisions have not been taken on the minimum carbon price for the post-2030 period. As a result, for the purpose of this modelling, the assumption is that the price remains at \$170/t CO_2 eq in nominal terms post-2030.	Behavioural Change; Efficiency; End-use fuel switching	ECW-01

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Federal Backstop Carbon Pollution Pricing - Output-Based Pricing System	Canada	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources; Industrial Processes	The OBPS is a performance-based emissions trading system for industry that puts a price incentive on all industrial emissions. For every tonne of excess emissions above a specified annual limit (based on emissions intensity output-based standards), facilities have to pay the carbon price or submit eligible credits. Facilities with emissions below the limit receive credits to sell or use for compliance. The federal government announced that the charge for excess emissions under the OBPS will increase annually by \$15/t CO_2 eq starting in 2023 until it reaches \$170/t CO_2 eq in 2030. Decisions have not been taken on the minimum carbon price for the post-2030 period. As a result, for the purpose of this modelling, the analysis assumes that the price remains at \$170/t CO_2 eq in nominal terms. The federal OBPS currently applies in Manitoba, Prince Edward Island, The Yukon, and Nunavut. The federal government will engage provinces, territories, and Indigenous organizations in an interim review of the benchmark by 2026, to confirm that benchmark criteria are sufficient to continue ensuring that pricing stringency is aligned across all carbon pricing systems in Canada.	Efficiency; Energy Source Decarbonization; End-use fuel switching; Non-energy Process Emission Reductions	ECW-01
Investment Tax Credit for Carbon Capture, Utilization, and Storage	Canada	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	50% tax credit for all non-Enhanced Oil Recovery Carbon Capture and Storage projects applied to capital costs.	Negative Emissions	ECW-15
Regulations Amending the Ozone-depleting Substances and Halocarbon Alternatives Regulations	Canada	Cross-Sectoral	Industrial Processes	The Regulations Amending the Ozone-depleting Substances and Halocarbon Alternatives Regulations (amendments) aim to reduce the supply of HFCs that enter Canada and the demand for HFCs in manufactured products, thereby averting future HFC releases to the environment. Modelled as a phase-down to 85% below 2018 HFC consumption baseline levels by 2036.	Energy Source Decarbonization	HVI-01
Clean Fuel Regulations	Canada	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	The CFR requires a reduction in life cycle emissions intensity of liquid fuels, primarily gasoline and diesel. Fuel distributors and refineries are the obligated parties. Credit generating pathways include biofuel blending, upstream intensity improvements, CCS (for domestically produced oil and petroleum products only) and EVs.	Energy Source Decarbonization	ECW-03
Clean Hydrogen Investment Tax Credit	Canada	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources; Industrial Processes; Transport	The Clean Hydrogen ITC, first introduced in the 2022 Fall Economic Statement will support between 15% and 40% of eligible projects' costs to produce clean hydrogen. It will be refundable, based on the life cycle carbon intensity of hydrogen. This policy is modelled through a discount on the capital costs of hydrogen production.	End-use fuel switching	ECW-07
Accelerating Industry Energy Management	Canada	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	This policy models Energy Star, ISO 50001 and SEP energy management program which are based on benchmarking, industry best practices and third-party certification to accelerate energy efficiency improvements. This is modelled as device energy retrofits which reduce energy requirements.	Efficiency	HVI-07

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Energy Innovation Program	Canada	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	The EIP advances clean energy technologies that will help Canada meet its climate change targets, while supporting the transition to a low-carbon economy. It funds research, development and demonstration projects, and other related scientific activities including industrial efficiency improvements, CCS, renewable fuels, storage technologies, and fugitive reductions. In industrial sectors, the impact of the program is modelled through assumed process efficiency increases in cement, as well as increased electrification in the petrochemicals and other chemicals sectors. In the buildings sector, emission reductions are achieved through increases in process efficiency.	Efficiency; Negative Emissions; Energy Source Decarbonization	ENB-02, ENB-02.1
Low Carbon Economy Fund - Leadership and Challenge Envelopes	Canada	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	The modelling of this policy excludes the Québec portion of the leadership envelope which serves to expand the province's ÉcoPerformance program. The leadership envelope supports provinces and territories to help them deliver on commitments to reduce GHG emissions. The Challenge envelope supports a wide range of Canadian recipients to implement projects that deploy proven, low-carbon technologies resulting in material GHG emissions reductions across sectors, focusing on its cost-effectiveness objective to maximize GHG emissions reductions. These are modelled as process investments and process energy reductions specified by province and sector.	Efficiency; End-use fuel switching	ECW-05.1, ECW-05.2
Green Industrial Facilities and Manufacturing Program (GIFMP)	Canada	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	The GIFMP provides financial assistance to support the implementation of energy efficiency and energy management solutions designed to maximize energy performance, reduce GHG emissions, and increase competitiveness for industry in Canada. The modelling of this policy is combined with the modelling of NRCan's Energy Management program which assumes increasing energy efficiency in industrial sectors in Canada over time.	Efficiency	HVI-07

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Low Carbon Economy Fund – Challenge and Leadership Envelopes	Canada	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	The LCEF provides funding to projects that generate clean growth and reduce GHG emissions, helping Canada to meet or exceed its commitments under the Paris Agreement. As of 2024, LCEF consists of 4 funding envelopes, two of which are explicitly modelled: • The Challenge Fund • The Leadership Fund The Leadership Fund provides funding directly to provinces and territories to help them reduce carbon pollution, meet Canada's 2030 climate target, and support the goal of net-zero emissions by 2050. The Challenge Fund provides funding to a wide range of recipients to implement projects that deploy proven, low-carbon technologies resulting in material GHG emissions reductions across sectors, focusing on its cost-effectiveness objective to maximize GHG emissions reductions. The Challenge Fund is modelled based on the expected impacts of the projects funded to date. In the industrial sector, projects targeting energy efficiency retrofits, industrial electrification, and clean fuels adoption are modelled. In the buildings sector, emission reductions are achieved through fuel switching from natural gas to heat pumps. Within the industrial sector, the Leadership Fund is modelled through assumed increases in energy efficiency over time.	Efficiency; End-use fuel switching	ECW-05.1, EC-05.2
Regulations Amending the Reduction of Carbon Dioxide Emissions from Coal-fired Generation of Electricity Regulations	Canada	Electricity	Energy - Stationary Combustion and Fugitive Sources	The Amendments will require all coal-fired electricity generating units to comply with an emissions performance standard of 420 tonnes of carbon dioxide per gigawatt hour of electricity produced (t of CO_2/GWh) by 2030, at the latest.	Energy Source Decarbonization	ELE-01
Emerging Renewable Power Program	Canada	Electricity	Energy - Stationary Combustion and Fugitive Sources	The policy funds emerging renewable technologies across different regions in Canada. The modelling is based on information received from NRCan. It is assumed that this funding results in the installation of additional generation capacity of 5 MW of geothermal power in Alberta, 6 MW of geothermal power in British Columbia and 9 MW of tidal power in Nova Scotia in 2028.	Energy Source Decarbonization	ELE-03
Clean Energy for Rural and Remote Communities (CERRC) Program	Canada	Electricity	Energy - Stationary Combustion and Fugitive Sources	The CERRC program provides funding for renewable energy and capacity-building projects and related energy efficiency measures in Indigenous, rural, and remote communities across Canada. The modelling is based on information received from NRCan.	Energy Source Decarbonization; Efficiency	ELE-05, ELE-05.1, ELE-05.2
Strategic Interconnections in electricity	Canada	Electricity	Energy - Stationary Combustion and Fugitive Sources	This policy extends existing contracts for 2041 to 2050 between Manitoba–Saskatchewan and Québec–New Brunswick. The modelling is based on information received from NRCan.	Energy Source Decarbonization	ELE-08

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Investment Tax Credits for CCUS, Clean Electricity, Clean Technology, and Atlantic Tax Credit	Canada	Electricity	Energy – Stationary Combustion and Fugitive Sources	Various ITCs to support the production of electricity, described in Budget 2022, the 2022 Fall Economic Statement, and Budget 2023. The credits concern the following technologies: carbon capture and sequestration, energy storage, nuclear, hydro, wind, solar, geothermal, wave, tidal, biomass and waste. The ITCs are modelled by reducing capital costs of the relevant technologies for the duration of the tax credits.	Energy Source Decarbonization; Efficiency; Negative Emissions	ECW-15, ELE-14, ENB-08
Smart Grid Program	Canada	Electricity	Energy – Stationary Combustion and Fugitive Sources	The program provides funding to a large variety of activities such as adding renewables and energy storage to the grid, reducing the electric demand (for example, voltage management, demand-side management [DSM]), increase renewable penetration into the grid, improve distribution of electricity, reduce power outages, and improve EV charging. The modelling uses information received from NRCan to simulate peak load reductions across several Canadian regions.	Efficiency; Energy Source Decarbonization; Behavioural Change	ELE-07
Regulations Limiting Carbon Dioxide Emissions from Natural Gas-fired Generation of Electricity	Canada	Electricity	Energy - Stationary Combustion and Fugitive Sources	The policy sets a performance standard of 420 t CO_2/GWh for natural gas-fired power plants and a standard of 550 t CO_2/GWh for natural gas-fired plants with a capacity of 150 MW or less.	Energy Source Decarbonization	NA
Net Zero Accelerator (Iron and Steel)	Canada	Heavy Industry	Energy - Stationary Combustion and Fugitive Sources	This policy models the conversion of two integrated Ontario iron and steel facilities (Algoma and Arcelor-Mittal Dofasco) from BF-BOF to EAF-based, and natural gas-based DRI and EAF, respectively. Funding for these projects was received from the SIF-NZA fund.	End-use fuel switching	HVI-03
NZA Critical Minerals	Canada	Heavy Industry	Energy - Stationary Combustion and Fugitive Sources	This policy represents the investment of $222 million through the Strategic Innovation Fund to help Rio Tinto Iron and Titanium to increase its production of critical minerals, including lithium, titanium, and scandium while decarbonizing its operations in Sorel-Tracy, Québec.	End-use fuel switching	HVI-03
2 Billion Trees Program	Canada	LULUCF	LULUCF	The 2 Billion Trees program aims to motivate and support new tree planting projects. Over a period of 10 years, by 2031, up to $3.2 billion will be invested in tree planting efforts to support provinces, territories, municipalities, third-party organizations (for and not-for profit) and Indigenous organizations to plant two billion trees across Canada.	Negative Emissions	NBS-01.2
Regulations Respecting Reduction in the Release of Methane and Certain Volatile Organic Compounds (Upstream Oil and Gas sector)	Canada	Oil and Gas	Industrial Processes	Federal backstop for CH_4 emissions; provincial systems were modelled for the WM scenario projections. Reductions come from an ECCC bottom-up CH_4 model and are expressed as percentages of achievable CH_4 reductions by province and subsector.	Energy Source Decarbonization	OIG-02
Heavy-duty vehicles (HDV) GHG emissions standards for heavy-duty vehicle model years 2014 to 2018 (HDV-1) and 2021 to 2027 (HDV-2)	Canada	Transportation	Transport	HDV-1 is no longer explicitly modelled as the policy is now accounted for completely in the historic data. HDV-2 models new HDV Gasoline and Diesel engine efficiency improvements for 2021 to 2027.	Efficiency	TRN-04

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Incentives for Medium- and Heavy-Duty Zero-Emission Vehicles	Canada	Transportation	Transport	Subsidy for the purchase of ZEV MHDVs. (Incentives included implicitly in ZEV sales shares modelled.)	End-use fuel switching	TRN-05.2
Incentives to Zero Emission Vehicles	Canada	Transportation	Transport	Subsidy for the purchase of ZEVs. (Incentives included implicitly in ZEV sales shares modelled.)	End-use fuel switching	TRN-03
Light-duty vehicles (LDV) GHG emissions standards for the light-duty vehicle model years 2011 to 2016 (LDV-1) and 2017 to 2026 (LDV-2)	Canada	Transportation	Transport	GHG emission standards for passenger cars and light-duty trucks. Annual improvements in new vehicle fuel efficiency of 10% for 2022-2023, 5% for 2023 to 2025 and 10% for 2025-2026; with no ZEV carve out (that is, standards apply to both ICEs and ZEVs).	Efficiency	TRN-01
Voluntary emission reductions for planes	Canada	Transportation	Transport	Voluntary emission reduction initiatives for planes modelled through aviation efficiency improvements of 1.6% per year.	Efficiency; End-use fuel switching	TRN-13
Green Freight Program	Canada	Transportation	Transport	$200M in federal funding to retrofit large trucks over five years, 2023 to 2027	Efficiency	TRN-08
The Regulations Amending the Passenger Automobile and Light Truck Greenhouse Gas Emission Regulations	Canada	Transportation	Transport	Targeting 20% ZEV sales by 2026, 60% ZEV sales by 2030 and 100% ZEV sales by 2035.	End-use fuel switching	TRN-02
Decarbonization of the rail sector – Memorandum of Understanding (MOU)	Canada	Transportation	Transport	Emissions intensity reduction targets for 2030 committed to by Class 1 freight railways.	Efficiency	TRN-10
Adoption of the National Energy Code for Buildings of Canada (2010-2012)	Alberta	Buildings	Energy - Stationary Combustion and Fugitive Sources	These policies are developed at the provincial level and typically mandate that new buildings are 40% more efficient than a certain reference level.	Efficiency	NA
Energy efficiency requirements for housing and small buildings, section 9.36 of the 2014 Alberta Building Code edition	Alberta	Buildings	Energy - Stationary Combustion and Fugitive Sources	This policy is not explicitly modelled as its impact is reflected in historical data.	Efficiency	NA
Alberta Large Emitter Greenhouse Gas Regulations – Alberta's Technology Innovation and Emissions Reduction regulation	Alberta	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources; Industrial Processes	TIER implements Alberta's industrial carbon pricing and emissions trading system. TIER Regulation requires facilities to reduce their emissions intensity to meet either a facility-specific or a sectoral high-performance benchmark. TIER fund price increase annually by $15/t CO_2 eq after 2022 until it reflects a carbon price of $170/t CO_2 eq in 2030.	Efficiency; End-use fuel switching; Energy Source Decarbonization; Negative Emissions; Non-energy Process Emission Reductions	AB-ENG-01
Industry - SIF/NZA - Air Products Hydrogen Production	Alberta	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources; Industrial Processes	Officially announced in November 2022, Air Products is to receive funding from the SIF-NZA program and Alberta to build a hydrogen production complex which is expected to come online in 2024.	End-use fuel switching	NA

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Funding to Emissions Reductions Alberta	Alberta	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	This policy models investments made by Emissions Reductions Alberta into decarbonizing the heavy industry sector.	Efficiency; End-use fuel switching; Energy Source Decarbonization	NA
Alberta Coal-Fired Electricity Generation phase-out	Alberta	Electricity	Energy - Stationary Combustion and Fugitive Sources	The original objective of the policy is that coal is no longer used to generate electricity by 2030. However, this was achieved in 2024. The policy is modelled through retirement and conversion dates for coal-fired electricity plants in Alberta.	Energy Source Decarbonization	AB-ENG-04
SIF-NZA Assistance to Heidelberg Materials	Alberta	Heavy Industry	Energy - Stationary Combustion and Fugitive Sources; Industrial Processes	This policy models the investment that the federal government has made through the SIF-NZA fund into financially assisting in the decarbonization of Heidelberg Materials in Alberta.	Negative Emissions	NA
Alberta *Oil Sands Emissions Limit Act*	Alberta	Oil and Gas	Industrial Processes; Energy - Stationary Combustion and Fugitive Sources	This policy is not explicitly modelled because projected emissions are below that level in ECCC's scenarios. A legislated emissions limit on the oil sands of a maximum of 100 Mt in any year with provisions for cogeneration and new upgrading capacity.	Energy Source Decarbonization	AB-ENG-13
Alberta Carbon Capture, Storage and Utilization -- Carbon Trunk Line Project – CO_2 capture and use for enhanced oil recovery	Alberta	Oil and Gas	Energy - Stationary Combustion and Fugitive Sources	Implementation of the Carbon Trunk Line Project in the projections.	Negative Emissions	AB-CRC-01
Alberta reduction of methane emissions -- Directive 060: Upstream Petroleum Industry Flaring, Incinerating and Venting	Alberta	Oil and Gas	Energy - Stationary Combustion and Fugitive Sources	AB's provincial methane regulation; aims to achieve a 40% to 45% reduction of CH_4 emissions relative to 2012 levels.	Energy Source Decarbonization	AB-ENG-14
Alberta Carbon Capture, Storage and Utilization -- Quest, Sturgeon, and Nutrien carbon capture and storage project	Alberta	Oil and Gas	Energy - Stationary Combustion and Fugitive Sources	Project is implemented in the projections.	Negative Emissions	AB-CRC-01
Alberta Renewable Fuels Standard	Alberta	Transportation	Transport	Current mandate of 5% ethanol blending, 2% biodiesel.	End-use fuel switching	AB-ENG-05

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
British Columbia Building Green Code	British Columbia	Buildings	Energy - Stationary Combustion and Fugitive Sources	These policies are developed at the provincial level and typically mandate that new buildings are 67% more efficient than a certain reference level. Additionally, the impact of the following policies is not explicitly modelled but is reflected in historical data: • Revisions for energy efficiency of housing and small buildings (Part 9) (reg # 173/2013) • Revisions for energy efficiency of large residential and commercial buildings (Part 3) (reg # 167/2013) • Step Code: Increased Energy Efficiency Requirements in the Building Code	Efficiency	BC-ENG-04
British Columbia Technology and Retrofit Incentive Programs: CleanBC Better Homes and Better Buildings – Heat Pump Incentive	British Columbia	Buildings	Energy - Stationary Combustion and Fugitive Sources	$38 million (2015$) is provided annually for the purchase of heat pumps in both residential and commercial buildings between 2021 and 2030. Incentives are modelled to apply to electric heat pumps for space and water heating. No assumptions have been made about how the incentives are allocated among building types or end-uses. 160,000 new residential heat pumps for space heating instead of natural gas furnaces—a 60% increase covering 600,000 m² or more floor space each year from 2019 to 2030. In 2030, 53 million m² of commercial floor space heated by heat pumps, that's fifteen times as much as today. In 2030, for heating water—150,000 new residential heat pumps in place of natural gas appliances.	End-use fuel switching	BC-ENG-06
British Columbia Carbon Tax	British Columbia	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	British Columbia's Carbon Tax applies to the purchase or use of fuels such as gasoline, diesel, natural gas, heating fuel, propane and coal, specific exemptions apply. The use of fuel includes all uses, even if the fuel is not combusted. The tax increases annually by $15/t CO_2 eq after 2022 until it reflects a carbon price of $170/t CO_2 eq in 2030.	Efficiency; Behavioural Change; End-use fuel switching	BC-CRC-02
CleanBC Program for Industry	British Columbia	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources; Industrial Processes	Through the CleanBC Program for Industry, BC directs a portion of carbon taxes paid by industry into incentives for cleaner operations (e.g., transmission grids, access to low carbon fuels). The CleanBC Industry Fund (CIF) invests in GHG reducing projects and increases opportunities for innovative clean technologies.	Efficiency; End-use fuel switching; Negative Emissions	BC-ENG-12
British Columbia *Clean Energy Act*: Clean or Renewable Electricity Requirement	British Columbia	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	This policy is not explicitly modelled because ECCC does not model targets and objectives but practical measures such as new power plants and interties. The Clean Energy Act regroups objectives aiming mainly to limit electricity emissions and electricity rate increases.	Behavioural Change; Efficiency; Energy Source Decarbonization	BC-ENG-09
BC Output-Based Pricing System	British Columbia	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources; Industrial Processes	Effective April 1, 2024, the BC OBPS ensures there is a price incentive for industrial emitters to reduce GHG emissions while promoting innovation and protecting competitiveness. This regulatory system allows the province to establish GHG EPS that facilities are required to achieve. Any facility that does not meet its performance standard will have a compliance obligation, compliance price increase annually by $15/t CO_2 eq until it reflects a carbon price of $170/t CO_2 eq in 2030.	Efficiency; End-use fuel switching; Energy Source Decarbonization; Non-energy Process Emission Reductions	BC-CRC-06

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
British Columbia *Clean Energy Act*: Demand Side Management – Natural Gas DSM Measures	British Columbia	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	This policy is designed to reduce natural gas consumption in British Columbia by providing various incentives for consumers to do so.	Behavioural Change; Efficiency	BC-ENG-10
British Columbia *Clean Energy Act*: Demand Side Management – BC Hydro DSM Measures	British Columbia	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources; Agriculture	This policy is designed to reduce electricity consumption in British Columbia by providing various incentives for consumers to do so. It is implemented by BC Hydro.	Behavioural Change; Efficiency	BC-ENG-10
British Columbia Electrification of the Natural Gas Sector	British Columbia	Heavy Industry	Energy - Stationary Combustion and Fugitive Sources; Industrial Processes	This electrification policy assumes a 15% reduction in natural gas consumption from British Columbia's Natural Gas Production and Processing sectors.	End-use fuel switching	BC-ENG-14
British Columbia Methane Reduction Policy / Regulations	British Columbia	Oil and Gas	Industrial Processes	British Columbia's provincial methane regulation; aims to achieve a 40% to 45% reduction of CH_4 emissions relative to 2012 levels.	Energy Source Decarbonization	BC-ENG-15
BC New Energy Action Framework	British Columbia	Oil and Gas	Energy - Stationary Combustion and Fugitive Sources	Limits new LNG projects to be net zero by 2030 (LNG Canada Phase 1, LNG Canada Phase 2, Cedar, Woodfibre exempt)	Energy Source Decarbonization; Negative Emissions	NA
British Columbia Light-Duty *Zero-Emission Vehicles Act*/Mandate	British Columbia	Transportation	Transport	Increase sales shares of hybrid and electric passenger cars and light-duty trucks. Annual percentage of new light-duty ZEV sales and leases, reaching: 26% of light-duty vehicle sales by 2026, 90% by 2030 and 100% by 2035.	End-use fuel switching	BC-TRN-03
CleanBC Plan – Tailpipe Emissions Standard	British Columbia	Transportation	Transport	This policy is not explicitly modelled because it is not incremental to the federal LDV regulations. Emissions standards for tailpipe emissions.	Efficiency	NA
British Columbia Low Carbon Fuel Standard	British Columbia	Transportation	Transport	This policy implements a 30% LCFS for transportation fuels and 10% for aviation in British Columbia.	End-use fuel switching; Energy Source Decarbonization	BC-TRN-04
British Columbia Low Carbon Fuel Standard – Renewable Fuel Content	British Columbia	Transportation	Transport	The modelling assumptions ensure that British Columbia's mandate of 5% ethanol blending, 4% biodiesel blending is met throughout the projection period.	End-use fuel switching	BC-TRN-04
British Columbia Low Carbon Fuel Standard – Renewable natural gas mandate	British Columbia	Transportation	Transport	The modelling assumptions ensure that British Columbia's mandate of 5% RNG blending by 2025 is met starting in 2025 and throughout the projection period.	End-use fuel switching	BC-TRN-04
British Columbia Transport Infrastructure Investments – Electric Bus Mandate	British Columbia	Transportation	Transport	Mandates 100% of new bus sales to be electric by 2029.	End-use fuel switching	BC-TRN-07
CleanBC Go Electric program – LDV	British Columbia	Transportation	Transport	This policy is not explicitly modelled because it is implicitly included in ZEV sales projections. Rebates to encourage the adoption of zero and low emission vehicles.	End-use fuel switching	BC-TRN-08
CleanBC Go Electric program – HDV	British Columbia	Transportation	Transport	This policy is not explicitly modelled as it is implicitly included in the ZEV sales projections provided by Transport Canada. Rebates for the adoption of zero-emission medium- and heavy-duty vehicles.	End-use fuel switching	BC-TRN-08

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
British Columbia Landfill Gas Management Regulation	British Columbia	Waste and Others	Waste	This policy is not explicitly modelled because the impacts are reflected in the historical data. This regulation requires landfills with 10,000 tonnes of waste disposed per year, or more than 100,000 tonnes in total, to evaluate their CH_4 emissions release. If they are found to release more than 1,000 tonnes of CH_4 annually, landfill gas capture systems must be installed with targeted capture rates of 75%.	Behavioural Change	BC-WST-02
CleanBC Organics Infrastructure and Collection Program	British Columbia	Waste and Others	Waste	Part of the CleanBC strategy that targets 95% organic waste diversion by 2030.	Behavioural Change	BC-WST-04
Adoption of the National Energy Code for Buildings of Canada (2010-2012)	Manitoba	Buildings	Energy - Stationary Combustion and Fugitive Sources	These policies are developed at the provincial level and typically mandate that new buildings are 20% more efficient than a certain reference level.	Efficiency	NA
Manitoba Building Code Section 9.36 (for housing)	Manitoba	Buildings	Energy - Stationary Combustion and Fugitive Sources	These policies are developed at the provincial level and typically mandate that new buildings are 20% more efficient than a certain reference level.	Efficiency	NA
The Efficiency Manitoba Act and Energy Efficiency Programing	Manitoba	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	This Act establishes Efficiency Manitoba Inc. Efficiency Manitoba is given the mandate to achieve electrical energy savings of 1.5% annually and natural gas savings of 0.75% annually in Manitoba during the first 15 years of its operations. Additional savings targets are to be established by regulation for subsequent 15-year periods.	Behavioural Change; Efficiency	MB-ENG-02
Manitoba biofuel mandates	Manitoba	Transportation	Transport	10% ethanol blending and 5% biodiesel blending by 2022.	End-use fuel switching	MB-TRN-01
Manitoba Electric Vehicle Rebate Program	Manitoba	Transportation	Transport	This policy is not explicitly modelled as it is included implicitly in ZEV sales projections provided by Transport Canada. Offering an electric vehicle rebate for eligible Manitobans, worth up to $4,000 for a new battery electric or plug-in hybrid and $2,500 for eligible recipients of a used battery electric vehicle or plug-in hybrid.	End-use fuel switching	MB-TRN-03
Waste Reduction and Recycling Support Program	Manitoba	Waste and Others	Waste	This policy is not explicitly modelled because the impacts are reflected in the historical data. Beginning July 1, 2009, all solid waste disposed at Manitoba landfills is subject to a $10 per tonne levy. The levy applies to all residential, industrial, commercial, and institutional waste, construction, renovation and demolition waste and other solid waste materials. The levy discourages the disposal of waste in landfills and generates funds to support waste reduction and diversion initiatives.	Behavioural Change	NA
Manitoba Waste Reduction and Recycling Support Payment	Manitoba	Waste and Others	Waste	Incentivization program to composting facilities across the province to receive a payment for processing organic waste (for example, food, leaf, and yard waste, etc.), from the residential and industrial, commercial, and institutional sectors. This program also targets organic waste diversion of 85 kg/capita.	Behavioural Change	MB-WST-01

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Building Codes – Adoption of the National Energy Code for Buildings of Canada (2010-2012)	New Brunswick	Buildings	Energy - Stationary Combustion and Fugitive Sources	These policies are developed at the provincial level and typically mandate that new buildings are 25% more efficient than a certain reference level.	Efficiency	NB-ENG-04
Building Codes – National Building Code of Canada 2015	New Brunswick	Buildings	Energy - Stationary Combustion and Fugitive Sources	These policies are developed at the provincial level and typically mandate that new buildings are 20% more efficient than a certain reference level.	Efficiency	NB-ENG-04
New Brunswick Output Based Pricing for Industry and Electricity	New Brunswick	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources; Industrial Processes	The New Brunswick OBPS is used to regulate GHG emissions from large emitters, including New Brunswick's industrial and electricity generation sectors. This regulatory system allows the province to establish GHG EPS that facilities are required to achieve. Any facility that does not meet its performance standard will have a compliance obligation. Compliance price increase annually by $15/t CO_2 eq after 2022 until it reflects a carbon price of $170/t CO_2 eq in 2030.	Efficiency; End-use fuel switching; Energy Source Decarbonization; Non-energy Process Emission Reductions	NB-CRC-05
New Brunswick Climate Change Fund	New Brunswick	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	This policy is not explicitly modelled because the projects funded are included in other policies in this list. In November 2021, the Government of New Brunswick had committed to direct $36 million in carbon tax revenue for the 2021-22 fiscal year to the Climate Change Fund. The investment is in initiatives that will help reduce GHG emissions, increase resiliency to the impact of climate change and foster educational opportunities. The funding amounts and projects funded will be updated regularly (funding for other measures that are included).	Efficiency; End-use fuel switching	NB-CRC-03
New Brunswick *Electricity Act*, Renewable Portfolio Standard Regulation, and Energy Efficiency Mandate	New Brunswick	Electricity	Energy - Stationary Combustion and Fugitive Sources	This policy is not explicitly modelled because ECCC does not model targets and objectives but practical measures such as new power plants and interties. The policy aimed to have 40% of NB Power in-province electricity sales provided with renewable energy by 2020.	Energy Source Decarbonization	NB-ENG-08
Electrify Rebate Program	New Brunswick	Transportation	Transport	This policy is not explicitly modelled as it is included implicitly in ZEV sales projections provided by Transport Canada. A $5,000 provincial rebate is available for the purchase and lease of a new battery-electric vehicle (BEV) or a long-range plug-in hybrid electric vehicle (PHEV). A $2,500 provincial rebate is available for the purchase or lease of a shorter-range PHEV or a used BEV/PHEV.	End-use fuel switching	NB-TRN-02
Building Codes – Adoption of the National Energy Code for Buildings of Canada (2010-2012)	Newfoundland and Labrador	Buildings	Energy - Stationary Combustion and Fugitive Sources	These policies are developed at the provincial level and typically mandate that new buildings are 20% more efficient than a certain reference level.	Efficiency	NA
Fuel oil to electricity incentive program	Newfoundland and Labrador	Buildings	Energy - Stationary Combustion and Fugitive Sources	This program is a collaboration between the Provincial Government with NRCan and ECCC, to incentivize fuel switching. This program provides incentives for technologies, including mini splits, multi splits, central heat pumps, electric furnaces, and electric boilers.	End-use fuel switching	NL-ENG-02

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Newfoundland and Labrador carbon pricing	Newfoundland and Labrador	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources; Industrial Processes	Newfoundland and Labrador's performance standards system for large industrial facilities and large-scale electricity generation, that emit more than 25 kt CO_2 eq per year. This regulatory system allows the province to establish GHG EPS that facilities are required to achieve. Any facility that does not meet its performance standard will have a compliance obligation, compliance price increase annually by \$15/t CO_2 eq after 2022 until it reflects a carbon price of \$170/t CO_2 eq in 2030.	Efficiency; End-use fuel switching; Energy Source Decarbonization; Non-energy Process Emission Reductions	NL-CRC-01
Green Technology Tax Credit	Newfoundland and Labrador	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources; Industrial Processes; Agriculture; Transport	Canadian Controlled Private Corporations that invest in equipment that generates or conserves renewable-source energy, uses fuels from waste, or makes efficient use of fossil fuels may be entitled to a credit equal to 20% of the capital cost of that equipment.	Efficiency; End-use fuel switching	NL-ENG-01
Maritime Transmission Link Project	Newfoundland and Labrador	Electricity	Energy - Stationary Combustion and Fugitive Sources	The project increases the transmission capacities between NL–NS and NS–NB.	Energy Source Decarbonization	NA
Electric vehicle incentive program	Newfoundland and Labrador	Transportation	Transport	This policy is not explicitly modelled as it is included implicitly in ZEV sales projections provided by Transport Canada. Newfoundland and Labrador delivers an EV incentive program for residential and commercial sector battery and plug-in hybrid electric vehicles. Rebates are available for 100% all-electric and plug-in hybrid vehicles purchased or leased between April 1, 2023, and March 15, 2025.	End-use fuel switching	NL-TRN-01
Waste Management Strategy	Newfoundland and Labrador	Waste and Others	Waste	Strategy to increase solid waste diversion to 50%, as well as reduce the amount of waste disposal sites across the province and eliminate open burning and incineration, by 2025.	Behavioural Change	NA
Building Codes – Adoption of the National Energy Code for Buildings of Canada (2010-2012)	Northwest Territories	Buildings	Energy - Stationary Combustion and Fugitive Sources	These policies are developed at the provincial level and typically mandate that new buildings are 20% more efficient than a certain reference level.	Efficiency	NA
Biomass Strategy	Northwest Territories	Buildings	Energy - Stationary Combustion and Fugitive Sources	Plan to use local and imported biomass products (for example, wood) for energy rather than fossil fuels to reduce the emissions and cost.	End-use fuel switching	NA
NWT Carbon Tax	Northwest Territories	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	Northwest Territories carbon tax. The carbon tax rate will increase annually by \$15/t CO_2 eq after 2022 until it reflects a carbon price of \$170/t CO_2 eq in 2030.	Behavioural Change; Efficiency; End-use fuel switching	NT-CRC-02
NWT 2030 Energy Strategy	Northwest Territories	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	This policy is not explicitly modelled because the projects funded are included in other policies in this list. The 2030 Energy Strategy provides a guide for the development of secure, affordable, and sustainable energy in the NWT for transportation, heat and electricity. This includes support for energy efficiency and conservation programs, local renewable and alternative energy solutions, and large-scale energy projects.	Energy Source Decarbonization; End-use fuel switching; Efficiency; Behavioural Change	NT-ENG-03

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Building Codes – Adoption of the National Energy Code for Buildings of Canada (2010-2012)	Nova Scotia	Buildings	Energy - Stationary Combustion and Fugitive Sources	These policies are developed at the provincial level and typically mandate that new buildings are 20% more efficient than a certain reference level.	Efficiency	NA
Nova Scotia's Output-based Pricing System for Industry	Nova Scotia	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources; Industrial Processes	Nova Scotia's OBPS for Industry. This regulatory system allows the province to establish GHG EPS that facilities are required to achieve. Any facility that does not meet its performance standard will have a compliance obligation, compliance price increase annually by $15/t CO_2 eq after 2022 until it reflects a carbon price of $170/t CO_2 eq in 2030.	Efficiency; End-use fuel switching; Energy Source Decarbonization; Non-energy Process Emission Reductions	NS-CRC-02
Nova Scotia Electricity Sector Regulations and Nova Scotia Greenhouse Gas Emissions Regulations	Nova Scotia	Electricity	Energy - Stationary Combustion and Fugitive Sources	The policy fixes a cap on annual GHG emissions from the electricity sector in Nova Scotia which decreases over time.	Energy Source Decarbonization	NS-ENG-04
Nova Scotia's 2030 Clean Power Plan	Nova Scotia	Electricity	Energy - Stationary Combustion and Fugitive Sources	Phase out coal-fired electricity plants by 2030.	Energy Source Decarbonization	NS-ENG-05
Nova Scotia Electricity Sector Regulations and Nova Scotia Greenhouse Gas Emissions Regulations	Nova Scotia	Electricity	Energy - Stationary Combustion and Fugitive Sources	The portfolio requires that a specific amount of electricity be produced from renewable sources such as wind, solar, biomass and hydro: 40% in 2023, 70% in 2026 and 80% by 2030.	Energy Source Decarbonization	NS-ENG-04
Building Codes – Adoption of the National Energy Code for Buildings of Canada (2010-2012)	Nunavut	Buildings	Energy - Stationary Combustion and Fugitive Sources	These policies are developed at the provincial level and typically mandate that new buildings are 20% more efficient than a certain reference level.	Efficiency	NA
Building Codes – Adoption of the National Energy Code for Buildings of Canada (2010-2012)	Ontario	Buildings	Energy - Stationary Combustion and Fugitive Sources	These policies are developed at the provincial level and typically mandate that new buildings are 20 % more efficient than a certain reference level.	Efficiency	ON-ENG-03
Ontario Greenhouse Gas Emissions Performance Standards Regulation	Ontario	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	Ontario EPS is a program ensuring that polluters are accountable for GHG emissions by applying "emissions performance standards" to determine a limit of GHG emissions that industrial facilities are required to meet each year. Credit price increase annually by $15/t CO_2 eq after 2022 until it reflects a carbon price of $170/t CO_2 eq in 2030.	Efficiency; End-use fuel switching; Energy Source Decarbonization	ON-CRC-02
Cleaner Transportation Fuels: Renewable Content Requirements for Gasoline and Diesel Fuels	Ontario	Cross-Sectoral	Transport	4% biodiesel content in diesel and 15% ethanol content in gasoline by 2030.	End-use fuel switching	ON-TRN-01

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Ontario Natural Gas Demand Side Management Programs	Ontario	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	This policy supports the delivery of natural gas conservation and energy efficiency programs in Ontario. Natural gas conservation programs under the DSM Framework are delivered by Ontario's two largest natural gas distributors—Enbridge Gas Distribution and Union Gas. Modelled as a process retrofit via exogenous process energy reductions (in natural gas compared to the base case) inferred from savings in GHGs as provided by the government of Ontario. Exogenous program process investments are based on approved budgets for the natural gas distributors.	Efficiency; Behavioural Change	ON-ENG-04
Electricity 2021 to 2024 Conservation and Demand Management Framework	Ontario	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	The 2021 to 2024 Conservation and Demand Management Framework was established by Ontario to support energy efficiency programs that reduce electricity consumption and peak demand in the residential, commercial and agriculture sectors. Modelled as a process retrofit via exogenous process energy reductions in electricity compared to the base case. Electricity savings between 2020 and 2040 are derived from the Independent Electricity System Operator Annual Planning Outlook Demand Forecast 2020 for the Near-Term Framework Energy Savings and the Long-Term Framework Energy Savings.	Behavioural Change; Efficiency	ON-ENG-12
Feed-in tariff program	Ontario	Electricity	Energy - Stationary Combustion and Fugitive Sources	This policy is not explicitly modelled because ECCC does not model targets and objectives but practical measures such as new power plants and interties. The Feed-In Tariff Program was developed to encourage and promote greater use of renewable energy sources for electricity-generating projects in Ontario (projects must be between 10 kW and 500 kW). The projects resulting from this program are included in our historical data.	Energy Source Decarbonization	NA
Ontario Municipal Bus Electrification Goals	Ontario	Transportation	Transport	50% of new bus sales to be electric by 2030.	End-use fuel switching	NA
Landfill Gas Regulation	Ontario	Waste and Others	Waste	This policy is not explicitly modelled because the impacts are reflected in the historical data. Policy that ensures that any new or expanding landfill larger than 1.5 million cubic metres landfill gas collection systems installed.	Negative Emissions	N/A
Strategy for a Waste-free Ontario	Ontario	Waste and Others	Waste	This policy sets the strategy for Ontario to transition to become a circular economy, with the ultimate goal of achieving no GHG emissions from the waste sector. In the meantime, interim goals of 30% diversion by 2020, 50% diversion by 2030, and 80% diversion by 2050, have been established.	Behavioural Change	NA

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Food and Organic Waste Policy Statement	Ontario	Waste and Others	Waste	The Policy Statement establishes sector-specific waste reduction and resource recovery targets as a means of assessing progress in addressing food and organic waste. Municipalities and specified industrial, commercial, and institutional facilities must achieve 50% or 70% waste reduction and resource recovery of food and organic waste generated, by 2023 or 2025.	Behavioural Change	NA
Prince Edward Island Building Code Act	Prince Edward Island	Buildings	Energy - Stationary Combustion and Fugitive Sources	These policies are developed at the provincial level and typically mandate that new buildings are 20 % more efficient than a certain reference level.	Efficiency	PE-ENG-06
PEI Electric Vehicle Rebate Program	Prince Edward Island	Transportation	Transport	This policy is not explicitly modelled as it is included implicitly in ZEV sales projections provided by Transport Canada. The Electric Vehicle (EV) Rebate Program provides rebates of $2,500 to $5,000 towards a plugin hybrid or new or used EV.	End-use fuel switching	PE-TRN-06
Building Codes – Adoption of the National Energy Code for Buildings of Canada (2010-2012)	Québec	Buildings	Energy - Stationary Combustion and Fugitive Sources	These policies are developed at the provincial level and typically mandate that new buildings are 28% more efficient than a certain reference level.	Efficiency	NA
Eco-performance program for commercial buildings	Québec	Buildings	Energy - Stationary Combustion and Fugitive Sources	ÉcoPerformance is offered to companies, institutions and municipalities that consume fossil fuels or that use processes that generate fugitive GHG emissions, to enable them to take the lead in reducing these types of emissions. It is aimed at both small and large energy consumers. The objectives of the program include reduce GHGs, reduce the consumption of fossil fuels, improve the energy efficiency of processes and buildings, and reduce fugitive process emissions.	Efficiency	QC-BDG-02
Québec's Cap-and-Trade System for Greenhouse Gas Emission Allowances	Québec	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources; Industrial Processes	Economy-wide cap-and-trade program currently linked between California and Québec. In order to formally count the net flow of WCI allowances and offset credits (imported from California to Québec) as ITMO transfers into Canada under Article 6 of the Paris Agreement, a bilateral agreement authorizing transfer and use would need to be established between Canada and the United States, including submission of Article 6 reporting to the UNFCCC.	Efficiency; End-use fuel switching; Energy Source Decarbonization; Non-energy Process Emission Reductions	QC-CRC-02
Regulation respecting the integration of low-carbon-intensity fuel content into gasoline and diesel fuel *(link in French only)*	Québec	Cross-Sectoral	Transport	By 2030, 15% for gasoline and 10% for diesel.	End-use fuel switching	QC-ENG-05
Québec Green Hydrogen and Bioenergy Strategy	Québec	Cross-Sectoral	Transport	5% RNG blending by 2025 and 10% by 2030.	End-use fuel switching	QC-ENG-03

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Québec EcoPerformance Program *(link in French only)*	Québec	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	This policy incentivizes emissions reductions from fuel switching and increased energy efficiency. It includes the addition of federal LCEF leadership funds.	Efficiency	QC-ENG-02
Québec Bioenergy Program	Québec	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	This program aims to reduce GHG emissions and the consumption of fossil fuels by funding specific energy conversion projects to switch from fossil fuels to residual forest biomass and other bioenergy sources. This policy is modelled through fuel switching to biomass in the cement and food and tobacco sectors.	End-use fuel switching	QC-ENG-01
GHG Challenge Program – Industry	Québec	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	The GHG Challenge Program – Industry call for projects aims to support and accelerate Québec's climate transition. The program focuses, among other things, on the completion of structuring industrial projects that could contribute to significantly reducing Québec's GHG emissions in the short and long term.	Efficiency; End-use fuel switching; Energy Source Decarbonization	NA
Support measure for the decarbonization of the Québec industrial sector	Québec	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	This measure aims to provide financial support to 54 companies subject to the Regulation respecting the cap-and-trade system for GHG emission allowances. The companies concerned will be able to obtain financing to implement projects to reduce GHG emissions.	Efficiency; End-use fuel switching	NA
Québec Industrial Electrification	Québec	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources; Industrial Processes	Temporarily support operating costs for conversion projects energy for industrial applications, prioritizing electrification.	End-use fuel switching	NA
Demand-side management program to reduce power peak demand	Québec	Electricity	Energy - Stationary Combustion and Fugitive Sources	These programs reduce power demands in peak demand periods in Québec.	Behavioural Change	QC-ENG-06
Hydro Québec DSM Measures	Québec	Electricity	Industrial Processes; Energy - Stationary Combustion and Fugitive Sources	This policy is designed to reduce electricity consumption in Québec by providing various incentives for consumers to do so. It is implemented by Hydro Québec.	Behavioural Change; Efficiency	QC-ENG-06
Québec Transportation Electrification Initiatives *(link in French only)*	Québec	Transportation	Transport	Subsidy for the purchase of EVs, to be phased out by 2027.	End-use fuel switching	QC-TRN-05
Program to reduce/avoid GHG emissions by using intermodal transportation	Québec	Transportation	Transport	Investment in the development and improvement of infrastructures and intermodal centres to increase the share of less energy-intensive modes of transport and optimize travel.	Behavioural Change	NA
Energy Efficiency Program for Marine, Air and Railway Transportation *(link in French only)*	Québec	Transportation	Transport	In order to reduce GHG emissions from maritime, air and rail transportation of people and goods, invest in the introduction of new technologies by focusing on electrification.	Efficiency; End-use fuel switching	QC-TRN-03
Québec Assistance Program to Improve Public Transit Services	Québec	Transportation	Transport	50% of new bus sales to be electric by 2030.	End-use fuel switching	QC-TRN-01
Québec Zero-Emission Vehicle Regulation	Québec	Transportation	Transport	Established credit market with increasing requirements to encourage the sale of ZEVs. 100% of new vehicles sold to be ZEV by 2035.	End-use fuel switching	QC-TRN-06

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Québec's Organic Materials Reclamation Strategy *(link in French only)*	Québec	Waste and Others	Waste	Organic waste diversion target of 70% by 2030.	Behavioural Change	QC-WST-04
Regulation respecting landfill methane reclamation and destruction projects eligible for the issuance of offset credits	Québec	Waste and Others	Waste	This policy is not explicitly modelled because the impacts are reflected in the historical data. Policy that ensures that landfills larger than 1.5 million cubic metres have landfill gas collection systems installed.	Negative Emissions	NA
Saskatchewan Energy Efficiency Standards for Buildings – Adoption of the National Energy Code for Buildings of Canada (2010-2012)	Saskatchewan	Buildings	Energy - Stationary Combustion and Fugitive Sources	These policies are developed at the provincial level and typically mandate that new buildings are 20% more efficient than a certain reference level.	Efficiency	SK-ENG-04
Saskatchewan Energy Efficiency Standards for Buildings – National Building Code of Canada 2015	Saskatchewan	Buildings	Energy - Stationary Combustion and Fugitive Sources	These policies are developed at the provincial level and typically mandate that new buildings are 20% more efficient than a certain reference level.	Efficiency	SK-ENG-04
Saskatchewan Regulation Respecting the Management and Reduction of Greenhouse Gases (Standards and Compliance)	Saskatchewan	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources; Industrial Processes	Effective January 1, 2022, industrial facilities in additional sectors are eligible to be covered by Saskatchewan's provincial OBPS. Credit price increase annually by \$15/t CO_2 eq after 2022 until it reflects a carbon price of \$170/t CO_2 eq in 2030.	Efficiency; End-use fuel switching; Energy Source Decarbonization	SK-ENG-04
SaskPower Electricity Initiatives	Saskatchewan	Electricity	Energy - Stationary Combustion and Fugitive Sources	This policy is not explicitly modelled because ECCC does not model targets and objectives but rather the practical measures such as new power plants and interties to reach such targets. SaskPower aims to reduce its electricity emissions by 50% below 2005 levels by 2030.	Energy Source Decarbonization	SK-ENG-07
Saskatchewan Oil and Gas Emissions Management Regulations	Saskatchewan	Oil and Gas	Industrial Processes	Saskatchewan's provincial methane regulation; aims to achieve a 40% to 45% reduction of CH_4 emissions relative to 2012 levels.	Energy Source Decarbonization	SK-ENG-13
Renewable Fuel Content	Saskatchewan	Transportation	Transport	The modelling assumptions ensure that Saskatchewan's current mandate of 7.5% ethanol blending and 2% biodiesel blending is met throughout the projection period.	End-use fuel switching	NA
Building Codes – Adoption of the National Energy Code for Buildings of Canada (2010-2012)	Yukon	Buildings	Energy - Stationary Combustion and Fugitive Sources	These policies are developed at the provincial level and typically mandate that new buildings are 20% more efficient than a certain reference level.	Efficiency	NA
Our Clean Future: A Yukon strategy for climate change, energy and a green economy	Yukon	Waste and Others	Waste	Circular economy strategy that includes a 40% waste diversion target by 2025.	Efficiency	YT-CRC-01

*Note: LULUCF is not considered an 'economic' sector, but is included with the list of sectors within Canada's Economic Sectors for completeness.

Table 9: Air pollutant policies and measures included in the WM scenario

Policy Name	Jurisdiction	Economic Sector	Modelling Assumptions / Description
Regulations Amending the Products Containing Mercury Regulations	Canada	Buildings	The Regulations prohibit the manufacture and import of products containing mercury or any of its compounds. The Amendments lower the mercury content limit currently allowed for straight fluorescent lamps for general light purposes, cold cathode fluorescent lamps, and external electrode fluorescent lamps.
Multi-Sector Air Pollutants Regulations	Canada	Cross-Sectoral	MSAPR addresses the following equipment types and industrial sectors: • Boilers and heaters equipment used to generate heat and steam for various purposes in many industrial facilities. • Stationary, reciprocating engines equipment used for compression, electric power generation and pumping in natural gas sectors and pipelines. • Cement manufacturing facilities.
Volatile Organic Compounds Concentration Limits for Architectural Coatings Regulations	Canada	Cross-Sectoral	The VOCs concentration limits for architectural coatings regulations are embedded in historical air pollutant emissions.
Volatile Organic Compound Concentration Limits for Certain Products Regulations	Canada	Cross-Sectoral	Modelling of the Volatile Organic Compound Concentration Limits for Certain Products Regulations (SOR/2021-268). The Regulations establish VOCs concentration limits for approximately 130 product categories and subcategories, including personal care products; automotive and household maintenance products; adhesives, adhesive removers, sealants and caulks; and other miscellaneous products.
Canadian Council of Ministers of the Environment (CCME) Acid Rain Strategy	Canada	Cross-Sectoral	Modelling of province-wide emission cap as part of the CCME Acid Rain Strategy.
Base-Level Industrial Emissions Requirements	Canada	Heavy Industry	Modelling of BLIERs for the 'Other non-ferrous' sector, as part of the Air Quality Management System strategy.
Reduction in the Release of Volatile Organic Compounds Regulations (Petroleum Sector)	Canada	Oil and Gas	Modelling of the VOCs emission reductions from the Reduction in the Release of Volatile Organic Compounds Regulations for the petroleum sectors.
Canada and USA Emission Control Area (ECA) for Ships	Canada	Transportation	This policy is not explicitly modelled because its impact is reflected in historical data. ECA for NO_x, SO_x, and PM. Sets fuel sulphur standard for Marine vessels.
Locomotive Emissions Regulations	Canada	Transportation	Transport Canada policy to control criteria air contaminant emissions from locomotives (Locomotive Emissions Regulations, under the Railway Safety Act).
Off-Road Compression-Ignition (Mobile and Stationary) and Large Sparke-Ignition Engine Emission Regulations	Canada	Transportation	Emissions standards for air pollutants from off-road diesel engines and large spark-ignition engines.
Off-Road Small Spark-Ignition Engine Emission Regulations	Canada	Transportation	Emissions standards for air pollutants from off-road small spark-ignition engines.
On-Road Vehicle and Engine Emission Regulations	Canada	Transportation	Light-Duty Vehicles Tier 2/3 Standards and MOVES (US vehicle emissions model) average coefficients for Heavy-Duty Vehicles for 2015, 2025 and 2035.
Sulphur in Gasoline Regulations	Canada	Transportation	This policy is not explicitly modelled because its impact is reflected in historical data. Tier 3 Sulphur Content in Gasoline requires that federal gasoline contains no more than 10 ppm of sulphur (down from 30 ppm) on an annual average basis by January 1, 2017.
Alberta Review and Assessment of Provincial Clean Air Policies	Alberta	Electricity	This policy is not explicitly modelled as its impact is reflected in historical data. Policy that simulates improvement to Alberta Utility Electric Generation air pollutant emissions but excludes the Clean Air Strategic Alliance (CASA) policy.
Reciprocating Engine Regulations	Alberta	Heavy Industry	Emission reductions for the Alberta Reciprocating Engine Regulations.

Policy Name	Jurisdiction	Economic Sector	Modelling Assumptions / Description
Reciprocating Engine Regulations	British Columbia	Heavy Industry	Emission reductions for the British Columbia Reciprocating Engine Regulations.
Newfoundland Air Control Regulations	Newfoundland and Labrador	Heavy Industry	Newfoundland Air Control Regulations for the Iron Ore Mining sector.
Nova Scotia Air Quality Regulations for Utility Electric Generation	Nova Scotia	Electricity	Nova Scotia Air Quality Regulations for the Utility Electric Generation sector which set caps on various air pollutants.
Discharge of Sulphur Dioxide from Nickel Smelting and Refining Facilities in the Sudbury Area	Ontario	Heavy Industry	Modelling of Ontario's SO_2 emissions reduction policy for the nickel smelting and refining industry in the Sudbury area is done through a cap on emissions.
Reducing sulphur dioxide emissions from Ontario's petroleum facilities (O. Reg. 530/18, O. Reg. 88/22, and O. Reg. 89/22)	Ontario	Oil and Gas	Modelling of Ontario's SO_2 emissions reduction policy for the petroleum products sector is done through a cap on emissions.
Québec Clean Air Regulation	Québec	Cross-Sectoral	This regulation establishes particle and gas emission standards, emission opacity standards, air quality standards and monitoring measures. It covers emissions of PM, BC, VOCs, and SO_x in various sectors (Lumber, Aluminium, Iron and Steel, Iron Ore Mining Pulp and Paper Mill, Converted Paper, Petroleum, Nonferrous Metals, Transport, Trade, Education).

A4.6.7.2 With additional measures scenario

Table 10: GHG policies and measures included in the WAM scenario

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Fertilizer Emissions Reduction Target	Canada	Agriculture	Agriculture	The fertilizer emissions reduction target aims to reduce emissions from fertilizer on agricultural lands by 30% below 2020 levels by 2030. It is assumed that Canada meets this target in the WAM scenario.	Efficiency	AGR-04
More stringent Energy Efficiency Standards for appliances and equipment	Canada	Buildings	Energy - Stationary Combustion and Fugitive Sources	Increased minimum efficiency standards for new equipment. Standards that are more stringent translate into higher device efficiency (sq. ft. per MMBtu). The current modelling results achieve reductions of 19 PJ and 21 PJ in the residential and commercial sectors, respectively.	Efficiency	BDG-09.3

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Net-zero energy ready building codes (for new commercial and residential buildings) by 2030	Canada	Buildings	Energy - Stationary Combustion and Fugitive Sources	Provinces, territories, and various municipalities have the authority to adopt energy codes. The federal government can only provide tools to support provinces, territories, and municipalities. National Building Code for residential and commercial buildings towards a “net-zero ready” future. This policy simulates a net zero pathway for all new commercial and residential construction, by increasing the process efficiency standard and it is based on an estimate of code adoption across the country, along with improvements to code compliance. Overall, it is assumed that between 2030 and 2050, energy intensities are likely to improve in provinces and territories by 22% to 90% in the residential sector and between 30% to 80% in the commercial sector.	Efficiency	BDG-01
Retrofits – Labelling and codes for existing buildings in the commercial sector and the Canada Greener Homes Loan program in the residential sector	Canada	Buildings	Energy - Stationary Combustion and Fugitive Sources	This policy simulates that existing commercial and residential construction will become more efficient, by increasing process efficiency standard. It also includes the impact of incentives. The process efficiency variable is tuned to arrive at the expected energy savings. ECCC adjusts process efficiencies to meet these energy reduction targets. Current modelling results achieve reductions of 48 PJ and 166 PJ in the residential and commercial sectors, respectively.	Efficiency	BDG-04.2
Canada Green Building Strategy	Canada	Buildings	Energy - Stationary Combustion and Fugitive Sources	The regulations are implemented in the model by modifying consumer choices. In the CGBS Regulations scenario (ban on oil heating in new construction in 2028), any consumer that would have chosen to install a fossil fuel heater (Oil) chooses to install an electric heat pump instead.	Behavioural Change; End-use fuel switching	BDG-09
Regulations Amending the Products Containing Mercury Regulations	Canada	Buildings	Energy - Stationary Combustion and Fugitive Sources	The Regulations prohibit the manufacture and import of products containing mercury or any of its compounds. The Amendments lower the mercury content limit currently allowed for straight fluorescent lamps for general light purposes, cold cathode fluorescent lamps, and external electrode fluorescent lamps.	Efficiency	NA
Agricultural Climate Solutions – On-Farm Climate Action Fund	Canada	Cross-Sectoral	Agriculture	The On-Farm Climate Action Fund ($704.1 million, 2021 to 2028) supports farmers in adopting BMPs that store carbon and reduce GHGs. The program also supports other activities that support the adoption BMPs, including outreach, education, and training. Modelling of the program achieves roughly 1 Mt CO_2 eq reduction in N_2O emissions by 2028 as part of the fertilizer emissions reduction target.	Non-energy Process Emission Reductions	AGR-01.2

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Agricultural Climate Solutions – Living Labs	Canada	Cross-Sectoral	LULUCF	The Living Labs Program ($185 million, 2021 to 2031) aims to establish a strong, Canada-wide network of living labs. Through these living labs, regional leaders will bring together farmers, scientists, and other sector partners to co-develop, test, and monitor BMPs on farms to sequester carbon and/or mitigate GHG emissions and enhance climate resiliency.	Negative Emissions; Efficiency	AGR-01.1
Sustainable Canadian Agricultural Partnership (Sustainable CAP)	Canada	Cross-Sectoral	Agriculture; LULUCF	The Sustainable CAP, a five-year partnership (2023 to 2028) with federal, provincial, and territorial governments to strengthen the competitiveness, innovation, and resiliency of the agriculture and agri-food sector. One of the five priorities of Sustainable CAP is tackling climate change and environmental protection to support GHG emission reductions and the long-term vitality of the sector while positioning producers and processors to seize economic opportunities from evolving consumer demands. Under this priority for Sustainable CAP, focus areas include preparation for, and response to, a changing climate by supporting BMPs and accelerating technological adoption, GHG emissions reduction and improved carbon sequestration, protection and regeneration of soil, water and air quality, and improved biodiversity and protection of sensitive habitats. Sustainable CAP will include the $250 million Resilient Agricultural Landscapes Program, to support ecological goods and services provided by the agriculture sector. Emissions reductions from fertilizer management are modelled by targeting N_2O emissions as part of the fertilizer emissions reductions target.	Negative Emissions; Efficiency	AGR-03b
SIF/NZA Projects	Canada	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources; Industrial Processes	These policies model the potential for future projects under the SIF-NZA initiative. They project the adoption of CCS and clean fuels in various industrial sectors.	End-use fuel switching; Negative Emissions	HVI-03
SIF-NZA Electrification	Canada	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources; Industrial Processes	This policy models the potential for future electrification of industrial sectors under the SIF-NZA initiative. It assumes steadily increasing electrification of multiple industrial sectors over time.	End-use fuel switching	HVI-03
SIF-NZA Energy Efficiency	Canada	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	This policy models the potential for future energy efficiency gains in industrial sectors under the SIF-NZA initiative. It assumes steadily increasing energy efficiency in numerous industrial sectors over time.	Efficiency	HVI-03

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Canada Carbon Rebate/ Output-Based Pricing System Proceeds Fund/ Decarbonization Incentive Program/ Future Electricity Fund	Canada	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	This policy models emissions reductions resulting from revenue returns from the OBPS and fuel charge proceeds programs. It assumes increasing energy efficiency across numerous industrial and residential sectors over time.	Efficiency; End-use fuel switching	ECW-01.2, ECW-01.6, ECW-01.6a, ECW-01.6b
Canada Growth Fund	Canada	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	The Canada Growth Fund aims to help attract private capital to build Canada's clean economy by using investment instruments that absorb certain risks in order to encourage private investment in low carbon projects, technologies, business. It is modelled through assumed increasing electrification and energy efficiency in numerous industrial sectors over time.	Efficiency; End-use fuel switching	ECW-16
Hydrogen Adoption	Canada	Cross-Sectoral	Industrial Processes; Energy - Stationary Combustion and Fugitive Sources	This policy models hydrogen adoption in Canada based on anticipated domestic production that has been announced to date.	End-use fuel switching	NA
Additional strategic Interconnections in electricity	Canada	Electricity	Energy - Stationary Combustion and Fugitive Sources	This program increases transmission capacity between regions based on information received from NRCan. In 2030, 700 MW of transmissions capacity is added between British Columbia and Alberta and 500 MW between Saskatchewan and Manitoba.	Energy Source Decarbonization	NA
Smart Renewables and Electrification Pathways Program (SREPs)	Canada	Electricity	Energy - Stationary Combustion and Fugitive Sources	The SREPs provides up to $1.56 billion over eight years for smart renewable energy and electrical grid modernization projects. This includes an additional $600 million for the program announced in Budget 2022. This program will reduce GHG emissions by encouraging the replacement of fossil-fuel generated electricity with renewables that can provide essential grid services while supporting Canada's equitable transition to an electrified economy. The modelling is based on an assessment of the projects that could be achieved thanks to the remaining funds that has not been spent in the With Measures scenario for this program.	Energy Source Decarbonization	ELE-04
Clean Electricity Regulations	Canada	Electricity	Energy - Stationary Combustion and Fugitive Sources	The Clean Electricity Regulations establish performance standards to reduce GHG emissions from fossil fuel-generated electricity starting in 2035. Modelling is based on the latest available information on the policy framework and is a joint exercise involving the NextGrid model of ECCC.	Energy Source Decarbonization	ELE-10
Nature Smart Climate Solutions Fund	Canada	LULUCF	LULUCF	Reduce Canada's net GHG emissions using natural climate solutions, while providing benefits for biodiversity and human well-being. NSCSF programs include activities covering avoided conversion, improved management, and restoration of ecosystems such as wetlands, grasslands, and forest land.	Negative Emissions	NBS-0.1, NBS-01.1a

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Strengthened Methane Regulation	Canada	Oil and Gas	Industrial Processes	Enhanced methane regulation achieves a 75% reduction of Oil and Gas sector CH_4 emissions relative to 2012 levels by 2030, through using IEA cost curves. More information about this policy is available in the draft regulations.	Energy Source Decarbonization	OIG-02
SIF-NZA Funding	Canada	Oil and Gas	Energy - Stationary Combustion and Fugitive Sources	All new SAGD facilities as of 2025 are assumed to utilize solvent technology. For some brownfield facilities (that is, expansions to existing facilities) co-injection of solvents are assumed, which yields a 30% improvement of energy intensities. For all greenfield (that is, new operations) and some brownfield facilities, pure solvent utilization is assumed, which yields an 80% improvement of the facility's energy intensity. Moreover, utilization of solvent technology for new SAGD facilities leads to roughly a 40% increase in oil production at the facility-level.	Efficiency	HVI-03
Oil and Gas Emissions Cap	Canada	Oil and Gas	Energy - Stationary Combustion and Fugitive Sources	The emissions cap will help decarbonize oil and gas production to make Canada a highly efficient producer supplying global demand and ensure the sector is on a path to net zero by 2050. The emissions cap is an integral piece of the Government of Canada's Roadmap to support the decarbonization of oil and gas production. The emissions cap level set out in the proposed Regulations is fixed at 27% below 2026 reported emissions for covered subsectors. More information available in the draft regulations.	Efficiency; Energy Source Decarbonization; Negative Emissions; Non-energy Process Emission Reductions	OIG-03
Measures to reduce emissions from air, marine and rail through efficiency gains and low-carbon fuel blending	Canada	Transportation	Transport	Electrification of new passenger ferries, ramping up starting in 2025, targeting 10% market share of new vehicles by 2030.	End-use fuel switching	TRN-09.1,
Medium- and heavy-duty zero-emission vehicles (ZEV) sales regulations	Canada	Transportation	Transport	Modelling HDV ZEV sales to reach 35% in 2030 and 100% by 2040 for a subset of vehicle types based on feasibility.	End-use fuel switching	TRN-05.1
Medium- and heavy-duty zero-emission vehicles (ZEV) sales regulations - Buses	Canada	Transportation	Transport	As part of realizing the HDV ZEV sales requirements, 100% of buses are assumed to be electric by 2040.	End-use fuel switching	TRN-05.1
National Active Transportation Strategy	Canada	Transportation	Transport	Investments in bike lanes and other active transportation that reduce car and truck usage. Reduces energy demand in passenger transportation by 0.33% in 2030.	Behavioural Change	TRN-11.3
Extension of passenger vehicle efficiency improvements	Canada	Transportation	Transport	Aligned with US passenger vehicle efficiency standards, ICE vehicles improve efficiency by 1.5% annually from 2026 to 2032.	Efficiency	TRN-01
Federal Landfill Gas Regulations	Canada	Waste and Others	Waste	The Regulations Respecting the Reduction in the Release of Methane increase landfill gas capture at municipal solid waste facilities in a stepwise manner, beginning in 2027, thus reducing methane emissions from landfills. By 2033, provincial and territorial collection efficiencies will range between 39% to 79%.	Negative Emissions	WST-06

Policy Name	Jurisdiction	Economic Sector*	IPCC Sector	Modelling Assumptions / Description	GHG Abatement Channel	PaMs Identifier
Alberta Carbon Capture, Storage and Utilization	Alberta	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	ACCIP will help hard-to-abate industries by providing a grant of 12% for new eligible CCUS capital costs.	Negative Emissions	AB-CRC-01
Alberta Zero Emissions Truck Electrification Collaboration project	Alberta	Transportation	Transport	New hydrogen (Fuel Cell) trucks are added to the Alberta fleet targeting a 5% market share as of 2025.	End-use fuel switching	AB-TRN-02
Energy Efficiency Standards Regulation – Highest Efficiency Equipment Standards for Space and Water Heating	British Columbia	Buildings	Energy - Stationary Combustion and Fugitive Sources	In 2030, the policy will prohibit the sale of new and replacement conventional gas- and oil-fired equipment for the following space and water heating equipment: residential forced air systems (such as furnaces), residential hydronic heating systems (such as boilers), domestic water heaters (such as storage and instantaneous water heaters), and weatherized gas-fired packaged units (such as rooftop and makeup air units).	Efficiency; End-use fuel switching	BC-ENG-07
British Columbia *Clean Energy Act*: Clean or Renewable Electricity Requirement	British Columbia	Electricity	Energy - Stationary Combustion and Fugitive Sources	The policy aims to implement a 100% Clean Electricity Delivery Standard for the BC Hydro grid by 2030.	Energy Source Decarbonization	BC-ENG-09
British Columbia Medium- and Heavy-Duty Zero-Emission Vehicle Mandate	British Columbia	Transportation	Transport	30% of on-road heavy-duty and medium-duty vehicles (except class 7-8 tractor trailers) sold in BC to be zero emission by 2030 and 100% by 2040.	End-use fuel switching	BC-TRN-05
Expand the Low Carbon Fuel Standard for aviation and marine fuels	British Columbia	Transportation	Transport	Air and Marine fuels added to the Low Carbon Fuel Standard, reaching 20% blend rates by 2030.	End-use fuel switching	BC-TRN-10
Expansion of the renewable natural gas blending mandate	British Columbia	Transportation	Transport	15% RNG blend by 2030, 5% by 2025.	End-use fuel switching	NA
Merit-based Low Carbon Economy Fund	Manitoba	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources	The Merit-based program is intended to support building and process improvements that reduce GHG emissions and use of fossil fuels. This program will not fund projects that qualify for or are already supported by Efficiency Manitoba, nor will it fund transportation projects such as ZEVs or charging infrastructure.	Efficiency; End-use fuel switching	NA
Québec's Cap-and-Trade System for Greenhouse Gas Emission Allowances – (Assumes companies in Québec meet it legislated emissions targets through purchases of WCI credits) to 2030	Québec	Cross-Sectoral	Energy - Stationary Combustion and Fugitive Sources; Industrial Processes	Expected WCI credits purchased by Québec companies from California. In order to formally count the net flow of WCI allowances and offset credits (imported from California to Québec) as ITMO transfers into Canada under Article 6 of the Paris Agreement, a bilateral agreement authorizing transfer and use would need to be established between Canada and the United States, including submission of Article 6 reporting to the UNFCCC.	Emission trading	QC-CRC-02
Renewable Fuel Regulations	The Yukon	Transportation	Transport	10% ethanol and 20% biodiesel by 2025.	End-use fuel switching	YT-TRN-01

*Note: LULUCF is not considered an 'economic' sector, but is included with the list of sectors within Canada's Economic Sectors for completeness.

Table 11: Air pollutant policies and measures included in the WAM scenario

Policy Name	Jurisdiction	Economic Sector	Modelling Assumptions / Description
Ontario Carbon Black Industry Standard	Ontario	Heavy Industry	Modelling of Ontario's Carbon Black Industry Standard. The regulations targets SO_2 emissions from carbon black facilities located in Sarnia and Hamilton is done through a cap on emissions.

A4.6.7.3 Provincial and territorial governments' announced GHG emissions reduction targets

Table 12: Provincial and territorial governments' announced GHG emissions reduction targets

Province / Territory	Target in 2020	Target in 2030	Target in 2050
Newfoundland and Labrador	10% below 1990	30% below 2005	Net-zero by 2050
Prince Edward Island	10% below 1990	40% below 2005 (1.2 Mt CO_2 eq or less total emissions)	Net-zero by 2040
Nova Scotia	10% below 1990	53% below 2005	Net-zero by 2050
New Brunswick	10% below 1990	46% below 2005 (10.7 Mt CO_2 eq total emissions output of)	Net-zero by 2050
Québec	20% below 1990	37.5% below 1990	Carbon neutrality by 2050
Ontario	15% below 1990	30% below 2005 (144 Mt CO_2 eq total emissions)	NA
Manitoba	15% below 2005	5.6 Mt CO_2 eq cumulative reduction (2023 to 2027)	NA
Saskatchewan	NA	NA	NA
Alberta	50 Mt below business-as-usual scenario	NA	Carbon neutrality by 2050
British Columbia	33% below 2007	40% below 2007 (60% below 2007 by 2040)	Net-zero by 2050
Nunavut	NA	NA	NA
Yukon	NA	45% below 2010	Net-zero by 2050
Northwest Territories	NA	30% below 2005	NA

A4.7 Tables

A4.7.1 GHG emissions by economic sector (excluding LULUCF accounting contribution, NBCS, agriculture measures, and WCI Credits, unless otherwise noted)

Table 13: GHG emissions by economic sector (Mt CO_2 eq), WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Oil and Gas	118	195	217	209	208	199	201	201	205	202	153	152	151
Electricity*	94	117	47	40	39	18	18	11	39	37	19	14	9
Transportation	118	156	156	162	158	142	125	109	163	159	144	118	92
Heavy Industry	97	88	78	77	77	74	73	77	74	71	58	57	63
Buildings	72	85	89	81	79	75	71	69	81	79	70	60	54
Agriculture**	51	66	70	70	69	69	69	69	69	67	65	66	66
Waste and Others	57	55	51	49	49	50	51	53	47	46	33	34	37
Subtotal	***608***	***761***	***708***	***688***	***680***	***626***	***608***	***589***	***679***	***662***	***543***	***501***	***473***
WCI Credits	NA	NA	NA	NA	NA	NA	NA	NA	-8	-5	-1	0	0
LULUCF Accounting Contribution	NA	0	12	-29	-28	-28	-31	-30	-29	-28	-28	-31	-30
NBCS and Agriculture Measures	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-12	-12	-12
Total	**608**	**761**	**720**	**659**	**652**	**597**	**577**	**559**	**642**	**628**	**502**	**458**	**431**

Notes: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.
* Electricity emissions also include the contributions of steam generation.
** Additional emissions reductions in the Additional Measures Scenario occurring on agricultural lands are represented in the NBCS and Agriculture Measures row.

Table 14: GHG emissions by IPCC sector (Mt CO_2 eq), excluding LULUCF accounting contribution, NBCS, Agriculture Measures, and WCI credits, WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Energy - Stationary Combustion and Fugitive Sources	344	435	381	354	350	312	308	301	343	333	239	221	215
Energy - Transport	145	190	196	202	198	184	169	154	202	199	184	159	134
Industrial Processes	55	55	51	53	52	51	52	54	54	52	54	55	57
Agriculture	42	56	56	56	56	56	56	56	56	54	52	53	53
Waste	21	24	23	24	24	24	24	24	24	24	14	14	14
Total	**608**	**761**	**708**	**688**	**680**	**626**	**608**	**589**	**679**	**662**	**543**	**501**	**473**

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.

Table 15: Upstream oil and natural gas production: emissions and drivers, WM and WAM scenarios, 1990 to 2040 (Selected Years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Conventional Oil Production													
Emissions (Mt CO_2 eq)	32	49	40	35	33	32	32	30	35	33	19	19	18
Production (Mb/d)	1 207	1 360	1 243	1 260	1 261	1 253	1 305	1 229	1 262	1 264	1 263	1 289	1 188
Emissions Intensity (kg CO_2 eq / bbl)	71.7	97.7	87.7	75.3	71.9	69.5	66.2	68.0	75.1	71.6	42.3	39.7	40.5
Oil Sands (Excluding Upgraders)													
Emissions (Mt CO_2 eq)	7	19	61	67	69	71	71	70	65	64	57	56	56
Production (Mb/d)	393	1 065	3 316	3 568	3 717	4 001	4 051	4 014	3 608	3 779	4 110	4 150	4 093
Emissions Intensity (kg CO_2 eq / bbl)	48.1	47.7	50.6	51.8	50.6	48.5	48.2	47.6	49.0	46.7	37.8	37.1	37.3
Natural Gas Production and Processing													
Emissions (Mt CO_2 eq)	38	75	60	56	56	52	52	53	56	56	39	37	37
Production (Mb/d)	2 284	3 609	3 597	4 025	4 080	4 190	4 463	4 602	4 025	4 078	4 185	4 323	4 401
Emissions Intensity (kg CO_2 eq / bbl)	46.1	57.2	45.6	38.3	37.5	34.0	32.0	31.7	38.2	37.4	25.4	23.3	22.9

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024.

Table 16: Oil and gas emissions by subsector (Mt CO_2 eq), WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Natural Gas Production and Processing	38	75	60	56	56	52	52	53	56	56	39	37	37
Conventional Oil	32	48	39	35	33	32	32	30	35	33	19	19	18
Light Oil Production	19	22	21	18	17	16	16	15	18	17	9	8	8
Heavy Oil Production	13	25	17	16	15	14	14	13	16	15	9	9	8
Frontier Oil Production	0	2	1	1	1	1	2	2	1	1	1	2	1
Oil Sands	15	36	87	89	90	86	86	85	85	85	71	70	70
In-Situ	5	13	45	49	50	51	52	50	47	46	40	39	39
Mining and Extraction	2	6	16	18	19	20	20	20	18	18	17	17	17
Upgraders	8	17	25	21	21	15	15	15	21	21	15	14	14
Oil and Natural Gas Transmission	13	12	13	13	12	12	13	13	13	12	11	11	11
Downstream Oil and Gas	20	23	19	15	15	14	14	13	15	14	10	11	11
Petroleum Products	18	22	17	14	14	12	12	12	13	12	9	9	10
Natural Gas Distribution	2	1	1	1	1	1	1	1	1	1	1	1	1
LNG Production	0	0	0	1	2	3	5	6	1	2	2	4	5
Total	**118**	**195**	**217**	**209**	**208**	**199**	**201**	**201**	**205**	**202**	**153**	**152**	**151**

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.

Table 17: Petroleum refining and upgrading sector emissions and drivers, WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Traditional Refineries													
Emissions (Mt CO_2 eq)	18	22	17	14	14	12	12	12	13	12	9	9	10
Refined Petroleum Processed (Mb/d)	1 659	1 987	2 130	2 129	2 129	2 129	2 129	2 129	2 129	2 129	2 129	2 129	2 129
Emissions Intensity (kg CO_2 eq / bbl)	30.2	30.2	21.9	18.2	17.8	16.0	15.8	15.7	17.3	15.9	11.3	12.2	12.6
Upgraders													
Emissions (Mt CO_2 eq)	8	17	25	21	21	15	15	15	21	21	15	14	14
Refined Petroleum Processed (Mb/d)	209	613	1 208	1 102	1 130	1 130	1 130	1 130	1 098	1 130	1 133	1 135	1 133
Emissions Intensity (kg CO_2 eq / bbl)	109.5	77.0	56.3	52.6	51.4	37.4	36.7	36.2	51.9	50.1	35.4	34.5	34.6

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024.

Table 18: Transportation emissions by subsector (Mt CO_2 eq), WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Passenger Transport	80	95	90	101	98	84	63	42	101	98	84	62	41
Cars, Light Trucks and Motorcycles	71	85	80	90	87	74	52	31	90	87	73	51	30
Bus, Rail and Domestic Aviation	9	10	10	11	11	11	11	11	11	11	11	11	10
Freight Transport	30	48	52	48	46	43	47	50	48	47	45	40	34
Heavy-Duty Trucks, Rail	25	42	44	41	39	36	40	42	41	40	38	33	27
Domestic Aviation and Marine	5	5	7	7	7	7	7	8	7	7	7	7	7
Other: Recreational, Commercial and Residential	8	14	14	14	14	15	16	17	14	14	15	16	17
Total	**118**	**156**	**156**	**162**	**158**	**142**	**125**	**109**	**163**	**159**	**144**	**118**	**92**

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.

Table 19: Utility electricity sector emissions and drivers, WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Emissions (Mt CO_2 eq)	94	117	47	40	39	18	18	11	39	37	19	14	9
Generation (TWh)	432	543	573	596	606	662	687	710	590	598	654	677	731

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.

Table 20: Utility electricity sector emissions by fuel type (Mt CO_2 eq), WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Coal	80	98	24	16	16	0	0	0	16	16	0	0	0
Refined Petroleum Products	11	11	4	3	3	1	1	1	2	2	0	0	1
Natural Gas	3	7	18	21	20	16	16	9	20	19	18	13	7
Biofuels	0	0	0	0	0	0	0	0	0	0	0	0	0
Steam Generation	0	1	0	0	1	1	1	1	0	0	0	1	1
Total	**94**	**117**	**47**	**40**	**39**	**17**	**18**	**11**	**39**	**37**	**19**	**14**	**9**

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024.

Table 21: Heavy industry emissions and drivers, WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Emissions (Mt CO_2 eq)	97	88	78	77	77	74	73	77	74	71	58	57	63
Gross Output of Heavy Industry (2017 $billions)	152	214	208	210	214	229	246	263	210	214	229	245	265

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.

Table 22: Heavy industry emissions by subsector (Mt CO_2 eq), WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Mining	7	8	11	11	11	12	13	14	10	9	8	9	11
Smelting and Refining (Non-Ferrous Metals)	17	14	10	10	10	10	10	10	10	9	9	8	8
Pulp and Paper	15	9	8	6	5	5	5	5	6	5	3	3	3
Iron and Steel	17	16	13	13	13	9	8	8	13	12	7	7	7
Cement	10	13	11	10	9	8	9	9	9	9	7	8	8
Lime and Gypsum	3	3	3	2	2	2	2	3	2	2	2	2	2
Chemicals and Fertilizers	28	24	23	26	27	28	27	29	25	24	23	20	24
Total	**97**	**88**	**78**	**77**	**77**	**74**	**73**	**77**	**74**	**71**	**58**	**57**	**63**

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.

Table 23: Residential subsector emissions and drivers, WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Emissions (Mt CO_2 eq)	45	45	42	38	37	35	33	31	38	37	33	28	24
Households (millions)	10	13	15	17	17	18	19	20	17	17	18	19	20

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.

Table 24: Commercial subsector emissions and drivers, WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Emissions (Mt CO_2 eq)	28	40	46	43	42	40	38	38	43	42	37	33	30
Floor space (millions m^2)	510	654	772	801	809	845	899	961	826	836	872	921	981

Note: Numbers may not sum to the total due to rounding. Projections for Floor space begin in 2022. Historical emissions data come from NIR2024. Access more data.

Table 25: Agriculture emissions by subsector (Mt CO_2 eq), excluding LULUCF accounting contribution and Agriculture Measures, WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
On Farm Fuel Use	8	9	14	14	14	13	13	13	13	13	13	13	13
Crop Production	9	10	19	19	19	19	19	19	19	17	15	15	15
Animal Production	33	46	37	37	37	37	38	38	**37**	**37**	**37**	**38**	**38**
Total	**51**	**66**	**70**	**70**	**69**	**69**	**69**	**69**	**69**	**67**	**65**	**66**	**66**

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data. These values do not include the accounting contribution from Cropland remaining cropland or Agriculture Measures.

Table 26: Waste and others emissions by subsector (Mt CO_2 eq), WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Waste	21	24	23	24	24	24	24	24	24	24	14	14	14
Coal Production	5	3	3	3	3	3	3	3	3	3	2	2	3
Light Manufacturing, Construction and Forest Resources	32	28	24	23	23	23	24	26	21	20	16	18	21
Total	**57**	**55**	**51**	**49**	**49**	**50**	**51**	**53**	**47**	**46**	**33**	**34**	**37**

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.

Table 27: CCS emissions reductions by sector (Mt CO_2 eq), WM and WAM scenarios, 2022 to 2040 (selected years)

	Historical	Projected - WM Scenario			Projected - WAM Scenario		
	2022	**2030**	**2035**	**2040**	**2030**	**2035**	**2040**
Electricity	-0.7	-2.3	-1.6	-0.7	-2.3	-1.7	-1.5
Heavy Industry	-0.2	-1.6	-8.2	-8.2	-3.9	-9	-9.1
Hydrogen Production	NA	-3.7	-3.6	-3.5	-6.1	-6.2	-6.6
Oil and Gas	-1.9	-13.5	-15.1	-14.8	-14.4	-15.8	-15.6
Total	**-2.8**	**-21.1**	**-28.5**	**-27.2**	**-26.7**	**-32.7**	**-32.9**

Table 28: Emissions from fuel used for international aviation and maritime transportation by subsector (Mt CO_2 eq), WM and WAM scenarios, 2005 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Foreign Freight	8	11	8	8	8	8	8	8	8	8	8	8	8
Foreign Passenger	5	8	8	11	11	11	11	11	11	11	11	11	11
Total	**13**	**20**	**16**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**	**19**

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.

Table 29: Per capita GHG emissions by province and territory (t CO_2 eq per capita), excluding LULUCF accounting contribution, NBCS, and Agriculture Measures, WM and WAM scenarios, 2005 to 2040 (selected years)

	Historical		Projected – WM Scenario					Projected – WAM Scenario				
	2005	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Newfoundland and Labrador	20.0	16.2	16.5	16.3	14.5	14.1	13.2	14.9	14.8	12.9	12.4	11.6
Prince Edward Island	13.7	9.6	8.6	8.4	7.4	6.2	5.3	8.5	8.3	6.9	5.6	4.6
Nova Scotia	24.3	14.4	13.1	12.5	8.1	7.2	6.4	13.1	12.4	7.4	6.0	5.0
New Brunswick	26.9	15.4	14.6	14.3	9.3	8.4	7.4	14.1	13.4	7.7	7.1	6.2
Québec*	11.3	9.1	8.2	7.9	7.1	6.5	6.1	7.3	7.1	6.2	5.5	5.0
Ontario	16.2	10.4	9.7	9.5	8.2	7.4	6.3	9.7	9.3	7.6	6.2	5.3
Manitoba	17.5	15.3	13.7	13.5	12.5	11.4	10.5	13.7	13.3	11.4	10.1	9.1
Saskatchewan	81.0	64.4	55.1	53.7	43.4	40.7	38.5	54.6	52.6	36.2	32.7	30.9
Alberta	75.6	59.8	50.9	48.9	43.9	40.3	37.4	50.0	47.4	36.4	32.2	29.4
British Columbia	14.9	12.0	11.2	11.2	10.1	9.3	8.8	11.1	11.0	9.0	7.7	6.8
Yukon	17.7	15.1	12.7	12.5	11.4	10.2	9.0	12.0	11.6	10.1	8.7	7.4
Northwest Territories	39.8	30.3	24.1	21.7	18.8	17.3	16.4	23.7	21.4	18.2	15.8	14.2
Nunavut	19.3	15.2	34.7	37.1	37.2	36.9	36.1	32.3	32.7	30.4	32.6	32.9
Canada	**23.6**	**18.2**	**16.4**	**16.0**	**14.0**	**12.9**	**11.8**	**16.0**	**15.4**	**12.1**	**10.6**	**9.5**

Notes: Historical emissions data come from NIR2024. Access more data.

* Projections for Québec for the WAM scenario include purchased credits under the WCI. In order to formally count the net flow of WCI allowances and offset credits (imported from California to Québec) as ITMO transfers into Canada under Article 6 of the Paris Agreement, a bilateral agreement authorizing transfer and use would need to be established between Canada and the United States, including submission of Article 6 reporting to the UNFCCC.

Table 30: Canadian GHG emissions by gas (Mt CO_2 eq, except for NF_3), excluding LULUCF accounting contribution, NBCS, Agriculture Measures, and WCI credits, WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Carbon Dioxide (CO_2)	458	573	551	542	537	485	468	449	533	520	442	403	376
Methane (CH_4)	108	150	117	109	107	107	108	108	110	107	70	69	69
Nitrous Oxide (N_2O)	31	29	28	28	28	29	29	29	28	27	25	25	25
Hydrofluorocarbon (HFC)	<1	5	11	8	7	5	3	3	8	7	5	3	3
Perfluorocarbon (PFC)	7	3	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Sulphur-Hexafluoride (SF_6)	3	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Nitrogen Trifluoride (NF_3) (kt CO_2 eq)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Total	**608**	**761**	**708**	**688**	**680**	**626**	**608**	**589**	**679**	**662**	**543**	**501**	**473**

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.

Table 31: Canadian emissions of CO_2 by economic sector (Mt CO_2 eq), excluding LULUCF accounting contribution, NBCS, Agriculture Measures, and WCI credits, WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Oil and Gas	66	113	158	158	160	150	151	151	154	153	132	130	130
Electricity	94	116	47	39	38	17	17	11	38	37	19	13	9
Transportation	113	148	151	158	154	139	122	106	159	155	141	115	90
Heavy Industry	75	79	76	76	76	73	72	76	73	70	57	57	63
Buildings	68	78	77	71	69	66	64	63	71	69	61	54	48
Agriculture	9	11	17	16	16	16	16	16	16	16	15	16	16
Waste and Others	33	29	25	24	24	24	25	27	22	21	17	19	21
Total	**458**	**573**	**551**	**542**	**537**	**485**	**468**	**449**	**533**	**520**	**442**	**403**	**376**

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.

Table 32: Canadian emissions of CH_4 by economic sector (Mt CO_2 eq), excluding LULUCF accounting contribution, NBCS, Agriculture Measures, and WCI credits, WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Oil and Gas	51.8	82.1	57.5	50	47.9	47.8	48.7	49	50.1	47.9	20.9	20.7	20.3
Electricity	0.1	0.2	0.3	0.5	0.5	0.4	0.4	0.3	0.5	0.5	0.4	0.4	0.3
Transportation	0.8	1.2	1	1	1	1.1	1.1	1.1	1	1	1.1	1.1	1.1
Heavy Industry	0.4	0.4	0.4	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3
Buildings	3.5	2.9	3.2	3.1	3	2.8	2.7	2.5	3.1	3	2.8	2.7	2.5
Agriculture	28	39	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5	31.5
Waste and Others	23.6	24.5	23.3	23.1	23.1	22.9	22.8	22.9	23.1	23.1	13.5	12.9	13.1
Total	**108.2**	**150.3**	**117.1**	**109.5**	**107.2**	**106.9**	**107.5**	**107.7**	**109.5**	**107.2**	**70.4**	**69.5**	**69.1**

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.

Table 33: Canadian emissions of N_2O by economic sector (Mt CO_2 eq), excluding LULUCF accounting contribution, NBCS, Agriculture Measures, and WCI credits, WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Oil and Gas	0.3	0.6	0.8	0.8	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8
Electricity	0.4	0.6	0.3	0.3	0.3	0.2	0.2	0.1	0.3	0.3	0.2	0.1	0.1
Transportation	4.5	5.5	1.9	2	2	2	1.9	1.7	2	2	1.9	1.7	1.5
Heavy Industry	10.4	3.8	0.5	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.3	0.4	0.4
Buildings	0.7	0.9	1.1	1	1	1	1.1	1.1	1	1	1	1	1
Agriculture	13.3	15.9	21.8	21.7	21.7	21.8	22	22.2	21.7	20.2	18.2	18.4	18.6
Waste and Others	1	1.4	2	2.1	2.1	2.2	2.4	2.5	2.1	2.1	2.1	2.3	2.5
Total	**30.6**	**28.6**	**28.4**	**28.4**	**28.4**	**28.5**	**28.8**	**29**	**28.4**	**26.8**	**24.6**	**24.7**	**24.8**

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.

Table 34: Canadian emissions of HFCs by economic sector (Mt CO_2 eq), excluding LULUCF accounting contribution, NBCS, Agriculture Measures, and WCI credits, WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Oil and Gas	0	0	0	0	0	0	0	0	0	0	0	0	0
Electricity	0	0	0	0	0	0	0	0	0	0	0	0	0
Transportation	0	1.7	2	1.4	1.1	0.5	0	0	1.4	1.1	0.5	0	0
Heavy Industry	0.8	0	0.1	0	0	0	0	0	0	0	0	0	0
Buildings	0	2.7	8	5.9	5.6	4.5	3.2	2.4	6	5.7	4.7	3.3	2.5
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0	0
Waste and Others	0	0.3	0.4	0.3	0.3	0.2	0.1	0.1	0.3	0.3	0.2	0.1	0.1
Total	**0.8**	**4.8**	**10.6**	**7.6**	**7**	**5.3**	**3.4**	**2.5**	**7.7**	**7.1**	**5.4**	**3.4**	**2.6**

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.

Table 35: Canadian emissions of PFCs by economic sector (Mt CO_2 eq), excluding LULUCF accounting contribution, NBCS, Agriculture Measures, and WCI credits, WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Oil and Gas	0	0	0	0	0	0	0	0	0	0	0	0	0
Electricity	0	0	0	0	0	0	0	0	0	0	0	0	0
Transportation	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Industry	6.8	3.4	0.7	0.4	0.4	0.4	0.4	0.5	0.4	0.4	0.3	0.3	0.2
Buildings	0	0	0	0	0	0	0	0	0	0	0	0	0
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0	0
Waste and Others	0	0	0	0	0	0	0	0.1	0	0	0	0	0.1
Total	**6.8**	**3.4**	**0.7**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.5**	**0.4**	**0.3**	**0.2**

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.

Table 36: Canadian emissions of SF_6 by economic sector (Mt CO_2 eq), excluding LULUCF accounting contribution, NBCS, Agriculture Measures, and WCI credits, WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Oil and Gas	0	0	0	0	0	0	0	0	0	0	0	0	0
Electricity	0.2	0.2	0.1	0.1	0	0	0	0	0.1	0	0	0	0
Transportation	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Industry	3.1	1.3	0.2	0	0	0	0	0	0	0	0	0	0
Buildings	0	0	0	0	0	0	0	0	0	0	0	0	0
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0	0
Waste and Others	0	0	0	0	0	0	0.1	0.1	0	0	0	0.1	0.1
Total	**3.3**	**1.5**	**0.3**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**	**0.1**

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.

Table 37: Canadian emissions of NF_3 by economic sector (kt CO_2 eq), excluding LULUCF accounting contribution, NBCS, Agriculture Measures, and WCI credits, WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Oil and Gas	0	0	0	0	0	0	0	0	0	0	0	0	0
Electricity	0	0	0	0	0	0	0	0	0	0	0	0	0
Transportation	0	0	0	0	0	0	0	0	0	0	0	0	0
Heavy Industry	0	0	0	0	0	0	0	0	0	0	0	0	0
Buildings	0	0	0	0	0	0	0	0	0	0	0	0	0
Agriculture	0	0	0	0	0	0	0	0	0	0	0	0	0
Waste and Others	0.3	0.2	0.6	0.6	0.6	0.7	0.7	0.8	0.6	0.6	0.7	0.7	0.8
Total	**0.3**	**0.2**	**0.6**	**0.6**	**0.6**	**0.7**	**0.7**	**0.8**	**0.6**	**0.6**	**0.7**	**0.7**	**0.8**

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.

Table 38: Canadian GHG emissions by province and territory (Mt CO_2 eq), excluding LULUCF accounting contribution, NBCS, and Agriculture Measures, WM and WAM scenarios, 2005 to 2040 (selected years)

	Historical		Projected - WM Scenario					Projected - WAM Scenario				
	2005	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Newfoundland and Labrador	10	9	9	9	8	8	6	8	8	7	7	6
Prince Edward Island	2	2	2	2	1	1	1	2	2	1	1	1
Nova Scotia	23	15	14	14	9	9	6	14	14	9	7	6
New Brunswick	20	12	13	13	9	8	6	12	12	7	7	6
Québec*	86	79	75	73	67	62	48	66	65	58	53	48
Ontario	203	157	160	159	145	139	106	159	156	134	118	106
Manitoba	21	22	21	21	20	19	16	21	20	18	17	16
Saskatchewan	80	76	69	69	59	57	45	69	67	49	46	45
Alberta	251	270	258	254	243	240	187	253	246	201	192	187
British Columbia	63	64	64	65	62	62	48	64	64	56	51	48
Yukon	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Northwest Territories	2	1	1	<1	<1	<1	<1	1	<1	<1	<1	<1
Nunavut	<1	<1	1	2	2	2	2	1	1	1	2	2
Canada	**761**	**708**	**688**	**680**	**626**	**608**	**473**	**671**	**656**	**542**	**501**	**473**

Notes: Numbers may not sum to the total due to rounding. Historical emissions data come from NIR2024. Access more data.
* Projections for Québec for the WAM scenario include purchased credits under the WCI. In order to formally count the net flow of WCI allowances and offset credits (imported from California to Québec) as ITMO transfers into Canada under Article 6 of the Paris Agreement, a bilateral agreement authorizing transfer and use would need to be established between Canada and the United States, including submission of Article 6 reporting to the UNFCCC.

Table 39: Canada's 2030 GHG emissions projections by economic sector (Mt CO_2 eq), current WM and WAM scenarios, comparison to projections presented in NC8/BR5

	WM Scenario			WAM Scenario		
	NC8/BR5	**BTR1**	**Change**	**NC8/BR5**	**BTR1**	**Change**
Oil and Gas	183	199	16	135	153	18
Electricity	33	18	-15	19	19	0
Transportation	163	142	-21	158	144	-13
Heavy Industry	72	74	2	60	58	-1
Buildings	69	75	6	55	70	15
Agriculture	69	69	0	63	65	2
Waste and Others	50	50	0	32	33	1
WCI Credits	NA	NA	NA	-4	-1	4
LULUCF Accounting Contribution	-12	-28	-16	-12	-28	-16
NBCS and Agriculture Measures	NA	NA	NA	-15	-12	3
Total	**625**	**597**	**-28**	**491**	**502**	**11**

Note: Numbers may not sum to the total due to rounding. Access more data.

Table 40: Canadian GHG emissions (Mt CO_2 eq), excluding LULUCF accounting contribution, under full range of sensitivity scenarios, 2030 to 2040 (selected years)

Scenario	GHG Emissions in 2030	GHG Emissions in 2035	GHG Emissions in 2040
Fast Growth, High Prices	650	654	647
Fast Growth	636	626	613
High Prices	640	637	623
With Measures	626	608	589
Low Prices	612	570	543
Slow Growth	616	591	563
Slow Growth, Low Prices	601	552	515
Range	601 to 650	552 to 654	515 to 647

Note: Access more data. Growth refers to growth of GDP and population. Prices refer to oil and gas prices.

Table 41: Difference in Canadian GHG emissions by economic sector (Mt CO_2 eq), between sensitivity scenarios projections and the WM scenario, 2030

Sector	Fast Growth-High World Oil Prices	Fast Growth	High World Oil Prices	Low World Oil Prices	Slow Growth	Slow Growth-Low World Oil Prices
Oil and Gas	14	0	14	-16	0	-16
Electricity	3	1	1	0	-1	-1
Transportation	5	4	1	-1	-4	-5
Heavy Industry	1	3	-1	2	-3	-1
Buildings	1	1	-1	1	-1	0
Agriculture	0	0	0	0	-1	0
Waste and Others	1	1	0	1	-1	-1
Total	**25**	**11**	**13**	**-13**	**-11**	**-24**

Note: Numbers may not sum to the total due to rounding. Access more data.

Table 42: Results of the technology scenarios by economic sector in 2030, 2035, and 2040 (Mt CO_2 eq)

Sector	2030			2035			2040		
	With Additional Measures Scenario	High Adoption Technology Scenario	Low Technology Adoption Scenario	With Additional Measures Scenario	High Adoption Technology Scenario	Low Technology Adoption Scenario	With Additional Measures Scenario	High Adoption Technology Scenario	Low Technology Adoption Scenario
Oil and Gas	153	153	153	152	152	152	151	152	152
Electricity	19	20	19	14	13	14	9	9	9
Transportation	144	142	147	118	115	120	92	89	94
Heavy Industry	58	58	59	57	57	58	63	63	63
Buildings	70	70	70	60	60	60	54	54	54
Agriculture	65	65	65	66	66	65	66	66	66
Waste and Others	33	33	33	34	34	34	37	37	37
Total	**543**	**541**	**545**	**501**	**497**	**504**	**473**	**469**	**475**

Note: Numbers may not sum to the total due to rounding. Access more data.

A4.7.2 Land-use, land-use change and forestry, nature-based climate solutions, and agriculture measures

Table 43: LULUCF sector net GHG flux estimates (Mt CO_2 eq), 1990 to 2040 (selected years)

	Historical Estimates								Projected Estimates				
	1990	2005	2017	2018	2019	2020	2021	2022	2025	2026	2030	2035	2040
Total LULUCF	**49**	**66**	**19**	**23**	**14**	**26**	**13**	**51**	**-4**	**-18**	**-25**	**-23**	**-23**

Note: Historical estimates include all LULUCF subcategories. Projected estimates include only subsectors for which projections are available (that is, they exclude grassland, settlements remaining settlements and other land subsectors). Access more data.

Table 44: LULUCF accounting contribution and projected GHG impact of NBCS and agriculture measures (Mt CO_2 eq), 2017 to 2040 (selected years)

	Historical Estimates						Projected Estimates				
	2017	2018	2019	2020	2021	2022	2025	2026	2030	2035	2040
LULUCF Accounting Contribution	-19	-16	-26	-20	-29	12	-29	-28	-28	-31	-30
GHG Impact of NBCS and Agriculture Measures	NA	NA	NA	NA	NA	NA	N/A	N/A	-12	-12	-12
Total (LULUCF Accounting + NBCS and Agriculture Measures)	**-19**	**-16**	**-26**	**-20**	**-29**	**12**	**-29**	**-28**	**-41**	**-44**	**-42**

Notes: N/A = Not available
Historical estimates include all LULUCF subcategories. Projected estimates include only subsectors for which projections are available (that is, they exclude grassland, settlements remaining settlements and other land subsectors). Access more data.

Table 45: Emissions reductions / accounting impact of nature-based climate solutions and agriculture measures added to the WAM scenario (Mt CO_2 eq), 2030, 2035 and 2040

Category	2030	2035	2040
Agriculture Measures*	**-6**	**-6**	**-6**
Budget 2021 Measures On-Farm Climate Action Fund, Agricultural Climate Solutions Living Labs	-2	-2	-2
Budget 2022 Measures *On-Farm Climate Action Fund (except nitrogen management), Sustainable Canadian Agriculture Partnership (except nitrogen management), Resilient Agricultural Landscapes Program*	-4	-4	-4
Nature-Smart Climate Solutions	**-5 to -7 (-6)**	**-5 to -7 (-6)**	**-5 to -7 (-6)**
Nature Smart Climate Solutions (Round 1) *Avoided conversion of wetlands, grasslands, and forests, restoration of wetlands and grasslands*	-2 to -4 (-3)	-2 to -4 (-3)	-2 to -4 (-3)
Nature Smart Climate Solutions (Round 2) *Extension of activities from Round 1 funding*	-3	-3	-3
Total Additional Reductions from Nature-Based Climate Solutions and Agriculture Measures	**-11 to -13 (-12)**	**-11 to -13 (-12)**	**-11 to -13 (-12)**

Note: *Fertilizer emissions target (30% reduction from 2020 level) is modelled in the With Additional Measures scenario.

Table 46: Historical LULUCF net GHG flux estimates (kt CO_2 eq), 1990 to 2022 (selected years)

Sectoral Category	1990	2005	2017	2018	2019	2020	2021	2022
A. Forest Land	**-89 000**	**-64 000**	**-99 000**	**-99 000**	**-100 000**	**-100 000**	**-100 000**	**-110 000**
Forest Land remaining Forest Land (FLFL)[a]	-88 000	-63 000	-99 000	-99 000	-100 000	-100 000	-100 000	-110 000
FLFL from afforestation	*- 110*	*-1 700*	*-2 600*	*-2 700*	*-2 700*	*-2 800*	*-2 800*	*-2 800*
FLFL not from afforestation	*-88 000*	*-62 000*	*-96 000*	*-96 000*	*-100 000*	*-98 000*	*-100 000*	*-110 000*
Land converted to Forest Land (LFL)	-1 100	- 950	- 390	- 330	- 300	- 240	- 180	- 130
B. Cropland[b]	**310**	**-23 000**	**-24 000**	**-23 000**	**-19 000**	**-16 000**	**-19 000**	**22 000**
Cropland remaining Cropland (CLCL)	-9 400	-27 000	-27 000	-26 000	-22 000	-19 000	-22 000	18 000
Land converted to Cropland (LCL)	9 700	4 100	3 400	3 600	3 500	3 500	3 600	3 600
C. Grassland	**0.7**	**0.9**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**	**1.3**
Grassland remaining Grassland (GLGL)	0.7	0.9	1.3	1.3	1.3	1.3	1.3	1.3
Land converted to Grassland (LGL)	NO	NO	NO	NO	NO	NO	NO	NO
D. Wetlands	**5 400**	**3 100**	**3 100**	**2 800**	**3 100**	**3 500**	**3 200**	**3 300**
Wetlands remaining Wetlands (WLWL)	1 500	2 600	2 700	2 500	2 700	2 900	2 700	3 100
Land converted to Wetlands (LWL)	3 900	510	420	250	410	560	440	290
E. Settlements	**1 800**	**1 800**	**2 400**	**2 300**	**2 200**	**2 300**	**2 200**	**2 200**
Settlements remaining Settlements (SLSL)	-4 200	-4 400	-4 400	-4 400	-4 400	-4 400	-4 400	-4 400
Land converted to Settlements (LSL)	6 100	6 100	6 800	6 700	6 600	6 800	6 600	6 700
F. Other Land	**NE, NO**	**NE, NO**	**NE, NO**	**NE, NO**	**NE, NO**	**NE, NO**	**NE, NO**	**NE, NO**
G. Harvested Wood Products (HWP)[c]	**130 000**	**150 000**	**140 000**	**140 000**	**130 000**	**140 000**	**130 000**	**130 000**
HWP from FLFL	130 000	140 000	130 000	130 000	130 000	130 000	130 000	130 000
HWP from Forest Conversion	2 700	2 900	3 400	3 400	3 300	3 600	3 500	3 500
HWP from Residential Firewood[d]	1 100	790	1 100	980	840	830	820	830
Total LULUCF[e]	**49 000**	**66 000**	**19 000**	**23 000**	**14 000**	**26 000**	**14 000**	**51 000**
Forest conversion[f]	*21 000*	*16 000*	*17 000*	*17 000*	*16 000*	*17 000*	*17 000*	*16 000*

Notes: NE = Not Estimated, NO = Not Occurring.
Negative sign indicates net removals of CO_2 from the atmosphere.

[a] Wetlands subject to forest management practices are not included in NIR estimates due to a lack of suitable activity data and science to quantify the short, medium and long-term impacts of management on net GHG emissions.

[b] Wetlands converted to Cropland and subject to agricultural management practices are not included in NIR estimates due to a lack of suitable activity data and science to quantify the short, medium, and long-term impacts of conversion and management on net GHG emissions.

[c] Emissions for different components shown separately for information and because the accounting approach differs between 'HWP from FLFL' (Reference Level) and the other components (Net-Net).

[d] This series represents HWP emissions from Residential Firewood coming from Cropland and Settlements only. HWP emissions from Residential Firewood coming from Forest Land are included in the 'HWP from FLFL' series.

[e] Totals may not add up due to rounding.

[f] Shown for information only. Forest Conversion overlaps with the subsectors of 'CLCL', 'LCL', 'WLWL', 'LWL', 'LSL' and 'HWP'.

Table 47: Net GHG flux estimates from LULUCF subsectors for which projections are currently available (kt CO_2 eq), 1990 to 2040 (selected years)

	Historical Estimates								Projected Estimates				
Sectoral Category	**1990**	**2005**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**
A. Forest Land	**-89 000**	**-65 000**	**-99 000**	**-99 000**	**-100 000**	**-100 000**	**-110 000**	**-110 000**	**-130 000**	**-130 000**	**-140 000**	**-150 000**	**-150 000**
Forest Land remaining Forest Land (FLFL)[a]	-88 000	-64 000	-99 000	-99 000	-100 000	-100 000	-100 000	-110 000	-130 000	-130 000	-140 000	-150 000	-150 000
FLFL from afforestation	*- 110*	*-1 700*	*-2 600*	*-2 700*	*-2 700*	*-2 800*	*-2 800*	*-2 800*	*-2 800*	*-2 700*	*-2 600*	*-2 300*	*-2 000*
FLFL not from afforestation	*-88 000*	*-62 000*	*-96 000*	*-96 000*	*-100 000*	*-98 000*	*-100 000*	*-100 000*	*-120 000*	*-130 000*	*-140 000*	*-140 000*	*-140 000*
Land converted to Forest Land (LFL)	-1 100	- 950	- 390	- 330	- 300	- 240	- 180	- 130	360	480	620	- 540	-1 500
B. Cropland	**1 000**	**-23 000**	**-24 000**	**-23 000**	**-19 000**	**-16 000**	**-19 000**	**22 000**	**-13 000**	**-12 000**	**-11 000**	**-10 000**	**-9 900**
Cropland remaining Cropland (CLCL)[b]	-8 300	-27 000	-27 000	-26 000	-22 000	-19 000	-23 000	18 000	-16 000	-15 000	-14 000	-13 000	-12 000
Land converted to Cropland (LCL)[c]	9 400	4 100	3 400	3 500	3 400	3 400	3 500	3 500	3 200	3 100	2 700	2 400	2 200
C. Grassland[d]	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**
Grassland remaining Grassland (GLGL)	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Land converted to Grassland (LGL)	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
D. Wetlands[e]	**2 900**	**1 600**	**1 300**	**1 100**	**1 200**	**1 300**	**1 200**	**1 100**	**560**	**550**	**500**	**480**	**410**
Wetlands remaining Wetlands (WLWL)	580	1 200	950	930	920	920	900	900	500	500	470	420	370
Land converted to Wetlands (LWL)	2 300	430	320	170	280	340	300	160	57	43	33	55	35
E. Settlements	**6 000**	**6 100**	**6 800**	**6 700**	**6 600**	**6 800**	**6 600**	**6 700**	**6 300**	**6 100**	**5 300**	**4 600**	**4 400**
Settlements remaining Settlements (SLSL)	0	0	0	0	0	0	0	-0.7	- 7.4	- 11	- 27	- 43	- 63
Land converted to Settlements (LSL)[f]	6 000	6 100	6 800	6 700	6 600	6 800	6 600	6 700	6 300	6 100	5 300	4 600	4 400
F. Other Land	**NE, NO**	**NE, NO**	**NE, NO**	**NE, NO**	**NE, NO**	**NE, NO**	**NE, NO**	**NE, NO**	**NE, NO**	**NE, NO**	**NE, NO**	**NE, NO**	**NE, NO**
G. Harvested Wood Products (HWP)[g]	**130 000**	**150 000**	**140 000**	**140 000**	**130 000**	**140 000**	**130 000**	**130 000**	**130 000**	**130 000**	**130 000**	**130 000**	**130 000**
HWP from FLFL	130 000	140 000	130 000	130 000	130 000	130 000	130 000	130 000	120 000	120 000	120 000	120 000	130 000
HWP from Forest Conversion	2 700	2 900	3 400	3 400	3 300	3 600	3 500	3 500	3 200	3 100	2 700	2 600	2 700
HWP from Residential Firewood[h]	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total LULUCF[i]	**50 000**	**67 000**	**20 000**	**24 000**	**15 000**	**26 000**	**14 000**	**52 000**	**-4 000**	**-12 000**	**-18 000**	**-25 000**	**-23 000**
Forest conversion[j]	*21 000*	*16 000*	*17 000*	*17 000*	*16 000*	*17 000*	*17 000*	*16 000*	*15 000*	*14 000*	*13 000*	*11 000*	*11 000*

Notes: NE = Not Estimated, NO = Not Occurring.
Negative sign indicates net removals of CO_2 from the atmosphere.
[a] Historical estimates and projections do not include net emissions from drainage, as these projections are not yet available.
[b] Historical estimates and projections do not include net emissions from agricultural woody biomass, as these projections are not yet available.
[c] Historical estimates and projections are only for Forest Land converted to Cropland.
[d] No projections are available for grasslands.
[e] Historical estimates and projections are only for Forest Land converted to Wetlands.
[f] Historical estimates and projections are only for Forest Land converted to Settlements.

[g] Emissions for different components shown separately for information and because the accounting approach differs between 'HWP from FLFL' (Reference Level) and 'HWP from Forest Conversion' (Net-Net).
[h] This series represents HWP emissions from Residential Firewood coming from Cropland and Settlements only, for which projections are not currently available. HWP emissions from Residential Firewood coming from Forest Land is included in the 'HWP from FLFL series'.
[i] Totals may not add up due to rounding.
[j] Shown for information only. Forest Conversion overlaps with the subsectors of 'CLCL', 'LCL','WLWL', 'LWL', 'LSL', and 'HWP'.

Table 48: Calculation of the accounting contribution from forest land remaining forest land and associated harvested wood products (kt CO_2 eq), 2017 to 2040 (selected years)

	Historical Values						Projected Values				
Forest Land Remaining Forest Land + associated Harvested Wood Products	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**
Historical/Projected Net GHG Flux	36 000	39 000	26 000	34 000	26 000	22 000	970	-7 500	-13 000	-20 000	-17 000
Reference Level	54 000	56 000	56 000	62 000	59 000	56 000	40 000	31 000	26 000	21 000	21 000
Accounting contribution	**-18 000**	**-17 000**	**-30 000**	**-28 000**	**-33 000**	**-34 000**	**-39 000**	**-39 000**	**-38 000**	**-41 000**	**-38 000**

Notes: Projected years: actual contributions will depend on actual emissions/removals occurring in those years.
Projections do not include net emissions from drainage, as these projections are not yet available.
Negative values represent progress towards lowering Canada's GHG emissions.
Totals may not add up due to rounding.

Table 49: Accounting contribution by LULUCF subsector (kt CO_2 eq), 2017 to 2022

Sectoral Category	2017	2018	2019	2020	2021	2022	Accounting Approach
A. Forest Land	**-8 000**	**-8 600**	**-12 000**	**-15 000**	**-15 000**	**-16 000**	
Forest Land Remaining Forest Land (FLFL) not from afforestation	-7 600	-8 200	-12 000	-15 000	-15 000	-15 000	Reference Level
Forest Land Remaining Forest Land from afforestation	- 930	- 980	-1 000	-1 100	-1 100	-1 100	Net-net
Land converted to Forest Land (LFL)	560	620	650	710	770	820	Net-net
B. Cropland	**-1 400**	**36**	**4 100**	**6 900**	**3 700**	**44 000**	Net-net
Cropland remaining Cropland (CLCL)	- 760	550	4 700	7 600	4 200	45 000	Net-net
Land converted to Cropland (LCL)	- 660	- 520	- 600	- 620	- 510	- 500	Net-net
C. Grassland	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	**0.4**	Net-net
Grassland remaining Grassland (GLGL)	0.4	0.4	0.4	0.4	0.4	0.4	Net-net
Land converted to Grassland (LGL)	NO	NO	NO	NO	NO	NO	Net-net
D. Wetlands	**- 76**	**- 390**	**- 66**	**340**	**41**	**200**	Net-net
Wetlands remaining Wetlands (WLWL)	12	- 130	30	280	100	410	Net-net
Land converted to Wetlands (LWL)	- 89	- 250	- 96	56	- 63	- 210	Net-net
E. Settlements	**660**	**550**	**430**	**590**	**420**	**490**	Net-net
Settlements remaining Settlements (SLSL)	- 63	- 63	- 63	- 63	- 63	- 64	Net-net
Land converted to Settlements (LSL)	720	610	500	650	480	550	Net-net
F. Other Land	**NE,NO**	**NE,NO**	**NE,NO**	**NE,NO**	**NE,NO**	**NE,NO**	
G. Harvested Wood Products (HWP)	**-9 900**	**-7 900**	**-18 000**	**-12 000**	**-18 000**	**-17 000**	
HWP from FLFL	-11 000	-8 600	-18 000	-13 000	-19 000	-18 000	Reference Level
HWP from Forest Conversion	470	470	380	690	590	580	Net-net
HWP from Residential Firewood[a]	280	190	54	41	31	35	Net-net
Total LULUCF[b]	**-19 000**	**-16 000**	**-26 000**	**-20 000**	**-29 000**	**12 000**	
Forest conversion[c]	*300*	*140*	*- 60*	*430*	*180*	*93*	*Net-net*

Notes: NE = Not Estimated, NO = Not Occurring.
Negative values represent progress towards lowering Canada's GHG emissions.
[a] This series represents the accounting contribution of HWP emissions from Residential Firewood coming from Cropland and Settlements only. The accounting contribution of HWP emissions from Residential Firewood coming from Forest Land is included in the 'HWP from FLFL' series.
[b] Totals may not add up due to rounding.
[c] Shown for information only. Forest Conversion overlaps with the subsectors of 'CLCL', 'LCL','WLWL', 'LWL', 'LSL', and 'HWP'.

Table 50: Projected accounting contribution by LULUCF subsector (kt CO_2 eq), 2025 to 2040 (selected years)

Sectoral Category	2025	2026	2030	2035	2040	Accounting Approach
A. Forest Land	**-19 000**	**-19 000**	**-19 000**	**-23 000**	**-23 000**	
Forest Land Remaining Forest Land (FLFL) not from afforestation	-20 000	-20 000	-20 000	-22 000	-22 000	Reference Level
Forest Land Remaining Forest Land from afforestation	-1 100	-1 000	- 850	- 540	- 270	Net-net
Land converted to Forest Land (LFL)	1 300	1 400	1 600	410	- 590	Net-net
B. Cropland[a]	**10 000**	**11 000**	**11 000**	**13 000**	**13 000**	Net-net
Cropland remaining Cropland (CLCL)	11 000	12 000	13 000	14 000	15 000	Net-net
Land converted to Cropland (LCL)	- 850	- 950	-1 400	-1 600	-1 900	Net-net
C. Grassland[b]	**N/A**	**N/A**	**N/A**	**N/A**	**N/A**	Net-net
Grassland remaining Grassland (GLGL)	N/A	N/A	N/A	N/A	N/A	Net-net
Land converted to Grassland (LGL)	NO	NO	NO	NO	NO	Net-net
D. Wetlands[c]	**-1 000**	**-1 000**	**-1 100**	**-1 100**	**-1 200**	Net-net
Wetlands remaining Wetlands (WLWL)	- 650	- 660	- 690	- 730	- 790	Net-net
Land converted to Wetlands (LWL)	- 380	- 390	- 400	- 380	- 400	Net-net
E. Settlements	**210**	**18**	**- 780**	**-1 500**	**-1 700**	Net-net
Settlements remaining Settlements (SLSL)	- 7	- 11	- 27	- 43	- 63	Net-net
Land converted to Settlements (LSL)[d]	220	29	- 750	-1 500	-1 700	Net-net
F. Other Land	**NE,NO**	**NE,NO**	**NE,NO**	**NE,NO**	**NE,NO**	
G. Harvested Wood Products (HWP)	**-19 000**	**-19 000**	**-19 000**	**-18 000**	**-17 000**	
HWP from FLFL	-19 000	-19 000	-18 000	-18 000	-17 000	Reference Level
HWP from Forest Conversion	270	170	- 230	- 360	- 270	Net-net
HWP from Residential Firewood[e]	N/A	N/A	N/A	N/A	N/A	Net-net
Total LULUCF[f]	**-29 000**	**-28 000**	**-28 000**	**-31 000**	**-30 000**	
Forest conversion[g]	*-1 500*	*-2 000*	*-3 800*	*-5 000*	*-5 500*	*Net-net*

Notes: Projected years: actual contributions will depend on actual emissions/removals occurring in those years.
NE = Not Estimated, NO = Not Occurring.
Negative values represent progress towards lowering Canada's GHG emissions.
[a] Projections are available only for Cropland remaining Cropland (CLCL, excluding agricultural woody biomass) and Forest Land converted to Cropland.
[b] No projections are available.
[c] Projections are available only for Forest Land converted to Wetlands.
[d] Projections are available only for Forest Land converted to Settlements.
[e] This series represents HWP emissions from Residential Firewood coming from Cropland and Settlements only, for which projections are not currently available. HWP emissions from Residential Firewood coming from Forest Land is included in the 'HWP from FLFL series'.
[f] Totals may not add up due to rounding.
[g] Shown for information only. Forest Conversion overlaps with the subsectors of 'CLCL', 'LCL','WLWL', 'LWL', 'LSL', and 'HWP'.

A4.7.3 Air pollutant emissions

Table 51: Air pollutant emissions by pollutant, excluding other sources (kt, except mercury), WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Nitrogen Oxides	2 251	2 266	1 303	1 099	1 087	1 011	983	980	1 083	1 059	940	872	847
Sulphur Oxides	3 012	2 098	652	601	562	450	463	468	591	548	412	411	415
Volatile Organic Compounds	2 287	2 293	1 407	1 212	1 205	1 207	1 206	1 207	1 215	1 208	1 208	1 193	1 186
Total Particulate Matter*													
(excl. Open Sources)	1 128	652	612	584	583	571	572	580	585	581	562	560	569
(incl. Open Sources)	20 764	21 512	24 530	25 842	26 566	28 938	31 346	33 750	26 045	26 836	29 635	32 061	34 828
PM_{10}**													
(excl. Open Sources)	678	401	342	321	318	305	297	294	321	316	300	289	286
(incl. Open Sources)	6 709	6 855	7 555	7 901	8 100	8 751	9 417	10 086	7 958	8 175	8 942	9 609	10 380
$PM_{2.5}$***													
(excl. Open Sources)	497	287	195	176	172	158	146	139	176	171	153	140	132
(incl. Open Sources)	1 663	1 380	1 299	1 318	1 338	1 402	1 473	1 549	1 326	1 347	1 423	1 490	1 576
Carbon Monoxide	12 972	8 890	4 499	4 554	4 512	4 357	4 164	4 012	4 539	4 473	4 246	3 940	3 751
Mercury (Kilograms)	33 641	7 945	2 963	2 959	2 949	2 608	2 620	2 697	2 944	2 898	2 475	2 474	2 551
Ammonia	395	490	482	443	459	509	552	601	443	458	506	546	590
Black Carbon	N/A	N/A	25.7	22.7	22.0	19.6	17.9	17.0	22.4	21.6	18.5	16.4	15.1

Notes: Historical emissions data come from APEI2024 and Canada's Black Carbon Inventory Report 2024. Access more data.
Other sources include emissions from domestic and international air transportation at cruise speed, and international marine emissions.
* TPM refers to the entire range of airborne particles, encompassing particles of various sizes, including PM10 and PM2.5. The sum of PM10 and PM2.5 does not equal TPM estimates because PM10 is a subset of TPM, and PM2.5 is a subset of PM10.
** PM10 refers to inhalable particles with a diameter of 10 microns or less. These particles are small enough to enter the respiratory system when inhaled.
*** PM2.5 is defined as particles with a diameter of 2.5 microns or less. PM2.5 particles pose significant health risks because they can penetrate deeply into the respiratory system and bloodstream.

Table 52: Nitrogen oxides emissions (kt), WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Oil and Gas	359	457	480	308	303	289	275	276	305	297	270	247	247
Electricity	254	246	84	58	57	18	18	11	57	55	19	12	8
Transportation	939	971	419	435	438	435	425	422	434	435	420	386	358
Heavy Industry	274	231	141	134	132	128	132	138	128	119	105	111	120
Buildings	77	79	70	63	62	57	52	50	64	61	53	44	37
Agriculture	94	88	53	49	47	39	35	34	49	47	38	36	35
Waste and Others	254	194	55	49	49	46	46	49	47	44	35	38	43
Total	**2 251**	**2 266**	**1 303**	**1 099**	**1 087**	**1 011**	**983**	**980**	**1 083**	**1 059**	**940**	**872**	**847**
Other Sources	131	204	184	202	203	204	206	209	203	204	207	209	213

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from APEI2024. Access more data.

Table 53: Sulphur oxides emissions (kt), WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Oil and Gas	541	474	281	281	284	281	288	289	277	277	263	262	263
Electricity	614	518	154	132	113	5	6	6	129	110	5	4	5
Transportation	80	68	3	3	3	3	3	3	3	3	3	3	3
Heavy Industry	1 648	946	204	176	154	153	158	162	174	149	134	135	137
Buildings	51	37	5	4	4	3	3	2	4	4	3	2	2
Agriculture	7	4	0	0	0	0	0	0	0	0	0	0	0
Waste and Others	73	52	5	5	5	5	5	6	5	5	4	4	5
Total	**3 012**	**2 098**	**652**	**601**	**562**	**450**	**463**	**468**	**591**	**548**	**412**	**411**	**415**
Other Sources	47	80	6	7	7	7	7	7	7	7	7	7	7

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from APEI2024. Access more data.

Table 54: Volatile organic compounds emissions (kt), WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Oil and Gas	665	711	588	428	422	425	424	415	428	422	426	417	400
Electricity	3	3	1	1	1	1	1	0	1	1	1	1	0
Transportation	544	598	171	179	179	176	170	166	179	179	177	169	164
Heavy Industry	152	134	64	65	65	68	71	73	64	63	64	68	72
Buildings	355	328	260	217	212	197	184	176	219	214	198	183	175
Agriculture	143	157	141	141	141	141	141	141	141	141	140	139	138
Waste and Others	424	362	182	181	186	200	217	235	184	188	202	217	237
Total	**2 287**	**2 293**	**1 407**	**1 212**	**1 205**	**1 207**	**1 206**	**1 207**	**1 215**	**1 208**	**1 208**	**1 193**	**1 186**
Other Sources	8	8	6	6	6	6	6	7	6	6	6	7	7

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from APEI2024. Access more data.

Table 55: Total particulate matter emissions (kt), including and excluding open sources, WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Oil and Gas	42	35	35	34	34	36	36	36	33	34	34	34	34
Electricity	122	34	12	10	10	1	1	1	10	10	1	1	1
Transportation	47	52	24	25	25	25	23	22	25	25	25	23	21
Heavy Industry	355	182	125	122	123	128	136	144	121	121	125	133	142
Buildings	234	159	168	153	149	136	126	120	156	151	136	123	116
Agriculture	6 799	4 539	3 567	3 566	3 566	3 565	3 566	3 567	3 564	3 561	3 543	3 535	3 539
Waste and Others	13 165	16 511	20 599	21 931	22 658	25 046	27 458	29 860	22 136	22 932	25 770	28 213	30 974
Total (excluding open sources)	**1 128**	**652**	**612**	**584**	**583**	**571**	**572**	**580**	**585**	**581**	**562**	**560**	**569**
Total	**20 764**	**21 512**	**24 530**	**25 842**	**26 566**	**28 938**	**31 346**	**33 750**	**26 045**	**26 836**	**29 635**	**32 061**	**34 828**
Other Sources	7	12	2	2	2	2	2	2	2	2	2	2	2

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from APEI2024. Access more data.

Table 56: Particulate matter 10 emissions (kt), including and excluding open sources, WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Oil and Gas	29	25	24	23	23	24	24	24	23	23	23	23	23
Electricity	66	15	4	3	3	1	1	1	3	3	1	1	0
Transportation	47	52	24	25	25	25	23	22	25	25	25	23	21
Heavy Industry	182	98	65	63	64	66	69	73	62	62	63	67	71
Buildings	173	120	119	104	100	87	74	66	105	101	87	72	64
Agriculture	2 392	1 739	1 484	1 484	1 483	1 483	1 483	1 483	1 483	1 482	1 474	1 471	1 474
Waste and Others	3 821	4 806	5 835	6 199	6 401	7 066	7 742	8 416	6 257	6 479	7 270	7 954	8 727
Total (excluding open sources)	**678**	**401**	**342**	**321**	**318**	**305**	**297**	**294**	**321**	**316**	**300**	**289**	**286**
Total	**6 709**	**6 855**	**7 555**	**7 901**	**8 100**	**8 751**	**9 417**	**10 086**	**7 958**	**8 175**	**8 942**	**9 609**	**10 380**
Other Sources	7	11	2	2	2	2	2	2	2	2	2	2	2

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from APEI2024. Access more data.

Table 57: Particulate matter 2.5 emissions (kt), including and excluding open sources, WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Oil and Gas	19	18	16	16	16	17	17	17	16	16	16	16	16
Electricity	48	8	2	1	1	1	1	0	1	1	1	0	0
Transportation	39	42	15	15	15	14	14	14	15	15	14	13	13
Heavy Industry	108	56	28	27	27	27	28	29	27	26	25	26	27
Buildings	161	109	103	88	84	70	57	48	89	85	70	55	46
Agriculture	685	457	357	356	356	356	356	356	356	356	354	353	353
Waste and Others	603	690	778	814	838	917	1 001	1 085	823	849	944	1 027	1 122
Total (excluding open sources)	**497**	**287**	**195**	**176**	**172**	**158**	**146**	**139**	**176**	**171**	**153**	**140**	**132**
Total	**1 663**	**1 380**	**1 299**	**1 318**	**1 338**	**1 402**	**1 473**	**1 549**	**1 326**	**1 347**	**1 423**	**1 490**	**1 576**
Other Sources	6	10	2	2	2	2	2	2	2	2	2	2	2

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from APEI2024. Access more data.

Table 58: Black carbon emissions (kt), WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Oil and Gas	N/A	N/A	3.7	3.4	3.4	3.5	3.5	3.4	3.4	3.4	3.4	3.3	3.2
Electricity	N/A	N/A	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Transportation	N/A	N/A	6.6	6.3	6.3	6.0	5.9	5.9	6.3	6.3	5.9	5.4	5.0
Heavy Industry	N/A	N/A	2.1	1.9	1.9	1.7	1.7	1.8	1.7	1.6	1.1	1.2	1.4
Buildings	N/A	N/A	8.0	6.6	6.2	4.8	3.5	2.6	6.6	6.2	4.7	3.2	2.1
Agriculture	N/A	N/A	3.3	2.7	2.6	2.1	2.0	1.9	2.7	2.6	2.2	2.1	2.0
Waste and Others	N/A	N/A	1.9	1.6	1.6	1.4	1.4	1.4	1.6	1.5	1.2	1.2	1.3
Total	**N/A**	**N/A**	**25.7**	**22.7**	**22.0**	**19.6**	**17.9**	**17.0**	**22.4**	**21.6**	**18.5**	**16.4**	**15.1**
Other Sources	N/A	N/A	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.6

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from Canada's Black Carbon Inventory Report 2024. Black carbon emissions inventory starts in 2013. Access more data.

Table 59: Carbon monoxide emissions (kt), WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Oil and Gas	421	574	579	574	564	549	553	549	570	558	523	503	495
Electricity	49	47	35	21	21	17	19	10	21	20	20	14	8
Transportation	8 579	6 025	2 384	2 542	2 539	2 489	2 372	2 278	2 552	2 551	2 508	2 359	2 240
Heavy Industry	874	711	619	656	656	671	681	696	641	623	597	559	561
Buildings	855	604	586	477	446	342	239	164	478	446	336	223	145
Agriculture	312	124	75	79	79	78	76	75	78	79	79	79	78
Waste and Others	1 882	806	220	204	206	212	223	239	199	195	184	203	223
Total	**12 972**	**8 890**	**4 499**	**4 554**	**4 512**	**4 357**	**4 164**	**4 012**	**4 539**	**4 473**	**4 246**	**3 940**	**3 751**
Other Sources	130	92	41	47	46	45	45	45	47	47	46	45	45

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from APEI2024. Access more data.

Table 60: Mercury emissions (kg), WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Oil and Gas	121	99	96	97	98	97	97	96	94	94	88	88	88
Electricity	2 226	2 149	476	432	430	56	2	1	433	430	56	2	1
Transportation	121	119	69	74	74	70	61	55	74	74	70	60	53
Heavy Industry	26 643	3 005	1 042	1 030	1 022	1 022	1 043	1 068	1 017	980	924	945	977
Buildings	1 107	827	454	441	428	423	423	430	447	431	414	400	396
Agriculture	3	3	7	6	6	5	5	4	5	4	3	3	3
Waste and Others	3 420	1 742	818	878	891	935	989	1 043	875	885	920	977	1 033
Total	**33 641**	**7 945**	**2 963**	**2 959**	**2 949**	**2 608**	**2 620**	**2 697**	**2 944**	**2 898**	**2 475**	**2 474**	**2 551**
Other Sources	3	5	0	0	0	0	0	0	0	0	0	0	0

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from APEI2024. Access more data.

Table 61: Ammonia emissions (kt), WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	**2005**	**2022**	**2025**	**2026**	**2030**	**2035**	**2040**	**2025**	**2026**	**2030**	**2035**	**2040**
Oil and Gas	2	2	3	3	3	3	3	3	2	2	2	2	2
Electricity	1	1	0	0	0	0	0	0	0	0	0	0	0
Transportation	6	11	6	7	7	6	5	4	7	7	6	5	3
Heavy Industry	15	14	11	13	13	14	15	16	13	13	14	15	16
Buildings	8	7	6	6	6	6	6	6	6	6	6	6	6
Agriculture	357	449	452	410	425	475	518	567	410	425	472	512	557
Waste and Others	8	6	5	5	5	5	6	6	5	5	5	5	6
Total	**395**	**490**	**482**	**443**	**459**	**509**	**552**	**601**	**443**	**458**	**506**	**546**	**590**
Other Sources	0	0	0	0	0	0	0	0	0	0	0	0	0

Note: Numbers may not sum to the total due to rounding. Historical emissions data come from APEI2024. Access more data.

A4.7.4 Major assumptions

Table 62: Electricity supply and demand (terawatt hours), WM and WAM scenarios, 2005 to 2040 (selected years)

	Historical		Projected - WM Scenario					Projected - WAM Scenario				
	2005	2022	2025	2026	2030	2035	2040	2025	2026	2030	2035	2040
Electricity Required	**602**	**639**	**690**	**699**	**760**	**789**	**813**	**680**	**689**	**753**	**773**	**831**
Total Gross Demand	546	555	586	594	619	657	694	572	575	607	670	735
Purchased from Grid	493	490	507	514	533	567	604	496	497	520	579	641
Own Use	53	64	77	77	82	83	83	74	75	84	85	88
Energy Storage	0	0	2	3	4	6	6	2	3	4	6	6
Net Exports	24	51	70	72	106	95	80	75	81	111	65	55
Exports	44	65	90	90	121	112	107	94	96	126	88	93
Imports	20	14	20	19	16	17	27	19	15	16	23	38
Losses	32	33	34	34	35	37	40	33	33	34	38	42
Electricity Produced	**603**	**643**	**689**	**698**	**757**	**785**	**808**	**679**	**688**	**751**	**769**	**828**
Utility Generation	543	573	596	606	662	687	710	590	598	654	677	731
Coal and Coke	96	24	16	16	1	0	0	16	16	1	0	0
Refined Petroleum Products	13	5	3	3	1	1	1	3	2	0	0	1
Natural Gas	13	40	53	50	42	42	24	51	48	48	34	21
Nuclear	87	82	62	54	84	78	88	62	54	85	81	104
Hydro	327	373	390	397	405	408	424	385	391	393	410	436
Other Renewables	7	49	71	87	129	156	174	71	86	126	150	168
Biomass	6	1	1	1	3	3	3	1	1	3	1	1
Solar	0	6	14	21	26	30	31	14	21	25	30	29
Waste	0	0	1	1	1	1	1	1	1	1	1	1
Wind	1	42	55	64	99	122	139	55	63	97	118	137
Industrial Generation	60	70	92	92	95	98	98	89	90	97	93	97
Refined Petroleum Products	1	1	1	1	1	1	1	1	1	1	1	1
Natural Gas	19	43	52	53	56	60	61	52	53	55	47	49
Hydro	31	19	28	28	28	28	28	28	28	28	28	28
Other Renewables	9	8	12	11	10	9	9	9	9	13	16	19
Biomass	9	7	7	7	6	6	6	7	7	6	6	6
Solar	0	0	0	0	0	0	0	0	0	1	1	2
Wind	0	1	1	1	1	1	1	1	1	1	3	3
Waste	0	0	4	3	3	2	2	1	1	5	6	8

Note: Numbers may not sum to the total due to rounding. Access more data.

Table 63: Summary of key economic and demographic assumptions used in projection analysis (compound annual growth rate), WM and WAM scenarios, 2006 to 2040 (selected years)

	Historical	Projected - WM Scenario				Projected - WAM Scenario			
	2006-2023	2024-2025	2026-2030	2031-2035	2036-2040	2024-2025	2026-2030	2031-2035	2036-2040
Real GDP[a]	1.7%	1.4%	1.9%	1.8%	1.6%	1.7%	2.2%	1.8%	1.7%
Population[b]	1.2%	2.3%	1.2%	1.1%	1.1%	2.3%	1.2%	1.1%	1.1%
Labour Force[c]	1.2%	2.1%	1.1%	1.2%	1.1%	2.1%	1.1%	1.2%	1.1%
Consumer Price Index[d]	2.2%	2.3%	2.0%	2.0%	2.0%	2.3%	2.1%	2.0%	1.9%
Households[e]	1.3%	2.4%	1.3%	1.1%	1.0%	2.4%	1.3%	1.1%	1.0%

Notes: Access more data.
Source: [a, b, c, d] Statistics Canada (Historical estimates); E3MC (Projections)
[e] E3MC

Table 64: Summary of key price-related assumptions used in projection analysis, WM and WAM scenarios, 2005 to 2040 (selected years)

	Historical		Projected - WM Scenario					Projected - WAM Scenario				
	2005	2022	2025	2026	2030	2035	2040	2025	2026	2030	2035	2040
Oil Price (2022 US$/bbl)	83.87	94.91	80.90	81.74	85.07	84.55	84.03	80.90	81.74	85.07	84.55	84.03
Natural Gas Price (2022 US$/MMBtu)	12.60	6.42	3.50	3.60	4.00	4.08	4.15	3.50	3.60	4.00	4.08	4.15
CPI (2002 = 100)	106.98	151.24	164.25	167.52	181.44	200.32	221.16	164.34	167.6	182.05	201.07	221.02

Note: Access more data.

Table 65: Crude oil production (Mb/d), WM and WAM scenarios, 2005 to 2040 (selected years)

	Historical		Projected - WM Scenario					Projected - WAM Scenario				
	2005	2022	2025	2026	2030	2035	2040	2025	2026	2030	2035	2040
Crude and Condensates	**1 525**	**1 862**	**2 106**	**2 117**	**2 132**	**2 224**	**2 203**	**2 108**	**2 120**	**2 140**	**2 174**	**2 119**
Conventional Heavy	414	492	505	495	477	427	407	507	498	482	423	397
Conventional Light	622	652	632	619	620	630	602	633	620	625	622	576
C5 and Condensates	165	619	846	856	879	919	975	846	856	877	885	931
Frontier Light (offshore + northern)	324	99	123	146	156	248	220	123	146	156	244	215
Oil Sands	**1 065**	**3 316**	**3 568**	**3 717**	**4 001**	**4 051**	**4 014**	**3 608**	**3 779**	**4 110**	**4 150**	**4 093**
Oil Sands: Primary	150	174	199	206	214	217	212	200	207	215	216	210
Oil Sands: In Situ	288	1 524	1 738	1 804	1 885	1 932	1 901	1 776	1 864	1 990	2 033	1 988
Steam - assisted Gravity Drainage	*84*	*1 304*	*1 484*	*1 542*	*1 612*	*1 654*	*1 629*	*1 520*	*1 598*	*1 712*	*1 750*	*1 714*
Cyclic Steam Stimulation	*204*	*220*	*253*	*263*	*273*	*278*	*272*	*256*	*266*	*278*	*282*	*274*
Oil Sands Mining	627	1 618	1 631	1 707	1 902	1 902	1 902	1 632	1 708	1 905	1 901	1 894
Total Production (gross)	**2 590**	**5 178**	**5 674**	**5 835**	**6 133**	**6 275**	**6 217**	**5 716**	**5 899**	**6 250**	**6 324**	**6 211**

Note: Numbers may not sum to the total due to rounding
Source: Statistics Canada, Canada Energy Regulator.

Table 66: Oil sands disposition (Mb/d), WM and WAM scenarios, 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	2005	2022	2025	2026	2030	2035	2040	2025	2026	2030	2035	2040
Oil Sands (gross)	**393**	**1 065**	**3 316**	**3 568**	**3 717**	**4 001**	**4 051**	**4 014**	**3 608**	**3 779**	**4 110**	**4 150**	**4 093**
Oil Sands (net)	**347**	**979**	**3 176**	**3 450**	**3 598**	**3 875**	**3 928**	**3 893**	**3 491**	**3 662**	**3 994**	**4 037**	**3 979**
Synthetic Crude Oil	209	613	1 208	1 102	1 130	1 130	1 130	1 130	1 098	1 130	1 133	1 135	1 133
Non-Upgraded Bitumen	138	366	1 968	2 348	2 467	2 745	2 797	2 762	2 393	2 532	2 861	2 902	2 847
Own Use	**46**	**86**	**140**	**118**	**120**	**125**	**123**	**121**	**117**	**117**	**116**	**113**	**113**

Note: Numbers may not sum to the total due to rounding.
Source: Statistics Canada, Canada Energy Regulator.

Table 67: Natural gas production (trillion cubic feet), 1990 to 2040 (selected years)

	Historical			Projected - WM Scenario					Projected - WAM Scenario				
	1990	2005	2022	2025	2026	2030	2035	2040	2025	2026	2030	2035	2040
Natural Gas Supply	**4.92**	**6.72**	**7.53**	**8.15**	**8.27**	**9.08**	**9.77**	**10.04**	**8.15**	**8.27**	**9.08**	**9.77**	**10.04**
Marketable Gas	**4.89**	**6.39**	**6.43**	**7.02**	**7.13**	**7.90**	**8.59**	**8.86**	**7.02**	**7.13**	**7.90**	**8.59**	**8.86**
Natural Gas Production (gross)	4.89	7.73	7.71	8.62	8.74	8.98	9.56	9.86	8.62	8.74	8.97	9.26	9.43
Own Use	0.00	1.34	1.27	1.61	1.61	1.08	0.98	1.00	1.61	1.61	1.07	0.68	0.57
Imports	**0.02**	**0.34**	**1.10**	**1.14**	**1.15**	**1.18**	**1.18**	**1.18**	**1.14**	**1.15**	**1.18**	**1.18**	**1.18**
Liquefied Natural Gas Production	**0.00**	**0.00**	**0.00**	**0.33**	**0.66**	**0.89**	**1.56**	**1.88**	**0.33**	**0.66**	**0.89**	**1.55**	**1.87**

Note: Numbers may not sum to the total due to rounding.

Table 68: Summary of key agriculture assumptions used in projection analysis (average annual percent change), 2010 to 2040

	Historical		Projected			
	2010-2015	2015-2022	2022-2025	2025-2030	2030-2035	2035-2040
Total Crops	2.17	0.18	0.15	0.10	0.13	0.12
Total Cattle	-1.62	-0.40	-0.17	0.01	0.00	0.00
Total Hogs	0.15	0.71	-0.41	-0.21	-0.05	0.01
Total Poultry	-0.04	1.23	-1.09	-0.14	0.01	0.07

Table 69: Mass of CO_2 eq emissions emitted per quantity of energy for various fuels

Fuel	**CO_2 eq Emission Factor (g/MJ)**
Aviation Gasoline	73.04
Biodiesel	5.43
Biomass	3.53
Coal	91.47
Coke	110.28
Coke Oven Gas	36.74
Diesel	71.28
Ethanol	2.04
Gasoline	71.7
Heavy Fuel Oil	75.28
Jet Fuel	69.3
Kerosene	68.12
Light Fuel Oil	71.16
LPG	36.07
Lubricants	57.72
Naphtha Specialties	17.77
Natural Gas	48.84
Natural Gas Raw	57.23
Other Non-Energy Products	36.41
Petrochemical Feedstocks	14.22
Petroleum Coke	83.68
Renewable Natural Gas	0.43
Still Gas	49.64
Waste	90.76

Annex 5: Support provided and mobilized

A5.1 Table III.1: Information on financial support provided under Article 9 of the Paris Agreement — Bilateral, regional, and other channels (2021)

Recipient country or region	Title of the project, programme, activity, or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Global	IFC-Canada Blended Climate Finance Program+	$58,160,000.00	$46,384,134.97	NA	NA	Disbursed	Bilateral	ODA	Concessional Loan	Cross-cutting	Cross-cutting	NA
Africa, Asia, Latin America and the Caribbean	Energy Transition Program+	$119,000,000.00	$94,905,640.66	NA	NA	Disbursed	Bilateral	ODA	Concessional Loan	Mitigation	Energy	NA
Africa, Asia, Latin America and the Caribbean	Integrating Gender Equality in the United Nations Convention to Combat Desertification (UNCCD)*	$360,000.00	$287,109.50	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Africa, Asia, Latin America and the Caribbean	Ocean Risk and Resilience Action Alliance+	$1,187,860.00	$947,349.70	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Africa, Asia, Latin America and the Caribbean	PROBLUE - Global Program for the Blue Economy*	$5,021,691.00	$4,004,931.56	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Water and sanitation	Waste management
Africa, Asia, Latin America and the Caribbean	Renewable Energy in Small Island Developing States Program+	$20,000,000.00	$15,950,527.84	NA	NA	Disbursed	Bilateral	ODA	Concessional Loan	Mitigation	Energy	NA
Africa	Accelerator for Women Climate Entrepreneurs (1)	$1,000,000.00	$797,526.39	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Industry	Rural development
Africa	Canada–African Development Bank Climate Fund (CACF)	$122,900,000.00	$98,015,993.59	NA	NA	Disbursed	Bilateral	ODA	Concessional Loan	Mitigation	Energy	NA

Recipient country or region	Title of the project, programme, activity, or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Africa	Challenges to Regional Cooperation III*	$818.45	$652.74	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Africa	Climate Change in Africa: Impacts and Responses for Women and Girls+	$143,268.00	$114,260.01	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Research and Scientific Institutions
Africa	Djonkoli kènè, the space for women and young people to get started (1)	$44,532.30	$35,515.69	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Africa	Expert Deployment Mechanism for Climate Action in Africa (1)	$407,515.98	$325,004.75	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Africa	FinDev Canada - EEGF	$8,000,000.00	$6,380,211.14	NA	NA	Committed	Bilateral	OOF	Non-concessional loan	Mitigation	Energy	NA
Africa	FinDev Canada - MIRO Forestry	$12,000,000.00	$9,570,316.71	NA	NA	Committed	Bilateral	OOF	Equity	Mitigation	Forestry	NA
Africa	FinDev Canada - Phatisa Food Fund 2	$10,000,000.00	$7,975,263.92	NA	NA	Committed	Bilateral	OOF	Equity	Mitigation	Agriculture	NA
Africa	Technical Assistance Facility (TAF)	$10,000,000.00	$7,975,263.92	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA
Africa	Implementing the AfCFTA	$1,320,000.00	$1,052,734.84	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Trade
Africa	Mathematical Sciences for Climate Change Resilience in Africa+	$4,200,000.00	$3,349,610.85	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Industry	Education
Africa	Supporting Renewable Energy in Africa+	$1,500,000.00	$1,196,289.59	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA
Africa	Strengthening Climate Risk Management in Africa+	$8,000,000.00	$6,380,211.14	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Disaster prevention and preparedness
Africa	Supporting Gender-Centered Climate Resilience in Africa+	$1,500,000.00	$1,196,289.59	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA

Recipient country or region	Title of the project, programme, activity, or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Latin America and the Caribbean, Asia	Forests and Landscapes Program+	$35,000,000.00	$27,913,423.72	NA	NA	Disbursed	Bilateral	ODA	Concessional Loan	Mitigation	Forestry	NA
Asia	Land4Life (Sustainable Landscape for Climate-Resilient Livelihoods)	$2,020,000.00	$1,611,003.31	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Bangladesh	BRAC Strategic Partnership Arrangement (BRAC-SPA)	$4,709,010.00	$3,755,559.76	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Health
Belize, Dominica, Jamaica, Grenada, Guyana, Saint Lucia	Skills to Access the Green Economy*	$634,135.81	$505,740.04	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Industry	Vocational training
Belize, St. Vincent and the Grenadines, Suriname	Community Resilience Building+	$1,486,124.00	$1,185,223.11	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Disaster prevention and preparedness
Benin, Guinea, Côte d'Ivoire, Mali, Niger, Senegal, Togo, Burkina Faso	Energy Efficiency	$98,465.00	$78,528.44	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Energy and Industry
Benin, Togo, Burkina Faso	TonFuturTonClimat (YourFutureYourClimate) – phase 2	$126,000.00	$100,488.33	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Benin	Developing a resilient, low-carbon local economy in mangrove areas	$77,568.54	$61,862.96	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Industry	Financial services
Benin	Mangrove economy (1)	$66,487.32	$53,025.39	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Biodiversity	NA
Benin	Project to improve the resilience of agricultural enterprises in Benin (PAREA)	$63,672.20	$50,780.26	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA

Recipient country or region	Title of the project, programme, activity, or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Benin	Support for the Development, Professionalization and Consolidation of Microfinance	$6,600.00	$5,263.67	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Benin	Support for the Structuring of a Profitable, Fair and Sustainable Family Agriculture*	$332,815.42	$265,429.09	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Benin	Support for Women's Entrepreneurship Within the Rice Sector*	$331,797.67	$264,617.41	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Industry	SME development
Bolivia (Plurinational State of)	Improving Living Conditions and Health in Rural and Indigenous Communities in Chuquisaca*	$681,340.79	$543,387.27	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Rural development
Bolivia (Plurinational State of)	RESTAURaccion - Chiquitano Model Forest – Bolivia (1)	$410,325.74	$327,245.61	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Burkina Faso, Ghana, Malawi, Uganda, Zambia	Building Innovative and Adaptive Capacity*	$135,000.00	$107,666.06	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Burkina Faso, Benin, Mali	Strengthening Sexual and Reproductive Health in Benin, Burkina Faso and Mali (PLURIELLES)	$900,000.00	$717,773.75	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Health
Burkina Faso, Ghana, Mali, Senegal	Scaling Her Voice on Air in Burkina Faso, Ghana, Mali, and Senegal*	$299,238.00	$238,650.56	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Burkina Faso, Niger, Mali	Food and Nutrition Security and Climate Change in the Sahel (SANC2S)	$314,801.10	$251,062.19	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Burkina Faso	Adapting Burkina Faso communities to climate change (ABC) (1)	$300,000.00	$239,257.92	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Burkina Faso	Adapting Burkina Faso communities to climate change (ABC) (2)	$350,000.00	$279,134.24	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA

Recipient country or region	Title of the project, programme, activity, or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Burkina Faso	Learning for change: Nahouri adapts to the challenges of climate change	$134,835.00	$107,534.47	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Disaster prevention and preparedness
Burkina Faso	Climate-resilient agriculture project	$158,621.40	$126,504.75	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Forestry	NA
Burkina Faso	Sustainable Energy and Economic Growth in the Boucle du Mouhoun in Burkina Faso+	$3,840,921.07	$3,063,235.92	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA
Cameroon	Strengthening the resilience of coastal populations in the Wouri estuary to the effects of climate change	$26,953.50	$21,496.13	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Disaster prevention and preparedness
Cameroon	Wouri Resilience (1)	$23,103.00	$18,425.25	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Biodiversity
Latin America and the Caribbean	Caribbean Disaster Risk Management Program*	$4,708.20	$3,754.91	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Disaster prevention and preparedness
Latin America and the Caribbean	Caribbean Disaster Risk Management Program - Health Sector*	$365,100.00	$291,176.89	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Disaster prevention and preparedness
Latin America and the Caribbean	Climate Change Action for Gender-Sensitive Resilience+	$3,500,000.00	$2,791,342.37	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Latin America and the Caribbean	Compete Caribbean Partnership Facility*	$1,126,800.00	$898,652.74	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Industry	SME development
Latin America and the Caribbean	Support to the Caribbean Disaster Emergency Management Agency (CDEMA)*	$2,433.89	$1,941.10	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Disaster prevention and preparedness
Latin America and the Caribbean	Climate Smart Agriculture in Central America+	$2,500,000.00	$1,993,815.98	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA

Recipient country or region	Title of the project, programme, activity, or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
China	Contribution to the China Council for International Cooperation on Environment and Development (CCICED- China Council)*	$661,004.40	$527,168.45	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Colombia	Colombian Cacao Agropreneurs*	$910,743.88	$726,342.29	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Colombia	RESTAURaccion - Risaralda Model Forest - Colombia	$296,186.49	$236,216.54	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Costa Rica	FinDev Canada - Pomerica Costa Rica	$15,000,000.00	$11,962,895.88	NA	NA	Committed	Bilateral	OOF	Non-concessional loan	Mitigation	Energy	NA
Costa Rica	RESTAURaccion - Latin American Model Forest Network - Costa Rica (1)	$138,864.77	$110,748.32	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Costa Rica	RESTAURaccion - Latin American Model Forest Network - Costa Rica (2)	$555,459.09	$442,993.28	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Côte d'Ivoire, Ghana, Senegal	The Cooperative Model: Building Inclusive and Sustainable Communities in Côte d'Ivoire, Senegal, and Ghana*	$1,134,930.26	$905,136.84	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Africa	Advancing National Adaptation Planning in Developing Countries+	$900,000.00	$717,773.75	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
Côte d'Ivoire	ÉDUCACAO	$99,791.30	$79,586.20	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Cuba	Contributing to Sustainable Food Production in Cuban Municipalities*	$278,790.21	$222,342.56	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Cuba	Enhancing Women's Leadership and Involvement in Cuba's Renewable Energy Sector*	$202,274.10	$161,318.93	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA
Cuba	Improved Production Chains in Cuba	$480,000.00	$382,812.67	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security

Recipient country or region	Title of the project, programme, activity, or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Democratic Republic of Congo, Haiti, Senegal	Knowledge of the People of the Earth / Farmers' Knowledge*	$180,427.71	$143,895.86	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Democratic Republic of the Congo, Uganda, Zimbabwe	Gender Equality in Artisanal Mining*	$242,401.00	$193,321.83	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Industry	Vocational training
Dominica	Support to the Climate Resilience Execution Agency of Dominica (CREAD)+	$750,016.45	$598,157.92	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Ecuador	RESTAURaccion - Choco Andino Model Forest - Ecuador	$183,383.68	$146,253.32	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Egypt	Improved rural women nutrition in Egypt	$825,000.00	$657,959.27	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Ethiopia, Ghana, Senegal	4R Nutrient Stewardship Project*	$866,360.70	$690,945.53	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Ethiopia	Rural Social Protection: Productive Safety Net Program - COVID-19 Response	$3,000,000.00	$2,392,579.18	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	Food security
Ethiopia, United Republic of Tanzania, Kenya	Rural Women Cultivating Change in Ethiopia, Kenya, and Tanzania (1)	$1,999,999.32	$1,595,052.24	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Biodiversity
Ethiopia	Resilient Landscapes and Livelihoods for Women in Ethiopia*	$1,530,000.00	$1,220,215.38	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Ethiopia	Rural Social Protection: Productive Safety Net Program (2016–2021)	$2,400,000.00	$1,914,063.00	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Food security

Recipient country or region	Title of the project, programme, activity, or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Ghana, United Republic of Tanzania, Uganda	Youth Challenge International - Volunteer Cooperation 2020–2027*	$645,121.52	$514,501.44	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Industry	Business Policy and Administration
Ghana	Farmers' Economic Advancement Through Seedlings*	$461,555.00	$368,102.85	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Ghana	Modernizing Agricultural Production*	$5,813,958.83	$4,636,785.61	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Agriculture	NA
Ghana	Supporting the Green Economy of Ghana (1)	$633,235.00	$505,021.62	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Industry	Education
Ghana	Women’s Innovation for Sustainable Enterprises (WISE)*	$579,900.00	$462,485.55	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Guatemala, Honduras, Nicaragua	Supporting Coronavirus (COVID-19) Response in Rural and Indigenous Communities*	$179,796.30	$143,392.29	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Guatemala	Economic Empowerment of Indigenous Women and Youth in Alta Verapaz*	$190,698.23	$152,086.87	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Industry	Business Policy and Administration
Guatemala	RESTAURaccion - Lachua Model Forest - Guatemala	$121,001.81	$96,502.14	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Guatemala	RESTAURaccion - Los Altos Model Forest - Guatemala	$162,370.14	$129,494.47	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Guatemala	Sustainable Economic Growth for Women and Youth in Alta Verapaz*	$408,777.29	$326,010.68	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Guatemala	Women Economic Empowerment - WFP Guatemala	$90,000.00	$71,777.38	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Guyana	Promoting Safe and Healthy Learning and Living (1)	$ 750,000.00	$598,144.79	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Water and sanitation	Water
Haiti	Adaptive and Innovative Solutions for Agri-Food Market Opportunities in Haiti*	$328,473.30	$261,966.13	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Haiti	Cacao d'Haïti	$96,305.00	$76,805.78	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA

Recipient country or region	Title of the project, programme, activity, or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Haiti	Cashew, Mango and Gardening Value Chains Development for the Benefit of Women and Youth+	$598,261.01	$477,128.95	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Haiti	Climate Adaptation and Economic Development of Agricultural Sectors in Haiti+	$1,815,917.03	$1,448,241.76	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Haiti	Countering drought and climate change in northeastern Haiti by installing water pumps and building local capacity	$36,000.00	$28,710.95	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Haiti	Creole Garden Revalorisation+	$467,820.00	$373,098.80	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Haiti	Improving Gender Equality, Waste Management and Clean Energy in Haiti*	$99,319.20	$79,209.68	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Water and sanitation	Waste Management
Haiti	Integrated Community Resilience for Improved Food Security in Haiti (1)	$600,000.00	$478,515.84	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Haiti	Jaden nou se vant nou – phase 1	$34,118.10	$27,210.09	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Haiti	Jaden nou se vant nou – phase 2 (1)	$96,485.40	$76,949.65	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Haiti	Jaden nou se vant nou – phase 2 (2)	$112,566.30	$89,774.60	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Haiti	KLIMA Grand Sud – Konbit pou Llte kont Chanjman kliMAtik nan Gran Sid Ayiti	$350,000.00	$279,134.24	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA
Haiti	Klimat 1	$100,000.00	$79,752.64	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Water and sanitation	Waste Management
Haiti	PROCLIMA	$99,819.60	$79,608.77	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Haiti	Productive and Inclusive Coffee Value Chain Adapted to Climate Change in Haiti+	$1,201,888.47	$958,537.77	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Haiti	Transforming the Market for Stoves and Clean Energy in Haiti+	$1,073,822.00	$856,401.39	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA
Haiti	Yon pyebwa ka fe diferans: United in the fight against climate change	$10,098.00	$8,053.42	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Forestry	NA

Recipient country or region	Title of the project, programme, activity, or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Honduras	Canada-Honduras Value Added Agroforestry Project*	$134,755.92	$107,471.40	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Honduras	Empowerment of Women for Climate Action in Honduras*	$1,582,031.00	$1,261,711.48	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Forestry	Policy and Forestry
Honduras	Promoting Rural Economic Development for Women and Youth in the Lempa Region - PROLEMPA*	$898,569.60	$716,632.97	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Honduras	Rural market Opportunities in the Gulf of Fonseca in Honduras*	$497,514.30	$396,780.78	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Indonesia	Tropical Landscape Public-Private Partnerships for Sustainable Development Goals (1)	$490,176.00	$390,928.30	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Multi-sector aid
Jordan	Jordan Municipal Support Program (1)	$13,967.40	$11,139.37	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
Jordan	Sustainable Development in Jordan*	$10,348.94	$8,253.55	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA
Jordan	Sustainable Economic Development Through Renewable Energy+	$372,629.87	$297,182.16	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA
Kenya	Equitable Prosperity Through Private Sector Development*	$672,636.30	$536,445.21	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Industry	SME Development
Kenya	More Food: Empowering Kenyan Women*	$26,155.24	$20,859.50	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Africa, Latin America and the Caribbean	FinDev Canada Technical Assistance Project*	$338,499.61	$269,962.37	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Industry	Business Policy and Administration
Latin America and the Caribbean	Additional Support to IFAD Climate Finance Loan 2019–2021	$190,000,000.00	$151,530,014.51	NA	NA	Disbursed	Bilateral	ODA	Concessional loan	Adaptation	Cross-cutting	Disaster prevention and preparedness
Latin America and the Caribbean	Canadian Climate Fund for the Private Sector in the Americas II+	$62,000,000.00	$49,446,636.31	NA	NA	Disbursed	Bilateral	ODA	Concessional loan	Cross-cutting	Cross-cutting	NA

Recipient country or region	Title of the project, programme, activity, or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Latin America and the Caribbean	FinDev Canada - Produbanco	$10,000,000.00	$7,975,263.92	NA	NA	Committed	Bilateral	ODA	Non-concessional loan	Mitigation	Energy	NA
Madagascar	RENIALA project to protect livelihoods through the adoption of soil conservation and sustainable development practices in Antananarivo and Bongolava	$140,000.00	$111,653.69	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Madagascar	Rano Madagasikara (1)	$295,368.90	$235,564.49	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Water and sanitation	Water
Madagascar	Rano Madagasikara: improving the resilience of communities in the Ikopa sub-basin against contamination of drinking water sources during floods	$ 344,597.00	$ 274,825.20	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Water and sanitation	Water
Maldives	Sanitization of Health Care Waste in COVID-19 Management Sites in Maldives	$405,000.00	$322,998.19	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Health
Mali	Dou Touloma - Woman Pillar of the Family (1)	$350,430.00	$279,477.17	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Mali	Rehabililtation of Agricultural Irrigation Infrastructures in the Zone of the Office du Niger (PAON)*	$4,461.88	$3,558.46	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Mali	Strengthening Irrigated Agriculture in Mali (REAGIR)*	$3,015.46	$2,404.91	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Mali	Strengthening the Nutritional Resilience and Food Security of the Most Vulnerable in Mali*	$1,620,000.00	$1,291,992.76	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Mali	Targeted Support for Irrigated Land and Nutrition Opportunities (ACTION) (1)	$624,000.00	$497,656.47	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Mexico	NDC Implementation Mexico (Oil and gas)+	$937,184.87	$747,429.67	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Environmental policy and administrative management

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		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Morocco	CAMELUS	$67,815.90	$54,084.97	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
Morocco	Empowering Women Through the Development of Forestry Cooperatives in Morocco+	$897,467.00	$715,753.62	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Agriculture and Forestry
Morocco	Decision support system for renewable resource and energy yield prediction (1)	$294,000.00	$234,472.76	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA
Mozambique	Mozambican Rural Women's and Girls' Economic Empowerment (PAEF)*	$232,269.89	$185,241.37	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Global	Canadian Crossroads International - Volunteer Cooperation 2020–2027*	$1,419,850.55	$1,132,368.28	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Global	Centre for International Studies and Cooperation - Volunteer Cooperation 2020–2027*	$1,740,070.50	$1,387,752.15	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Global	CESO - Volunteer cooperation 2020–2027*	$979,424.10	$781,116.57	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Global	Contribution to the Group on Earth Observations (GEO) Trust Fund*	$30,000.00	$23,925.79	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Global	Contribution to the Intergovernmental Science-policy Platform on Biodiversity and Ecosystem Services (IPBES)+	$40,000.00	$31,901.06	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Research and Scientific Institutions
Global	Climate Risk Early Warning Systems (CREWS)+	$880,000.00	$701,823.23	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Disaster prevention and preparedness
Global	Consortium of International Agricultural Research Centers (CGIAR) Institutional Support 2019–2025 GENDER Platform	$10,000,000.00	$7,975,263.92	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA

Recipient country or region	Title of the project, programme, activity, or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Global	Cuso International - Volunteer Cooperation 2020–2027*	$1,358,035.98	$1,083,069.54	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Global	Gender-Responsive Climate Finance Design Funding Window	$4,948,903.06	$3,946,880.80	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Multi-sector aid
Global	Global Fund for Disaster Reduction and Recovery - Earth Observation technologies	$2,000,000.00	$1,595,052.78	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Disaster prevention and preparedness
Global	Greater Rural Opportunities for Women 2 (1)	$94,090.50	$75,039.66	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Global	Greening the Global Financial System	$1,660,000.00	$1,323,893.82	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Global	IDRC – Adaptation*	$1,352,776.44	$1,078,874.91	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Global	IDRC – Adaptation+	$5,681,619.60	$4,531,241.58	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Global	IDRC – Cross-cutting*	$1,343,552.43	$1,071,518.52	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Global	IDRC – Cross-cutting+	$1,122,166.80	$894,957.64	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Global	IDRC – Mitigation+	$1,945,559.82	$1,551,635.30	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	NA
Global	IDRC – Mitigation*	$17,880.00	$14,259.77	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	NA
Global	International Union for Conservation of Nature (IUCN)* (Cross-cutting)	$5,098.20	$4,065.95	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Global	Investing in Inclusive Infrastructure	$12,000,000.00	$9,570,316.71	NA	NA	Disbursed	Bilateral	ODA	Concessional loan	Cross-cutting	Industry	Financial services
Global	Land and Livelihoods: Accompanying Indigenous Peoples in Guatemala and the Philippines	$323,139.00	$257,711.88	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Rural development

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		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Global	Land Degradation Neutrality Fund (1)	$19,499.13	$15,551.07	NA	NA	Disbursed	Bilateral	ODA	Concessional loan	Cross-cutting	Forestry	NA
Global	Land Degradation Neutrality Fund (2)	$53,060,400.00	$42,317,069.38	NA	NA	Disbursed	Bilateral	ODA	Concessional Loan	Cross-cutting	Forestry	NA
Global	Partnership for Market Implementation	$5,000,000.00	$3,987,631.96	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA
Global	PROBLUE - Global Program for the Blue Economy (Additional support)	$1,200,000.00	$957,031.67	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Water and sanitation	Waste Management
Global	Strengthening Local Agricultural Supply Chains - Response to Coronavirus (COVID-19)	$4,380,000.00	$3,493,165.60	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	Food security
Global	SUCO - Volunteer Cooperation 2020–2027*	$1,148,069.71	$915,615.89	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Global	Support to Address Short-Lived Climate Pollutant (SLCP) Emissions in the Pacific Alliance and West Africa+	$1,219,281.30	$972,409.02	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Environmental policy and administrative management
Global	Support to the Climate Finance Access Network	$9,500,000.00	$7,576,500.73	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Global	UPA international development – Volunteer cooperation 2020–2027*	$518,722.20	$413,694.64	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Global	Virtual capacity-building workshop for francophone women climate negotiators	$31,500.00	$25,122.08	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Myanmar, Niger, Sudan	Breaking barriers, Improving Girls' education, Hope and Totality (BRIGHT)*	$703,046.55	$560,698.18	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Education
Nepal	Reconstruction of Water, Sanitation and Hygiene Services*	$15,939.00	$12,711.77	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Water and sanitation	NA

Recipient country or region	Title of the project, programme, activity, or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Nepal	Support to Rights and Economic Development for Nepal's Empowered Women (RENEW)*	$67,175.90	$53,574.56	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Nicaragua	Gender-Responsive Climate-Smart Agriculture in Nicaragua*	$113,052.00	$90,161.95	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Nicaragua	Supporting Smallholder Farmers: A Women's Economic Empowerment Approach – Nicaragua	$375,000.00	$299,072.40	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Education
Nicaragua	Technolinks+: Advancing Inclusive Prosperity in Nicaragua's Agri-food Export Sector*	$593,532.00	$473,357.43	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Nicaragua	Towards climate-resilient living environments	$22,230.00	$17,729.01	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Niger, Ethiopia, Sudan	COVID-19 Response: Strengthening Local Agricultural Supply Chains	$2,325,000.00	$1,854,248.86	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	Food security
Nigeria	Critical gender-sensitive support to vulnerable conflict and pandemic-affected households in Nigeria	$1,650,000.00	$1,315,918.55	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Nigeria	Livelihoods and Nutrition Empowerment*	$823,411.82	$656,692.66	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Oceania	Kiwa Initiative+	$2,400,000.00	$1,914,063.34	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Biodiversity
Oceania	Strengthening Small-Scale Fisheries in the Pacific Islands*	$300,000.00	$239,257.92	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Industry	Fishery
Pakistan, Malawi, Zimbabwe, Zambia, Bangladesh, Democratic Republic of the Congo	An Integrated Food Systems Approach to Build Nutrition Security	$900,000.00	$717,773.75	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security

Recipient country or region	Title of the project, programme, activity, or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Peru	Participatory Water Management and Climate Resilience for Andean Women and Men+	$4,200,000.00	$3,349,610.85	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Water and sanitation	Water
Peru	RESTAURaccion – Huayabamba Abiseo Model Forest - Peru	$241,332.34	$192,468.91	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Peru	RESTAURaccion – Pichanaki Model Forest - Peru	$209,294.00	$166,917.49	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Senegal	Adaptation and Valorization of Entrepreneurship in Irrigated Agriculture+	$1,960,129.00	$1,563,254.61	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Senegal	Building Community Resilience to Climate Change in Senegal+	$577,836.99	$460,840.25	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Agriculture and Forestry
Senegal	Sine Saloum communities committed to climate resilience	$288,365.00	$229,978.70	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Biodiversity
Senegal	Dekkal Suuf – Giving new life to the land	$350,000.00	$279,134.24	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Senegal	Feminine Governance and Innovation in Senegal*	$150,000.00	$119,628.96	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Senegal	Goutte à goutte	$21,973.08	$17,524.11	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Senegal	Improving Access to Agricultural Insurance in the Casamance Region in Senegal (1)	$431,565.59	$344,184.95	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Senegal	Rural Oyster Farming and Adaptation (ORA) (1)	$150,000.00	$119,628.96	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Biodiversity
Senegal	Rural Oyster Farming and Adaptation (ORA) (2)	$175,000.00	$139,567.12	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Biodiversity
Senegal	Women, Agriculture and Resilience in Senegal+	$2,526,210.00	$2,014,719.58	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
South Africa	Building Inclusive Green Municipalities* (funded by Global Affairs Canada)	$36,750.00	$29,309.09	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Policy
Africa	Improving Bean Markets in Africa*	$784,185.60	$625,408.72	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
South Sudan	Building Resilience Through Safety Nets in South Sudan*	$1,230,000.00	$980,957.47	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security

Recipient country or region	Title of the project, programme, activity, or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
South Sudan	Fortifying Equality and Economic Diversity for Resilience in South Sudan*	$681,867.00	$543,807.17	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Sri Lanka	Providing Home-Grown Nutritious School Meals to Primary School Children (1)	$210,000.00	$167,480.54	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Education
Suriname, Dominica, Saint Lucia, Guyana, Jamaica	Sustainable Agriculture in the Caribbean (1)	$902,430.00	$719,711.74	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Education
United Republic of Tanzania	Supporting Systems to Achieve Improved Maternal Newborn and Child Health in Kigoma Region*	$4,030.99	$3,214.82	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Health
Togo	Collection and recovery of residual materials and biogas-solar co-energy in Kloto prefecture	$174,906.55	$139,492.59	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Energy, Water and Sanitation
Vietnam	Reducing Short Lived Climate Pollutants through Improved Municipal Solid Waste (MSW) Practices in Vietnam+	$135,000.00	$107,666.06	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Water and sanitation	Waste management
Western Asia	Supporting Economic Growth through Value Chain Development in the West Bank	$600,000.00	$478,515.84	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Zimbabwe	Supporting Transition, Retention, and Training for Young Women and Girls*	$900,000.00	$717,773.75	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Education

A5.2 Table III.1: Information on financial support provided under Article 9 of the Paris Agreement — Bilateral, regional, and other channels (2022)

Recipient country or region	Title of the project, programme, activity or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Africa	PROBLUE - Global Program for the Blue Economy	$4,834,131.82	$3,712,850.86	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Water and sanitation	Waste management
Africa	MIRO Forestry	$7,812,000.00	$6,000,000.00	NA	NA	Committed	Bilateral	OOF	Equity	Mitigation	Forestry	NA
Africa	Strengthen scientific evidence and its use to inform policy, negotiations, and climate implementation in Africa	$16,099.80	$12,365.44	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Africa	Agri-food SME Catalytic Financing Mechanism - Technical Assistance	$6,000,000.00	$4,608,294.93	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Africa	Agri-Food Small- and Medium-sized Enterprises Catalytic Financing Mechanism	$24,000,000.00	$18,433,179.72	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Africa	Mathematical sciences for climate change resilience (MS4CR): Operating costs for capacity building	$5,600.30	$4,301.31	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Industry	Environmental education / training
Africa	Climate Change in Africa: Impacts and Responses for Women and Girls	$396,732.00	$304,709.68	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Research and scientific institutions
Africa	Mathematical Sciences for Climate Change Resilience in Africa (MS4CR)	$3,500,000.00	$2,688,172.04	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
Africa	Supporting Gender-Centered Climate Resilience in Africa (adaptation only)	$1,470,000.00	$1,129,032.26	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
Africa	Supporting Gender-Centered Climate Resilience in Africa (mitigation only)	$630,000.00	$483,870.97	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Environmental policy and administrative management

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Africa	Supporting Renewable Energy in Africa - Africa Renewable Energy Initiative (AREI)	$350,000.00	$268,817.20	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA
Africa	Women-Led Coal Transition Mechanism	$15,000,000.00	$11,520,737.33	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA
Africa, Asia, Latin America and the Caribbean	Climate Investment Funds - Accelerating Coal Transition Investment Program (CIF-ACT)	$400,000,000.00	$307,219,662.06	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA
Africa, Asia, Latin America and the Caribbean	Ocean Risk and Resilience Action Alliance (1)	$112,620.00	$86,497.70	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Disaster risk reduction / environmental research
Africa, Asia, Latin America and the Caribbean	CDKN knowledge accelerator for climate compatible development	$90,633.90	$69,611.29	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Africa, Asia, Latin America and the Caribbean	CDKN Knowledge accelerator for climate compatible development: Operating costs for capacity building	$4,121.43	$3,165.46	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Africa, Asia, Latin America and the Caribbean	Support to the Consultative Group on International Agricultural Research (CGIAR)	$25,000,000.00	$19,201,228.88	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Africa, Asia, Latin America and the Caribbean	Climate Support to IFAD (adaptation only)	$17,906,623.28	$13,753,166.89	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Africa, Asia, Latin America and the Caribbean	Climate Support to IFAD (mitigation only)	$7,674,267.12	$5,894,214.38	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Agriculture	NA
Africa, Asia	Supporting Investment in Least Developed Countries - BUILDER Technical Assistance Facility	$975,000.00	$748,847.93	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Industry	Small and medium-sized enterprises development

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Africa, Asia, Latin America and the Caribbean	Integrating Gender Equality in the UNCCD	$360,000.00	$276,497.70	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	Rural land policy and management
Argentina	Socio-environmental strategies to strengthen resilience of women migrant workers in the Reconquista River Basin, Buenos Aires, Argentina	$65,998.00	$50,689.71	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Women's rights organizations and movements, and government institutions
Bangladesh	Addressing Environmental Degradation in Cox's Bazar District	$4,500,000.00	$3,456,221.20	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Forestry	NA
Bangladesh	Scaling climate change adaptation knowledge and technologies for empowering women, and to enhance social equity and disaster resilience in Bangladesh	$142,300.00	$109,293.39	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Social protection
Belize, Jamaica, Dominica, Grenada, Saint Lucia, Guyana	Skills to Access the Green Economy	$754,831.81	$579,747.94	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Vocational training	Vocational training
Belize, Saint Vincent and the Grenadines, Suriname	Community Resilience Building	$240,000.00	$184,331.80	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Multi-hazard response preparedness
Benin, Côte d'Ivoire, Senegal, Togo, Burkina Faso, Guatemala, Haiti, Honduras	SUCO - Volunteer Cooperation 2020–2027	$1,719,452.35	$1,320,623.92	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA

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Benin	Solar energy and biotechnologies for women entrepreneurs in the mangroves of Ramsar Site 1017 in Benin (SEWomen)	$43,228.20	$33,201.38	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Cross-cutting
Benin	Support for the Structuring of a Profitable, Fair and Sustainable Family Agriculture	$2,358.75	$1,811.64	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Rural development
Benin	Support for Women's Entrepreneurship Within the Rice Sector	$231,739.58	$177,987.38	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Industry	Small and medium-sized enterprises (SME) development
Benin	Mangrove economy (2)	$44,324.88	$34,043.69	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Biodiversity
Benin	Better understanding, better adaptation - Resilience-building project for the Communes of Ouidah and Dangbo in southern Benin	$75,000.00	$57,603.69	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Benin, Ethiopia, Ghana, Côte d'Ivoire, Kenya, Senegal, Tanzania, Togo, Burkina Faso	CESO - Volunteer cooperation 2020–2027	$1,948,528.79	$1,496,565.89	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Bhutan	Bhutanese Knowledge for Indigenous Development	$462,180.00	$354,976.96	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
Bhutan, Nepal, Pakistan, Bangladesh	Economics of forest restoration as a carbon mitigation and nature-based solution in South Asia	$83,718.00	$64,299.54	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Forestry	NA

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Bolivia (Plurinational State of)	Tourism as an engine of gender-inclusive and sustainable development in Bolivia	$132,870.00	$102,050.69	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Industry	Tourism
Bolivia (Plurinational State of)	Improving Living Conditions and Health in Communities in Chuquisaca – Monitoring	$2,398.58	$1,842.23	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Rural development
Bolivia (Plurinational State of)	Improving Living Conditions and Health in Rural and Indigenous Communities in Chuquisaca	$83,361.90	$64,026.04	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Rural development
Bolivia (Plurinational State of)	RESTAURacción FY2022-23 – Chiquitano Model Forest – Bolivia	$98,329.85	$75,522.15	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Forestry	NA
Bolivia (Plurinational State of)	Creating Indigenous women's green jobs in the Bolivian quinoa sector for a low-carbon COVID-19 response and recovery	$142,900.00	$109,754.22	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Bolivia (Plurinational State of)	RESTAURaccion – Chiquitano Model Forest – Bolivia (2)	$720,657.00	$553,500.00	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental research
Bolivia (Plurinational State of), Peru	Together for Equality	$224,304.30	$172,276.73	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Brazil	RESTAURacción FY2022-23 – Pantanal Model Forest – Brazil	$41,126.64	$31,587.28	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Forestry	NA
Brazil, Colombia, Peru	Strategies for climate defenders and Indigenous peoples' rights in the Amazon	$206,400.00	$158,525.35	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Human rights
Burkina Faso	Building resilience of vulnerable people in Burkina Faso	$3,600,000.00	$2,764,976.96	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Burkina Faso	Globalization in a nutshell – Opportunities and risks for women shea producers in West Africa	$103,628.00	$79,591.40	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Burkina Faso	Sustainable Energy and Economic Growth in the Boucle du Mouhoun Region	$2,004,798.23	$1,539,783.59	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA

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Burkina Faso	Burkina Faso communities' adaptation to climate change (ABC)	$200,000.00	$153,609.83	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Energy	NA
Burkina Faso	Improving women's resilience to climate change in Burkina Faso's shea parklands (adaptation only)	$30,000.00	$23,041.47	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Energy	NA
Burkina Faso	Improving women's resilience to climate change in Burkina Faso's shea parklands (mitigation only)	$70,000.00	$53,763.44	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA
Burkina Faso	Learning for Change, Nahouri adapts to the challenges of climate change (ACN-CC)	$115,573.20	$88,765.90	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Burkina Faso	Climate Resilient Agriculture Project (PARC)	$135,961.20	$104,424.88	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Cambodia	Agricultural-based Growth and Resilience Opportunities for Women (AGROW)	$203,953.50	$156,646.32	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Cambodia, Malaysia	Promoting social entrepreneurship in disaster risk reduction to build community resilience: Pilots in Malaysia and Cambodia	$13,409.00	$10,298.77	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental research
Cambodia, Philippines, Viet Nam	ASEAN green recovery through equity and empowerment (AGREE)	$69,038.07	$53,024.63	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Industry	Business development
Cameroon	Wouri Resilience (2)	$15,402.00	$11,829.49	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Biodiversity
Cameroon	Land restoration for post-COVID-19 rural and indigenous women’s empowerment and poverty reduction in Cameroon	$244,067.00	$187,455.45	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Forestry	NA

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Cameroon, Democratic Republic of Congo, Benin, Ethiopia, Nigeria, United Republic of Tanzania	Cuso International - Volunteer Cooperation 2020–2027	$1,914,034.52	$1,470,072.59	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Industry	Environmental education/ training
Cameroon, Ghana, Burkina Faso	Social entrepreneurship for sustainable development in sub-Saharan Africa: lessons from business incubation in selected countries	$25,257.00	$19,398.62	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Industry	Business policy and administration
Cameroon, Democratic Republic of Congo, Benin, Gabon, Guinea, Côte d'Ivoire, Mali, Mauritius, Senegal, Djibouti, Togo, Burkina Faso	CAO ACT-CORSIA Capacity Building and Training	$6,000.00	$4,608.29	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Transport	NA
Latin America and the Caribbean	A policy and regulatory roadmap for the Fourth Sector: synthesizing and sharing evidence for impact	$5,749.20	$4,415.67	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Industry	Responsible business conduct
Latin America and the Caribbean	Regenerative agribusiness and investment with a gender lens in the Amazonia and Central America dry corridor	$269,580.00	$207,050.69	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA

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Latin America and the Caribbean	Strengthening Gender-Responsive Governance Latin American Parliaments	$300,000.00	$230,414.75	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Women's rights organizations and movements, and government institutions
Latin America and the Caribbean	Climate Smart Agriculture in Latin America and the Caribbean (adaptation only)	$700,000.00	$537,634.41	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Latin America and the Caribbean	Climate Smart Agriculture in Latin America and the Caribbean (mitigation only)	$300,000.00	$230,414.75	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	NA
Latin America and the Caribbean	Caribbean Disaster Risk Management Program	$2,257.39	$1,733.79	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
Latin America and the Caribbean	Strengthening Political Capacities for Gender-Responsive Governance in the Caribbean	$150,000.00	$115,207.37	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Women's rights organizations and movements, and government institutions
Latin America and the Caribbean	Targeted Support to the Caribbean Disaster Emergency Management Agency (CDEMA)	$300,000.00	$230,414.75	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Multi-hazard response preparedness
Latin America and the Caribbean	Climate Change Action for Gender-Sensitive Resilience	$3,600,000.00	$2,764,976.96	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
China	Contribution to the China Council for International Cooperation on Environment and Development (CCICED- China Council)	$88,423.20	$67,913.36	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
China	China Council for International Cooperation on the Environment and Development (CCICED)	$600,868.00	$461,496.16	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management

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Colombia	Transforming food systems to improve livelihoods and environmental sustainability in three Indigenous territories of Colombia	$41,130.00	$31,589.86	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Colombia	Creating Sustainable Livelihoods for Colombian Smallholder Cacao Farmers	$1,377,733.05	$1,058,166.70	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Colombia	RESTAURacción FY2022-23 – Risaralda Model Forest – Colombia	$63,562.98	$48,819.49	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental research
Colombia	Building resilience in Cartagena Bay	$29,131.00	$22,374.04	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
Comoros, Kenya, Madagascar, Mozambique, United Republic of Tanzania	Science decision-makers dialogue for integrated coastal and marine zone management	$8,410.80	$6,459.91	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Costa Rica	RESTAURaccion - Latin American Model Forest Network - Costa Rica	$140,552.00	$107,950.84	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Côte d'Ivoire	Women and Cocoa Communities Initiative (WCCI)	$522,314.11	$401,162.91	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Côte d'Ivoire	AdaptCoop: the adaptation of cocoa cooperatives in a context of climate change in Côte d'Ivoire (1)	$178,542.00	$137,129.03	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Côte d'Ivoire	AdaptCoop: the adaptation of cocoa cooperatives in a context of climate change in Côte d'Ivoire (2)	$48,520.00	$37,265.75	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Africa	Advancing National Adaptation Planning in Developing Countries	$2,850,000.00	$2,188,940.09	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management

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Cuba, Dominican Republic, Guatemala, Haiti, Mexico, Nicaragua, Bolivia (Plurinational State of), Colombia, Ecuador, Peru	Multistakeholder collaborative research to advance food system transformation in Latin America and the Caribbean	$255,120.00	$195,944.70	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Cuba	Building resilience to droughts in Cuba	$134,876.40	$103,591.71	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Cuba	Contributing to Sustainable Food Production in Cuban Municipalities	$204,256.67	$156,879.16	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Cuba	Enhancing Women's Leadership and Involvement in Cuba's Renewable Energy Sector	$504,368.40	$387,379.72	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA
Cuba, Colombia	Enhancing the resilience of alternative food systems in informal settings in Latin America and the Caribbean through bottom-up initiatives	$207,157.00	$159,106.76	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Democratic Republic of the Congo	Addressing climate- and water-driven migration and conflict interlinkages to build Community Resilience in the Congo Basin	$21,806.00	$16,748.08	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management

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Democratic Republic of the Congo, Ethiopia, Kenya, Liberia, Malawi, Mozambique, Nigeria, Zimbabwe, Rwanda, Senegal, Sierra Leone, United Republic of Tanzania, Uganda, Zambia	Energy Access Relief Fund (EARF)	$28,000,000.00	$21,505,376.34	NA	NA	Disbursed	Bilateral	OOF	Grant	Mitigation	Energy	NA
Democratic Republic of the Congo, Zimbabwe, Uganda	Gender Equality in Artisanal Mining	$158,685.00	$121,877.88	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
Global	Building an IDRC approach to foresight thinking: Support for development	$28,627.56	$21,987.37	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Research and scientific institutions
Global	Digital transformation in 2035: understanding the future of converging technology on development	$19,550.94	$15,016.08	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Research and scientific institutions
Global	Monitoring and evaluation support for Step Change	$947.37	$727.63	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Research and scientific institutions
Global	Promoting a pandemic recovery: evidence to support managing the growing debt crisis	$87,196.80	$66,971.43	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Macro-economic policy
Global	Research ideas competition on health and sustainable food systems	$3,195.00	$2,453.92	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security

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Global	Transforming the care economy through impact businesses and investment: outreach, knowledge translation, and synthesis (1)	$7,560.00	$5,806.45	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Research and scientific institutions
Global	Transforming the care economy through impact businesses and investment: outreach, knowledge translation, and synthesis (2)	$2,619.30	$2,011.75	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Research and scientific institutions
Global	Understanding and amplifying the role of women's leadership in food systems transformation	$42,690.00	$32,788.02	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Global	Contribution to the Group on Earth Observation (GEO) Trust Fund / Canadian contribution to the GEO Trust fund to support the availability, accessibility, and use of Earth Observation data for decision-making.	$30,000.00	$23,041.47	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Global	Climate Investor One (FinDev)	$55,711.34	$42,789.05	NA	NA	Disbursed	Bilateral	OOF	Equity	Mitigation	Energy	NA
Global	Annual membership of IUCN	$4,840.50	$3,717.74	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Global	Mapping study for private sector engagement in capacity-building activities for climate action in Africa and Asia (adaptation only)	$7,000.00	$5,376.34	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
Global	Mapping study for private sector engagement in capacity-building activities for climate action in Africa and Asia (mitigation only)	$3,000.00	$2,304.15	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Environmental policy and administrative management
Global	Measuring adaptation progress in the agricultural sector (MAP Ag)	$67,234.00	$51,639.02	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA

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Global	Promoting Transformative Research on Gender and Social Equity in the Context of Climate Change	$33,689.00	$25,874.81	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Women's rights organizations and movements, and government institutions
Global	Scoping on climate and resilience – Fostering partnerships and gender-transformative approaches	$1,846.20	$1,417.97	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
Global	Step Change: Accelerating adaptation to climate change – Operating costs for capacity building	$7,665.00	$5,887.10	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Research and scientific institutions
Global	Internship programs in international organizations	$15,000.00	$11,520.74	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Global	Building seamless multi-hazard early warning system under Climate Risk Early Warning Systems (CREWS) initiative	$250,000.00	$192,012.29	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Disaster risk reduction
Global	Canada's contribution as a member of the Intergovernmental Science-policy Platform on Biodiversity and Ecosystem Services (IPBES)	$40,000.00	$30,721.97	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Research and scientific institutions
Global	Climate and Clean Air Coalition (CCAC) to Reduce Short-Lived Climate Pollutants (SLCPs)	$10,000,000.00	$7,680,491.55	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Environmental policy and administrative management
Global	Climate Finance Support to Address Short-Lived Climate Pollutant (SLCP) Emissions in the Pacific Alliance and West Africa	$247,139.30	$189,815.13	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Environmental policy and administrative management
Global	Global Fund for Coral Reefs (mitigation only)	$450,000.00	$345,622.12	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Biodiversity
Global	Global Fund for Coral Reefs (adaptation only)	$1,050,000.00	$806,451.61	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Biodiversity

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Global	Ocean Risk and Resilience Action Alliance (2)	$2,540,000.00	$1,950,844.85	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Biodiversity
Dominica	Support to the Climate Resilience Execution Agency of Dominica (CREAD)	$786,547.07	$604,106.81	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Ecuador	Food for life: helping Andean farmers pioneer regenerative agriculture and food to improve health, social equity and restore ecosystems	$40,080.00	$30,783.41	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Ecuador	Strengthening food systems of the Indigenous Nations of Ecuador for resilience to climate change	$59,190.00	$45,460.83	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Ecuador	RESTAURacción FY2022-23 – Choco Andino Model Forest – Ecuador	$44,332.32	$34,049.40	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Forestry	NA
Ecuador, Peru	Healthy food hubs: building sustainable and resilient agri-food systems in Lima and Quito	$65,220.00	$50,092.17	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
El Salvador, Guatemala, Nicaragua	Empowering women in agricultural value chains for a low-carbon transition in Central America	$437,900.00	$336,328.73	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Ethiopia, Ghana, Kenya, Malawi, Mali, Nigeria, Senegal, United Republic of Tanzania, Uganda, Burkina Faso	Scaling Her Voice on Air in Burkina Faso, Ghana, Mali and Senegal	$26,057.49	$20,013.43	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Ethiopia	Climate-smart Interventions for Smallholder Farmers in Ethiopia (CultiAF-2)	$6,340.05	$4,869.47	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Ethiopia	Urban agriculture for advancing healthy food systems in Ethiopia	$24,367.20	$18,715.21	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security

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Ethiopia	Resilient Landscapes and Livelihoods for Women Program	$1,350,000.00	$1,036,866.36	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Ethiopia	RESILIENT WE: Reducing Environmental Shocks and Improving Livelihoods	$372,906.90	$286,410.83	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Ethiopia, Kenya, Eritrea, Somalia, Sudan, South Sudan, United Republic of Tanzania, Uganda	Strengthening knowledge, evidence use and leadership in the Global South on forced displacement: focus on East Africa	$21,150.00	$16,244.24	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Migration
Ethiopia, Ghana, Côte d'Ivoire, Uganda, Burkina Faso, Zambia	On-Air for Gender-Inclusive Nature-based Climate Solutions (1)	$100,000.00	$76,804.92	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Rural development
Ethiopia, Ghana, Côte d'Ivoire, Uganda, Burkina Faso, Zambia	On-Air for Gender-Inclusive Nature-based Climate Solutions (2)	$2,099,939.97	$1,612,857.12	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Rural development
Ethiopia, Ghana, Zambia	Her Time to Grow	$585,856.20	$449,966.36	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Ethiopia, Kenya, United Republic of Tanzania	Rural Women Cultivating Change in Ethiopia, Kenya, and Tanzania (2)	$2,201,089.76	$1,690,545.13	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Ethiopia, Ghana, Senegal	4R Nutrient Stewardship Project (4R-NSP) (1)	$915,148.22	$702,878.81	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA

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Ethiopia, Ghana, Guinea, Côte d'Ivoire, Senegal, Eswatini, United Republic of Tanzania, Togo, Uganda, Burkina Faso, Zambia	Canadian Crossroads International – Volunteer Cooperation 2020–2027	$2,008,816.00	$1,542,869.43	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Ethiopia, Ghana	4R Nutrient Stewardship Project (4R-NSP) (2)	$30,000.00	$23,041.47	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Ethiopia, Ghana	SHINE	$153,000.00	$117,511.52	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Europe	Nature-based Climate Solutions Knowledge & Capacity Initiative	$957,264.99	$735,226.56	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Europe, Africa, Latin America and the Caribbean, Oceania, Asia	Preventive Diplomacy and Mediation Support	$750,000.00	$576,036.87	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Civilian peace-building, conflict prevention and resolution
Gambia, Ghana, Liberia, Togo	Bilateral Support for Nationally Determined Contributions Implementation & Climate Governance in The Gambia, Ghana, Liberia, and Togo	$2,040,000.00	$1,566,820.28	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Environmental policy and administrative management
Gambia, Guinea, Guinea-Bissau, Senegal	Adaptation of Coastal Communities and the Blue Economy (APOCEB)	$750,000.00	$576,036.87	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Ghana	Developing evidence and action toward a double-duty food-based policy bundle to ensure healthier diets in Ghana	$65,115.75	$50,012.10	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security

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Ghana	Distributional impacts of innovation and SME support in Ghana	$55,395.00	$42,546.08	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Ghana	Centre of Excellence for the Circular Economy in Ghana	$375,000.00	$288,018.43	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Industry	Business policy and administration
Ghana	Greater Rural Opportunities for Women 2 (2)	$837,585.56	$643,306.88	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Ghana	Modernizing Agriculture in Ghana	$3,130,588.03	$2,404,445.49	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Agriculture	NA
Ghana	Women & Cocoa Communities Initiative (TogetHER)	$609,095.10	$467,814.98	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Ghana	Women’s Innovation for Sustainable Enterprises (WISE)	$494,100.00	$379,493.09	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Ghana	Digital Agricultural Services (DigitAL)	$1,062.10	$815.75	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Industry	Environmental education/ training
Ghana	Supporting the Green Economy of Ghana (2)	$1,387,809.00	$1,065,905.53	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Industry	Environmental education/ training
Ghana, Kenya, Madagascar, Mali, Mozambique, Zimbabwe, Senegal, Namibia, India, Bangladesh	Climate and Resilience - Operating costs for capacity building (adaptation only)	$25,413.85	$19,519.09	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Industry	Environmental policy and administrative management

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Ghana, Kenya, Madagascar, Mali, Mozambique, Zimbabwe, Senegal, Namibia, India, Bangladesh	Climate and Resilience - Operating costs for capacity building (mitigation only)	$10,891.65	$8,365.32	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Environmental policy and administrative management
Ghana, Côte d'Ivoire, Senegal	The Cooperative Model: Building Inclusive and Sustainable Communities in Côte d'Ivoire, Senegal and Ghana	$1,353,358.79	$1,039,446.08	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Ghana, Nigeria, Colombia, Peru	Tapping into local research expertise to deepen evidence-based impact investing	$144,345.00	$110,864.06	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Research and scientific institutions
Ghana, Kenya, Senegal	Strengthening capacities for food systems analysis and diagnostics for national planning in Kenya, Ghana, and Senegal	$60,510.00	$46,474.65	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Ghana, Zimbabwe, Senegal	AgMIP Adaptation Teams Start-up - A CLARE Transition Activity (adaptation only)	$4,242.63	$3,258.55	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Ghana, Zimbabwe, Senegal	AgMIP Adaptation Teams Start-up - A CLARE Transition Activity (mitigation only)	$1,818.27	$1,396.52	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Agriculture	NA
Ghana, Malawi, Rwanda	Policy foundations, country dialogues, and analytics for food system transformative integrated policy in Rwanda, Malawi, and Ghana	$29,585.25	$22,722.93	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Ghana, United Republic of Tanzania, Uganda	Youth Challenge International - Volunteer Cooperation 2020–2027	$810,339.21	$622,380.34	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management

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Ghana, Madagascar, Mozambique	Building ecosystem services for poverty alleviation (adaptation only)	$7,459.62	$5,729.35	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental research
Ghana, Madagascar, Mozambique	Building ecosystem services for poverty alleviation (mitigation only)	$3,196.98	$2,455.44	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Industry	Environmental research
Ghana, Sierra Leone	Investment in a commercially-focused and sustainably integrated forestry business (adaptation only)	$780,960.00	$599,815.67	NA	NA	Disbursed	Bilateral	OOF	Equity	Adaptation	Forestry	NA
Ghana, Sierra Leone	Investment in a commercially-focused and sustainably integrated forestry business (mitigation only)	$1,822,240.00	$1,399,569.89	NA	NA	Disbursed	Bilateral	OOF	Equity	Mitigation	Forestry	NA
Guatemala	Camino Verde: Economic Empowerment of Indigenous Women and Youth in Alta Verapaz	$500,770.27	$384,616.19	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Industry	Environmental education/ training
Guatemala	CRECER: Sustainable Economic Growth for Women and Youth in Alta Verapaz, Guatemala	$313,740.90	$240,968.43	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Guatemala	Support to Indigenous women's economic empowerment and food security	$150,000.00	$115,207.37	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Guatemala	RESTAURacción FY2022-23 – Los Altos Model Forest – Guatemala	$10,794.38	$8,290.61	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Forestry	NA
Guinea	Support to Ingénieurs sans frontières Québec (NQSF)	$350,000.00	$268,817.20	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Western Africa, Guinea, Senegal	Energy transition for women's economic empowerment through the horticultural value chain in Guinea and Senegal	$302,800.00	$232,565.28	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Guinea-Bissau, Senegal, Togo, Burkina Faso	Gender Equality through Women-led Agroecology in West Africa	$323,281.50	$248,296.08	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Guyana	Promoting Safe and Healthy Learning and Living (2)	$90,000.00	$69,124.42	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA

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Haiti	Adaptive and Innovative Solutions for Agri-Food Market Opportunities in Haiti	$1,386,968.41	$1,065,259.92	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Haiti	Call for proposals "Strengthening agri-food value chains" – Monitoring	$4,650.00	$3,571.43	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Haiti	Improving Gender Equality, Waste Management and Clean Energy in Haiti	$39,764.10	$30,540.78	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Water and sanitation	Waste management
Haiti	Integrated Community Resilience for Improved Food Security in Haiti (2)	$600,000.00	$460,829.49	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Haiti	Strengthening National Systems to Improve Management and Response to Natural Disasters	$1,200,000.00	$921,658.99	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Haiti	The Revival of Haitian Micro, Small and Medium Enterprises (MSMEs)	$300,000.00	$230,414.75	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Industry	Financial services
Haiti	Cashew, Mango and Gardening Value Chains Development for the Benefit of Women and Youth (adaptation only)	$779,041.19	$598,341.93	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Haiti	Cashew, Mango and Gardening Value Chains Development for the Benefit of Women and Youth (mitigation only)	$333,874.79	$256,432.25	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Agriculture	NA
Haiti	Climate Adaptation and Economic Development of Agricultural Sectors in Haiti (adaptation only)	$1,494,817.76	$1,148,093.51	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Haiti	Climate Adaptation and Economic Development of Agricultural Sectors in Haiti (mitigation only)	$640,636.18	$492,040.08	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Agriculture	NA
Haiti	Creole Garden Revalorisation (adaptation only)	$984,874.18	$756,431.78	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Haiti	Creole Garden Revalorisation (mitigation only)	$422,088.94	$324,185.05	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Agriculture	NA

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Haiti	Productive and Inclusive Coffee Value Chain Adapted to Climate Change in Haiti (adaptation only)	$1,654,602.04	$1,270,815.70	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Haiti	Productive and Inclusive Coffee Value Chain Adapted to Climate Change in Haiti (mitigation only)	$709,115.16	$544,635.30	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Agriculture	NA
Haiti	Transforming the Market for Stoves and Clean Energy in Haiti (adaptation only)	$721,653.90	$554,265.67	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Haiti	Transforming the Market for Stoves and Clean Energy in Haiti (mitigation only)	$1,683,859.10	$1,293,286.56	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	NA
Haiti	Jaden nou se vant nou - phase 2 (3)	$64,323.60	$49,403.69	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Haiti	KLIMA Grand Sud - Konbit pou Llte kont Chanjman kliMAtik nan Gran Sid Ayiti	$300,000.00	$230,414.75	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA
Haiti	Support to Carrefour de solidarité internationale	$59,630.00	$45,798.77	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Forestry	NA
Honduras	CAHOVA: Increasing Sustainable Productivity of Value-Added Agroforestry	$90,187.68	$69,268.57	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Forestry	NA
Honduras	SABORES de Honduras: Empowering Women and Youth in Coffee and Honey Value Chains	$150,000.00	$115,207.37	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Honduras	Agroecology and resilience of small-scale farmers to climate change: evidence to transform food systems in the Dry Corridor of Central America (adaptation only)	$299,740.00	$230,215.05	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Honduras	Agroecology and resilience of small-scale farmers to climate change: evidence to transform food systems in the Dry Corridor of Central America (mitigation only)	$128,460.00	$98,663.59	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Agriculture	NA
Honduras	Empowerment of Women for Climate Action in Honduras	$975,000.00	$748,847.93	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Biodiversity

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India, Pakistan, Bangladesh	Uptake of climate change adaptation research results in South Asia	$10,111.30	$7,765.98	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
Indonesia	Tropical Landscape Public-Private Partnerships for Sustainable Development Goals (2)	$585,177.62	$449,445.18	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	NA
Indonesia	Think Climate Indonesia – Organizational strengthening and core research	$377,426.40	$289,882.03	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental research
Indonesia	Think Climate Indonesia – Research support costs	$51,865.30	$39,835.10	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental research
Indonesia	Land4Life (Sustainable Landscape for Climate-Resilient Livelihoods) (adaptation only)	$1,539,979.72	$1,182,780.12	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Indonesia	Land4Life (Sustainable Landscape for Climate-Resilient Livelihoods) (mitigation only)	$659,991.31	$506,905.77	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Agriculture	Agriculture
Iraq	Transboundary water management in Iraq	$330,000.00	$253,456.22	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Water and sanitation	Water security policy and administrative management
Jamaica, Dominica, Saint Lucia, Guyana, Suriname	Sustainable Agriculture in the Caribbean (2)	$548,627.10	$421,372.58	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Jordan	Mitigating Climate Change through Solid Waste Management in southern Jordan	$1,496,304.60	$1,149,235.48	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Water and sanitation	Waste management
Jordan	Jordan Municipal Support Program (2)	$1,812.88	$1,392.38	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Public sector policy and administrative management
Jordan	Sustainable Economic Development Through Renewable Energy in Jordan	$3,186,194.01	$2,447,153.62	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA

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Kenya, Jamaica, Colombia, Sri Lanka	Exploring the private-sector role in the Sustainable Development Goal data revolution	$149,092.20	$114,510.14	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Research and scientific institutions
Kenya	Catalyzing food environment policy actions towards a healthy diet and prevention of the double burden of malnutrition in Kenya	$46,008.36	$35,336.68	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Kenya	Improving Agricultural Productivity and Resilience with Satellite and Cellphone Imagery to Scale Climate-Smart Crop Insurance (Cultiaf-2)	$13,630.20	$10,468.66	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Kenya	Re-addressing equity through evidence-driven response to COVID-19 in Africa	$52,641.90	$40,431.57	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Research and scientific institutions
Kenya	More Food: Empowering Kenyan Women	$55,304.07	$42,476.25	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Kenya	Livestock keeping in a changing climate (adaptation only)	$17,563.50	$13,489.63	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Kenya	Livestock keeping in a changing climate (mitigation only)	$40,981.50	$31,475.81	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Agriculture	NA
Kenya	Opportunities for blue economic empowerment and COVID-19 resilience of fisher women in Kenya	$392,400.00	$301,382.49	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Industry	Fisheries development
Kenya	Socially inclusive adaptation knowledge for resilient livelihoods in northern Kenya	$164.30	$126.19	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
Kenya, Rwanda, United Republic of Tanzania, Uganda	Reorienting the private sector to enable climate-smart agricultural solutions to address gender inequalities	$197,316.00	$151,548.39	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA

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Kenya, Senegal, Namibia, India	Building on CARIAA learning on women entrepreneurs, migration, and climate-resilient development (adaptation only)	$2,026.71	$1,556.61	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Industry	Environmental research
Kenya, Senegal, Namibia, India	Building on CARIAA learning on women entrepreneurs, migration, and climate-resilient development (mitigation only)	$868.59	$667.12	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Industry	Environmental research
Kenya, Uganda	Capacity building on the Women's Empowerment in Livestock Index	$1,250.00	$960.06	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Madagascar	RENIALA project “Protecting livelihoods through the adoption of soil conservation and sustainable development practices in Antananarivo and Bongolava”	$120,000.00	$92,165.90	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Madagascar	Rano Madagasikara (2)	$196,912.60	$151,238.56	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Water and sanitation	Water security policy and administrative management
Madagascar, Togo	Farmer-driven assessment of climate-resilient crop varieties and downstream impacts for improved food systems in Madagascar and Togo	$143,125.80	$109,927.65	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Mali	Agricultural Seeds for Women's Empowerment	$2,880.00	$2,211.98	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Mali	Djonkoli kènè, the space for women and young people to get started (2)	$139,779.30	$107,357.37	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Mali	Dou Touloma - Woman Pillar of the Family (2)	$696,643.22	$535,056.24	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Mali	Rehabililtation of Agricultural Irrigation Infrastructures in the Zone of the Office du Niger	$738.75	$567.39	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Mali	Strengthening Irrigated Agriculture in Mali (REAGIR)	$306.58	$235.47	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA

Recipient country or region	Title of the project, programme, activity or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Mali	Strengthening the Nutritional Resilience and Food Security of the Most Vulnerable in Mali	$1,830,000.00	$1,405,529.95	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Mali	Targeted Support for Irrigated Land and Nutrition Opportunities (ACTION) (2)	$1,482,000.00	$1,138,248.85	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Mali, Niger, Burkina Faso	Climate Knowledge Brokering in West Africa. A learning by doing approach	$39,436.90	$30,289.48	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Mali, Niger, Burkina Faso	Food and Nutrition Security and Climate Change in the Sahel (SANC2S) (1)	$262,440.90	$201,567.51	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Mali, Niger, Burkina Faso	Food and Nutrition Security and Climate Change in the Sahel (SANC2S) (2)	$113,600.06	$87,250.43	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Mali, Sudan, Uganda	Exploring the impacts of the war in Ukraine on lower-income countries	$443,789.10	$340,851.84	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Mexico	Canada's Support for the Implementation of Mexico's Nationally Determined Contribution	$124,858.00	$95,897.08	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Environmental policy and administrative management
Mexico, Colombia, Ecuador, Peru	Bilateral Support for Nationally Determined Contributions Implementation & Climate Governance in the Pacific Alliance	$215,000.00	$165,130.57	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Environmental policy and administrative management
Western Asia	Strengthening knowledge, evidence use, and leadership in the Global South on forced displacement: Focus on the Middle East	$52,950.00	$40,668.20	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Migration
Morocco	Scaling up quinoa value chain to improve food and nutritional security in the rural/poor communities of Morocco	$10,428.00	$8,009.22	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security

Recipient country or region	Title of the project, programme, activity or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Morocco	Empowering Women Through the Development of Forestry Cooperatives in Morocco (adaptation only)	$850,931.89	$653,557.52	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Forestry	NA
Morocco	Empowering Women Through the Development of Forestry Cooperatives in Morocco (mitigation only)	$364,685.10	$280,096.08	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Forestry	NA
Morocco	Decision support system for renewable resource and energy yield prediction (2)	$252,000.00	$193,548.39	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Energy	NA
Mozambique	User Driven Approaches to make Government and Farmer led Smallholder Irrigation in Mozambique more Productive (Cultiaf 2)	$20,384.55	$15,656.34	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Mozambique	Mozambican Rural Women's and Girls' Economic Empowerment (PAEF)	$1,234,957.80	$948,508.30	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Myanmar	Powering for climate action through gendered energy access in Myanmar	$58,780.50	$45,146.31	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Energy	NA
Myanmar, Bangladesh, Cambodia, China, Lao People's Democratic Republic, Thailand, Viet Nam	Strengthening knowledge, evidence use and leadership in the Global South on forced displacement - focus on Southeast Asia	$32,010.00	$24,585.25	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Migration
Myanmar, Cambodia, Philippines	Climate-smart villages as a platform to resilience, women’s empowerment, equity, and sustainable food systems	$96,624.00	$74,211.98	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security

Recipient country or region	Title of the project, programme, activity or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Namibia	Support for management of research calls by Namibia's National Commission on Research, Science and Technology	$3,624.87	$2,784.08	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Research and scientific institutions
Nepal	Co-producing a shock-resilient ecosystem for women-led enterprises in Nepal	$30,830.70	$23,679.49	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Industry	Business development
Nepal	Water-induced Disasters Risk Management Planning in Nepal	$12,881.40	$9,893.55	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Disaster risk reduction
Nepal	Support to Rights and Economic Development for Nepal's Empowered Women	$69,230.44	$53,172.38	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Nepal	Economic empowerment of women through forest solutions (adaptation only)	$42,230.10	$32,434.79	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Forestry	NA
Nepal	Economic empowerment of women through forest solutions (mitigation only)	$98,536.90	$75,681.18	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Forestry	NA
Nicaragua	Technolinks+: Advancing Inclusive Prosperity in Nicaragua's Agri-food Export Sector	$596,979.00	$458,509.22	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Nicaragua	Gender-Responsive Climate-Smart Agriculture in Nicaragua	$158,419.00	$121,673.58	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Forestry	NA
Niger, Sudan, Myanmar	Breaking barriers, Improving Girls' education, Hope and Totality (BRIGHT)	$989,835.31	$760,242.17	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Nigeria	Livelihoods and Nutrition Empowerment	$293,579.52	$225,483.50	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Nigeria, South Sudan	Advancing Gender Equality in Fragile Food Systems in the Sahel	$187,718.40	$144,176.96	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Agriculture	Food security
Africa, Asia,Oceania	Climate Adaptation and Resilience (CLARE2) — operating costs for capacity building	$75,590.50	$58,057.22	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Research and scientific institutions
Africa	Enhance the capacity for gender- and SRHR-responsive climate adaptation at COP27 and beyond	$100,000.00	$76,804.92	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Research and scientific institutions

Recipient country or region	Title of the project, programme, activity or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Africa	Empowering African youth and women green social entrepreneurs	$74,970.00	$57,580.65	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Industry	Business development
Oceania	Kiwa Initiative – Nature-based Solutions for Climate Resilience	$4,000,000.00	$3,072,196.62	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Disaster risk reduction
Peru	RESTAURacción FY2022-23 – Pichanaki Model Forest – Peru	$72,220.97	$55,469.25	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Forestry	NA
Peru	AMAZON BUSINESS ALLIANCE (adaptation only)	$900,000.00	$691,244.24	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Peru	AMAZON BUSINESS ALLIANCE (mitigation only)	$2,100,000.00	$1,612,903.23	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	NA
Peru, Venezuela	Strengthening Knowledge, Evidence Use and Leadership in the Global South on Forced Displacement: Focus on Latin America	$32,940.00	$25,299.54	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Migration
Philippines	Accelerating Green & Climate Finance in the Philippines	$2,000,000.00	$1,536,098.31	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Rwanda, Kyrgyzstan	Supporting Investment in Least Developed Countries – BUILD Fund	$3,900,000.00	$2,995,391.71	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Industry	SME development
Rwanda, Nepal, Bangladesh, Vanuatu	Strengthening loss and damage response capacity in the Global South (STRENGTH)	$224,000.00	$172,043.01	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
Senegal	On improved cookstoves: the double benefit of energy efficiency and paid labour opportunities	$10,294.50	$7,906.68	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Women's rights organizations and movements, and government institutions
Senegal	Feminine Governance and Innovation in Sénégal	$90,000.00	$69,124.42	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA
Senegal	Improving Access to Agricultural Insurance in the Casamance Region in Senegal (2)	$315,000.00	$241,935.48	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA

Recipient country or region	Title of the project, programme, activity or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Senegal	M&E of Improving Access to Agricultural Insurance in the Casamance Region in Senegal	$2,430.00	$1,866.36	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Senegal	Support to Engineers Without Borders Quebec (NQSF) I	$44,492.70	$34,172.58	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Senegal	Support to Engineers Without Borders Quebec (NQSF) II	$44,492.70	$34,172.58	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Senegal	Improving the welfare and gender impacts of a Senegalese climate-smart development program (adaptation only)	$6,886.60	$5,289.25	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Rural development
Senegal	Improving the welfare and gender impacts of a Senegalese climate-smart development program (mitigation only)	$2,951.40	$2,266.82	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Rural development
Senegal	Adaptation and Valorization of Entrepreneurship in Irrigated Agriculture (AVENIR)	$2,922,109.00	$2,244,323.35	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Senegal	Building Community Resilience to Climate Change in Senegal	$330,918.99	$254,162.05	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
Senegal	Women, Agriculture and Resilience (FAR) in Senegal (adaptation only)	$2,520,903.54	$1,936,177.83	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Senegal	Women, Agriculture and Resilience (FAR) in Senegal (mitigation only)	$1,080,387.23	$829,790.50	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Agriculture	NA
Senegal	Dekkal Suuf - Giving new life to the earth	$300,000.00	$230,414.75	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Senegal	ORA	$100,000.00	$76,804.92	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Industry	Fisheries development
Senegal, Haiti, Mexico, Colombia, Peru	Supporting implementation of the Kigali Amendment on HFCs- Phase II	$854,828.00	$656,549.92	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Environmental policy and administrative management
South Africa	Towards equitable nature-based solutions to climate change in southern Africa’s water towers	$192,300.00	$147,695.85	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management

Recipient country or region	Title of the project, programme, activity or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
South Africa, Ghana, Kenya	Seeds of good anthropocenes: fostering food-system transformation in Africa	$22,050.00	$16,935.48	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA
South Africa, Cameroon, Ghana, Kenya, Rwanda, Senegal	Mathematical sciences for climate change resilience (MS4CR)	$513,299.30	$394,239.09	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Higher education
South Africa, Uganda	Enhancing access to renewable energy: A dividend for a just transition to low-carbon economies	$131,429.00	$100,943.93	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Energy	NA
Latin America and the Caribbean	RESTAURacción FY2022-23 – Latin American Model Forest Network – Costa Rica	$65,075.47	$49,981.16	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Forestry	NA
Latin America and the Caribbean	RESTAURaccion - Latin American Model Forest Network – Costa Rica	$562,208.00	$431,803.38	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Africa	Knowledge translation and synthesis in the Sustainable Inclusive Economies program: gender equality in a low-carbon transition	$68,885.46	$52,907.42	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Research and scientific institutions
Africa	Artificial intelligence for climate action innovation research network	$45,094.41	$34,634.72	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Research and scientific institutions
Africa	Catalyzing climate finance for the Southern African Development Community	$150,535.80	$115,618.89	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Public finance management
Africa	Navigating trade-offs in agroecology in West Africa's food systems	$182,385.60	$140,081.11	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Africa	Artificial intelligence for agriculture and food systems innovation research network	$204,149.20	$156,796.62	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security

Recipient country or region	Title of the project, programme, activity or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Africa	Cultivate Africa's Future 2 – Operations	$194,642.40	$149,494.93	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Africa	Cultivate Africa's Future II (CultiAF-2) – Research integration	$23,412.90	$17,982.26	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Africa	One Planet Women: strengthening research and leadership skills of African women at the intersection of climate change and food security	$2,702.40	$2,075.58	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Women's rights organizations and movements, and government institutions
Africa	Uptake of climate change adaptation research results in Africa	$3,103.20	$2,383.41	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
Africa	Accelerator for Women Climate Entrepreneurs (2)	$514,300.00	$395,007.68	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Industry	Rural development
Africa	Expert Deployment Mechanism for Climate Action in Africa (2)	$666,799.34	$512,134.67	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Africa, Asia, Latin America and the Caribbean	Harmonized indicators for measuring progress toward more sustainable, healthier food systems	$87,814.80	$67,446.08	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Africa, Asia, Latin America and the Caribbean	Supporting low-carbon transition and gender equity in the Global South	$187,677.87	$144,145.83	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Multi-sector aid
Africa, Asia, Latin America and the Caribbean	FinDev Canada Technical Assistance Project	$444,446.10	$341,356.45	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	NA
Africa, Oceania	Mobilizing central banks and financial regulators for an inclusive green finance	$66,960.00	$51,428.57	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Public finance management

Recipient country or region	Title of the project, programme, activity or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Africa, Asia, Latin America and the Caribbean	Enhancing the design of the Adaptation Futures conference for a more distributed participation in the context of limited international mobility (adaptation only)	$44,839.90	$34,439.25	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
Africa, Asia, Latin America and the Caribbean	Enhancing the design of the Adaptation Futures conference for a more distributed participation in the context of limited international mobility (mitigation only)	$19,217.10	$14,759.68	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Environmental policy and administrative management
Africa, Asia	Generating rigorous evidence on how and which interventions lead to equitable and sustainable food systems in Africa, South and Southeast Asia	$60,000.00	$46,082.95	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security
Africa, Asia, Latin America and the Caribbean	Global cooperation for climate action: Southern engagement with climate negotiations and commitments 2020–2023 (adaptation only)	$160,620.00	$123,364.06	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
Africa, Asia, Latin America and the Caribbean	Global cooperation for climate action: Southern engagement with climate negotiations and commitments 2020–2023 (mitigation only)	$374,780.00	$287,849.46	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Environmental policy and administrative management
Africa, Asia, Latin America and the Caribbean	Justice in a changing climate	$188,871.24	$145,062.40	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Cross-cutting	Environmental policy and administrative management
Africa	Implementing corporate knowledge-sharing plans on climate change and COVID-19	$294,889.80	$226,489.86	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Research and scientific institutions
Africa, Asia, Latin America and the Caribbean	Climate and Development Knowledge Network – Accelerating inclusive climate action	$555,140.30	$426,375.04	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
South Sudan	Building Resilience Through Safety Nets in South Sudan	$2,176,836.28	$1,671,917.27	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	Food security

Recipient country or region	Title of the project, programme, activity or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
South Sudan	Fortifying Equality and Economic Diversity (FEED) for Resilience in South Sudan	$3,826,470.02	$2,938,917.07	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
South Sudan	Investing in Women in South Sudan - African Enterprise Challenge Fund	$3,000.00	$2,304.15	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Sri Lanka	Providing Home-Grown Nutritious School Meals to Primary School Children (2)	$90,000.00	$69,124.42	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Education
Sri Lanka, India, Nepal, Bangladesh	South Asian Water (SAWA) Leadership Program on Climate Change	$6,390.00	$4,907.83	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Industry	Environmental education/ training
Sri Lanka, Nepal, Bangladesh	Gendering water and climate science research in South Asia	$53,190.00	$40,852.53	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Environmental policy and administrative management
Togo	Waste collection and recovery and biogas-solar co-energy in Kloto prefecture	$149,919.90	$115,145.85	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Energy	NA
Tunisia	Green Economy: Women’s Economic Empowerment in Tunisia	$750,000.00	$576,036.87	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	Environmental policy and administrative management
Tunisia	Social economy project of agricultural services for rural women in Tunisia	$450,000.00	$345,622.12	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Cross-cutting	NA

Recipient country or region	Title of the project, programme, activity or other	Amount (climate-specific)				Status	Channel	Funding source	Financial instrument	Type of support	Sector	Subsector
		Face value		Grant equivalent								
		Domestic currency	USD	Domestic currency	USD							
Tunisia, Cameroon, Democratic Republic of the Congo, Benin, Guinea, Senegal, Burkina Faso, Haiti, Bolivia (Plurinational State of), Ecuador, Peru	UPA Développement international - Volunteer cooperation 2020–2027	$667,256.40	$512,485.71	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Africa	Canada-South Africa trilateral Research Chair in climate change and human-wildlife interactions	$29,701.00	$22,811.83	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Environmental research
Vietnam	Reducing Short Lived Climate Pollutants through Improved Municipal Solid Waste (MSW) Practices in Vietnam	$55,000.00	$42,242.70	NA	NA	Disbursed	Bilateral	ODA	Grant	Mitigation	Cross-cutting	Environmental policy and administrative management
Western Asia	Supporting Economic Growth through Value Chain Development in the West Bank (2)	$294,000.00	$225,806.45	NA	NA	Disbursed	Bilateral	ODA	Grant	Adaptation	Agriculture	NA
Western Asia	Gaza food connections - towards resilient women-led urban agroecological farming initiatives	$438,700.00	$336,943.16	NA	NA	Disbursed	Bilateral	ODA	Grant	Cross-cutting	Agriculture	NA

A5.3 Table III.2: Information on financial support provided under Article 9 of the Paris Agreement — Multilateral channels (2021)

Institution	Core / General				Climate-Specific		Status	Channel	Funding Source	Financial Instrument	Type of Support	Sector
	Face Value		Grant Equivalent		Face Value							
	Domestic currency	USD	Domestic currency	USD	Domestic currency	USD						
Global Environment Facility (GEF) mitigation only+	NA	NA	NA	NA	$12,456,172.47	$9,934,126.29	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
Global Environment Facility (GEF) adaptation only+	NA	NA	NA	NA	$10,907,842.47	$8,699,292.25	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
Global Environment Facility (GEF) both mitigation and adaptation+	NA	NA	NA	NA	$16,568,992.46	$13,214,208.78	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting
Least Developed Countries Fund (adaptation only)	NA	NA	NA	NA	$6,247,350.00	$4,982,426.51	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
Least Developed Countries Fund (both mitigation and adaptation)	NA	NA	NA	NA	$1,252,650.00	$999,021.44	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting
Green Climate Fund (GCF) mitigation only+	NA	NA	NA	NA	$7,084,612.22	$5,650,165.23	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
Green Climate Fund (GCF) adaptation only+	NA	NA	NA	NA	$4,745,543.42	$3,784,696.12	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
Green Climate Fund (GCF) both mitigation and adaptation+	NA	NA	NA	NA	$2,759,844.41	$2,201,048.75	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting
United Nations Framework Convention on Climate Change	NA	NA	NA	NA	$633,896.00	$505,548.79	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting

Institution	Core / General				Climate-Specific		Status	Channel	Funding Source	Financial Instrument	Type of Support	Sector
	Face Value		Grant Equivalent		Face Value							
	Domestic currency	USD	Domestic currency	USD	Domestic currency	USD						
African Development Bank (mitigation only)	NA	NA	NA	NA	$32,740,175.80	$26,111,154.29	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
African Development Bank (adaptation only)	NA	NA	NA	NA	$30,463,688.15	$24,295,595.30	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
Asian Development Bank (ADB) (mitigation only)	NA	NA	NA	NA	$3,886,700.03	$3,099,745.85	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
Asian Development Bank (ADB) (adaptation only)	NA	NA	NA	NA	$1,281,402.54	$1,021,952.34	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
Inter-American Development Bank (mitigation only)	NA	NA	NA	NA	$359,682.72	$286,856.46	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
Inter-American Development Bank (adaptation only)	NA	NA	NA	NA	$69,731.21	$55,612.48	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
Inter-American Development Bank (both mitigation and adaptation)	NA	NA	NA	NA	$63,434.72	$50,590.87	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting
Asian Infrastructure Investment Bank (AIIB) (mitigation only)	NA	NA	NA	NA	$6,947,770.66	$5,541,030.46	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
Asian Infrastructure Investment Bank (AIIB) (adaptation only)	NA	NA	NA	NA	$1,607,118.80	$1,281,719.66	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
Asian Infrastructure Investment Bank (AIIB) (both mitigation and adaptation)	NA	NA	NA	NA	$154,547.12	$123,255.41	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting

Institution	Core / General				Climate-Specific		Status	Channel	Funding Source	Financial Instrument	Type of Support	Sector
	Face Value		Grant Equivalent		Face Value							
	Domestic currency	USD	Domestic currency	USD	Domestic currency	USD						
Inter-American Development Bank Fund for Special Operations (IDB FSO) (mitigation only)	NA	NA	NA	NA	$63,375.08	$50,543.30	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
Inter-American Development Bank Fund for Special Operations (IDB FSO) (adaptation only)	NA	NA	NA	NA	$12,286.44	$9,798.76	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
Inter-American Development Bank Fund for Special Operations (IDB FSO) (both mitigation and adaptation)	NA	NA	NA	NA	$11,177.02	$8,913.97	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting
International Development Association (IDA) (mitigation only)	NA	NA	NA	NA	$55,956,560.40	$44,626,833.73	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
International Development Association (IDA) (adaptation only)	NA	NA	NA	NA	$76,441,376.40	$60,964,015.13	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
International Development Association (IDA) (both mitigation and adaptation)	NA	NA	NA	NA	$1,527,896.40	$1,218,537.70	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting
Caribbean Development Bank (mitigation only)	NA	NA	NA	NA	$115,400.09	$92,034.62	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
Caribbean Development Bank (adaptation only)	NA	NA	NA	NA	$10,032,481.16	$8,001,168.50	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting

Institution	Core / General				Climate-Specific		Status	Channel	Funding Source	Financial Instrument	Type of Support	Sector
	Face Value		Grant Equivalent		Face Value							
	Domestic currency	USD	Domestic currency	USD	Domestic currency	USD						
Caribbean Development Bank (both mitigation and adaptation)	NA	NA	NA	NA	$73,473.43	$58,597.00	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting
United Nations Development Programme (UNDP)	NA	NA	NA	NA	$4,800,000.00	$3,828,126.68	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
United Nations Environment Program (UNEP)	$3,887,018.70	$3,100,000.00	NA	NA	NA	NA	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting
United Nations University - Institute for Water, Environment and Health (UNU-INWEH)	$2,000,000.00	$1,595,052.78	NA	NA	NA	NA	Disbursed	Multilateral	ODA	Grant	Adaptation	Water and sanitation
International Renewable Energy Agency (IRENA)	$821,192.00	$654,922.29	NA	NA	NA	NA	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Energy
International Fund for Agricultural Development (IFAD) (mitigation only)	NA	NA	NA	NA	$1,614,999.99	$1,288,005.12	Disbursed	Multilateral	ODA	Grant	Mitigation	Agriculture
International Fund for Agricultural Development (IFAD) (adaptation only)	NA	NA	NA	NA	$16,900,499.91	$13,478,594.72	Disbursed	Multilateral	ODA	Grant	Adaptation	Agriculture
Multilateral Fund for the Implementation of the Montreal Protocol	NA	NA	NA	NA	$886,393.00	$706,921.81	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
World Meteorological Organisation (WMO)	$99,243.00	$79,148.91	NA	NA	NA	NA	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
Food and Agriculture Organization for the United Nations (FAO) (mitigation only)	NA	NA	NA	NA	$43,247.77	$34,491.23	Disbursed	Multilateral	ODA	Grant	Mitigation	Agriculture

Institution	Core / General				Climate-Specific		Status	Channel	Funding Source	Financial Instrument	Type of Support	Sector
	Face Value		Grant Equivalent		Face Value							
	Domestic currency	USD	Domestic currency	USD	Domestic currency	USD						
Food and Agriculture Organization for the United Nations (FAO) (adaptation only)	NA	NA	NA	NA	$259,204.85	$206,722.71	Disbursed	Multilateral	ODA	Grant	Adaptation	Agriculture
Food and Agriculture Organization for the United Nations (FAO) (both mitigation and adaptation)	NA	NA	NA	NA	$618,147.21	$492,988.72	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Agriculture

A5.4 Table III.2: Information on financial support provided under Article 9 of the Paris Agreement — Multilateral channels (2022)

Institution	Core/ General				Climate-Specific		Status	Channel	Funding Source	Financial Instrument	Type of Support	Sector
	Face Value		Grant Equivalent		Face Value							
	Domestic currency	USD	Domestic currency	USD	Domestic currency	USD						
Global Environment Facility (GEF) (mitigation only)	NA	NA	NA	NA	$3,876,032.32	$2,976,983.35	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
Global Environment Facility (GEF) (adaptation only)	NA	NA	NA	NA	$3,388,786.82	$2,602,754.85	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
Global Environment Facility (GEF) (both mitigation and adaptation)	NA	NA	NA	NA	$6,961,845.13	$5,347,039.27	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting
Least Developed Countries Fund (adaptation only)	NA	NA	NA	NA	$28,562,248.76	$21,937,211.03	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
Least Developed Countries Fund (both mitigation and adaptation)	NA	NA	NA	NA	$8,937,749.61	$6,864,631.04	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting
Green Climate Fund (GCF) (mitigation only)	NA	NA	NA	NA	$116,354,999.80	$89,366,359.29	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
Green Climate Fund (GCF) (adaptation only)	NA	NA	NA	NA	$88,147,499.85	$67,701,612.79	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
Green Climate Fund (GCF) (both mitigation and adaptation)	NA	NA	NA	NA	$45,497,499.92	$34,944,316.38	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting
Adaptation Fund † (adaptation only)	NA	NA	NA	NA	$19,998,827.43	$15,360,082.51	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
United Nations Framework Convention on Climate Change	NA	NA	NA	NA	$545,079.25	$418,647.66	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting

Institution	Core/ General				Climate-Specific		Status	Channel	Funding Source	Financial Instrument	Type of Support	Sector
	Face Value		Grant Equivalent		Face Value							
	Domestic currency	USD	Domestic currency	USD	Domestic currency	USD						
African Development Bank (mitigation only)	NA	NA	NA	NA	$33,656,020.85	$25,849,478.38	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
African Development Bank (adaptation only)	NA	NA	NA	NA	$102,735,660.52	$78,906,037.26	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
Asian Development Bank (ADB) (mitigation only)	NA	NA	NA	NA	$5,857,022.14	$4,498,480.91	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
Asian Development Bank (ADB) (adaptation only)	NA	NA	NA	NA	$2,916,305.80	$2,239,866.21	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
Inter-American Development Bank Fund for Special Operations (IDB FSO) (mitigation only)	NA	NA	NA	NA	$73,397.20	$56,372.66	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
Inter-American Development Bank Fund for Special Operations (IDB FSO) (adaptation only)	NA	NA	NA	NA	$29,847.94	$22,924.69	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
Inter-American Development Bank Fund for Special Operations (IDB FSO) (both mitigation and adaptation)	NA	NA	NA	NA	$48,787.16	$37,470.94	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting
International Development Association (IDA) (mitigation only)	NA	NA	NA	NA	$113,288,298.01	$87,010,981.58	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
International Development Association (IDA) (adaptation only)	NA	NA	NA	NA	$160,118,099.59	$122,978,571.11	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting

Institution	Core/ General				Climate-Specific		Status	Channel	Funding Source	Financial Instrument	Type of Support	Sector
	Face Value		Grant Equivalent		Face Value							
	Domestic currency	USD	Domestic currency	USD	Domestic currency	USD						
International Bank for Reconstruction and Development (IBRD) (mitigation only)	NA	NA	NA	NA	$7,628,750.36	$5,859,255.27	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
International Bank for Reconstruction and Development (IBRD) (adaptation only)	NA	NA	NA	NA	$4,668,656.37	$3,585,757.58	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
Caribbean Development Bank (mitigation only)	NA	NA	NA	NA	$489,890.69	$376,260.13	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
Caribbean Development Bank (adaptation only)	NA	NA	NA	NA	$1,327,406.35	$1,019,513.32	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
Caribbean Development Bank (both mitigation and adaptation)	NA	NA	NA	NA	$35,006.73	$26,886.89	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting
International Finance Corporation (IFC) (mitigation only)	NA	NA	NA	NA	$81,296,729.58	$62,439,884.47	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
International Finance Corporation (IFC) (adaptation only)	NA	NA	NA	NA	$708,906.07	$544,474.71	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
International Finance Corporation (IFC) (both mitigation and adaptation)	NA	NA	NA	NA	$156,798.54	$120,428.99	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting
IMF Resilience and Sustainability Trust (IMF RST) (mitigation only)	NA	NA	NA	NA	$11,667,068.74	$8,960,882.29	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
IMF Resilience and Sustainability Trust (IMF RST) (adaptation only)	NA	NA	NA	NA	$6,069,380.73	$4,661,582.74	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting

Institution	Core/ General				Climate-Specific		Status	Channel	Funding Source	Financial Instrument	Type of Support	Sector
	Face Value		Grant Equivalent		Face Value							
	Domestic currency	USD	Domestic currency	USD	Domestic currency	USD						
IMF Resilience and Sustainability Trust (IMF RST) (both mitigation and adaptation)	NA	NA	NA	NA	$22,407,612.53	$17,210,147.87	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting
United Nations Development Programme (UNDP)	NA	NA	NA	NA	$4,000,000.02	$3,072,196.63	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting
United Nations Environment Program (UNEP)	$3,100,000.00	$2,380,952.38	NA	NA	NA	NA	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting
United Nations Convention to Combat Desertification (UNCCD)	$573,233.67	$440,271.64	NA	NA	NA	NA	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting
United Nations University - Institute for Water, Environment and Health (UNU-INWEH)	$2,000,000.00	$1,536,098.31	NA	NA	NA	NA	Disbursed	Multilateral	ODA	Grant	NA	Cross-cutting
International Renewable Energy Agency (IRENA)	$525,201.13	$403,380.28	NA	NA	NA	NA	Disbursed	Multilateral	ODA	Grant	NA	Cross-cutting
Multilateral Fund for the Implementation of the Montreal Protocol	NA	NA	NA	NA	$19,056,180.13	$14,636,083.05	Disbursed	Multilateral	ODA	Grant	NA	Cross-cutting
World Meteorological Organisation (WMO)	NA	NA	NA	NA	$100,984.77	$77,561.27	Disbursed	Multilateral	ODA	Grant	NA	Cross-cutting
Food and Agriculture Organization for the United Nations (FAO) (mitigation only)	NA	NA	NA	NA	$76,136.40	$58,476.50	Disbursed	Multilateral	ODA	Grant	Mitigation	Cross-cutting
Food and Agriculture Organization for the United Nations (FAO) (adaptation only)	NA	NA	NA	NA	$252,309.17	$193,785.84	Disbursed	Multilateral	ODA	Grant	Adaptation	Cross-cutting

Institution	Core/ General				Climate-Specific		Status	Channel	Funding Source	Financial Instrument	Type of Support	Sector
	Face Value		Grant Equivalent		Face Value							
	Domestic currency	USD	Domestic currency	USD	Domestic currency	USD						
Food and Agriculture Organization for the United Nations (FAO) (both mitigation and adaptation)	NA	NA	NA	NA	$751,918.52	$577,510.39	Disbursed	Multilateral	ODA	Grant	Cross-cutting	Cross-cutting

A5.5 Table III.3: Information on financial support mobilized through public interventions under Article 9 of the Paris Agreement in year 2021

The majority of Canada's private sector finance for calendar years 2021 and 2022 is presented at the fund level. Sub-project details are subject to confidentiality by implementing partners.

Recipient country or region	Title of the project, programme, activity or other	Channel	Amount Mobilized				Type of Support	Sector	Subsector	Additional Information	Type of Public Intervention
			Face Value		Amount of Resources used to Mobilize Support						
			Domestic currency	USD	Domestic currency	USD					
Ghana	Canada Climate Change Program (1)	Bilateral	$5,555,284.00	$4,431,818.00	$18,802,500.00	$15,000,000.00	Mitigation	Energy	Energy generation renewable sources multiple tech	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Mexico	Canadian Climate Fund for the Private Sector in the Americas	Bilateral	$50,247,026.00	$40,085,382.00	$25,571,400.00	$20,400,000.00	Mitigation	Energy	Solar energy	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Colombia	Increased Economic and Social Empowerment of Women and Youth in Rural Colombia	Bilateral	$833,333.00	$664,805.00	$5,000,000.00	$3,988,831.00	Cross-cutting	Cross-cutting	Banking and financial services	ODA	Guarantee / insurance
Cambodia	Canada-International Finance Corporation Blended Climate Finance Program (1)	Bilateral	$4,637,950.00	$3,700,000.00	$5,014,000.00	$4,000,000.00	Mitigation	Energy	Solar energy	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Cambodia	Canada-International Finance Corporation Blended Climate Finance Program (2)	Bilateral	$4,371,571.00	$3,487,492.00	$5,014,000.00	$4,000,000.00	Mitigation	Energy	Solar energy	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Cambodia	Canadian Climate Fund for the Private Sector in Asia – II (1)	Bilateral	$4,433,462.00	$3,536,866.00	$5,264,700.00	$4,200,000.00	Mitigation	Energy	Solar energy	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Jamaica	Canada Climate Change Program (2)	Bilateral	$8,308,786.00	$6,628,469.00	$12,535,000.00	$10,000,000.00	Mitigation	Energy	Wind energy	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Uzbekistan	Canada-International Finance Corporation Blended Climate Finance Program (3)	Bilateral	$20,788,045.00	$16,584,001.00	$21,953,353.00	$17,513,644.00	Mitigation	Energy	Solar energy	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Costa Rica	Canadian Climate Fund for the Private Sector in the Americas II (1)	Bilateral	$12,588,274.00	$10,042,500.00	$3,760,500.00	$3,000,000.00	Mitigation	Energy	Energy conservation and demand-side efficiency	ODA	Direct investment in companies / SPVs, mezzanine / senior debt

Recipient country or region	Title of the project, programme, activity or other	Channel	Amount Mobilized				Type of Support	Sector	Subsector	Additional Information	Type of Public Intervention
			Face Value		Amount of Resources used to Mobilize Support						
			Domestic currency	USD	Domestic currency	USD					
Nigeria	Supporting Renewable Energy in Africa - Africa Renewable Energy Initiative (AREI) (1)	Bilateral	$25,070,000.00	$20,000,000.00	$12,535,000.00	$10,000,000.00	Mitigation	Energy	Solar energy	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Cabo Verde	Renewable Energy in Small Island Developing States Program [solar energy portion (adaptation only)]	Bilateral	$3,627,458.10	$2,893,863.60	$1,868,968.50	$1,491,000.00	Adaptation	Energy	Solar energy	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Cabo Verde	Renewable Energy in Small Island Developing States Program [solar energy portion (mitigation only)]	Bilateral	$8,464,068.90	$6,752,348.40	$4,360,926.50	$3,479,000.00	Mitigation	Energy	Solar energy	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Cabo Verde	Renewable Energy in Small Island Developing States Program [energy policy portion (adaptation only)]	Bilateral	$2,454,865.80	$1,958,409.00	$763,381.50	$609,000.00	Adaptation	Energy	Energy policy and administrative management	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Cabo Verde	Renewable Energy in Small Island Developing States Program [energy policy portion (mitigation only)]	Bilateral	$5,728,020.20	$4,569,621.00	$1,781,223.50	$1,421,000.00	Mitigation	Energy	Energy policy and administrative management	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Saint Lucia	Renewable Energy in Small Island Developing States Program (1)	Bilateral	$1,199,432.00	$956,866.00	$2,464,757.00	$1,966,300.00	Mitigation	Energy	Energy policy and administrative management	ODA	Direct investment in companies / SPVs, mezzanine/senior debt
Saint Lucia	Renewable Energy in Small Island Developing States Program (2)	Bilateral	$1,155,885.00	$922,126.00	$2,185,728.00	$1,743,700.00	Mitigation	Energy	Geothermal energy	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Gabon	Supporting Renewable Energy in Africa - Africa Renewable Energy Initiative (AREI) (2)	Bilateral	$12,169,036.00	$9,708,046.00	$29,647,588.00	$23,651,845.00	Mitigation	Energy	Hydro-electric power plants	ODA	Direct investment in companies / SPVs, mezzanine / senior debt

A5.6 Table III.3: Information on financial support mobilized through public interventions under Article 9 of the Paris Agreement in year 2022

The majority of Canada's private sector finance for calendar years 2021 and 2022 is presented at the fund level. Sub-project details are subject to confidentiality by implementing partners.

Recipient country or region	Title of the project, programme, activity or other	Channel	Amount Mobilized				Type of Support	Sector	Subsector	Additional Information	Type of Public Intervention
			Face Value		Amount of resources used to mobilize support						
			Domestic currency	USD	Domestic currency	USD					
Latin America and the Caribbean	Canadian Climate Fund for the Private Sector in the Americas II (2)	Bilateral	$904,762.00	$695,062.00	$1,000,000.00	$768,226.00	Cross-cutting	Industry	SME development	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Brazil	Canadian Climate Fund for the Private Sector in the Americas II (3)	Bilateral	$13,375,698.00	$10,275,561.00	$2,129,951.00	$1,636,284.00	Cross-cutting	Energy	Solar energy for isolated grids and standalone systems	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Brazil	Land Degradation Neutrality Fund (1)	Bilateral	$732,979.00	$563,094.00	$2,542,384.00	$1,953,126.00	Cross-cutting	Forestry	Agricultural development	ODA	Direct investment in companies / SPVs, equity
Colombia	Agroemprende Cacao (1)	Bilateral	$13,674.00	$10,504.00	$1,332.00	$1,023.00	Cross-cutting	Agriculture	Agricultural development	ODA	Standard grants & loans in simple co-financing arrangements
Colombia	Agroemprende Cacao (2)	Bilateral	$5,860.00	$4,502.00	$571.00	$438.00	Cross-cutting	Agriculture	Agricultural land resources	ODA	Standard grants & loans in simple co-financing arrangements
Colombia	Agroemprende Cacao (3)	Bilateral	$19,534.00	$15,006.00	$1,902.00	$1,461.00	Cross-cutting	Agriculture	Agricultural co-operatives	ODA	Standard grants & loans in simple co-financing arrangements
Cambodia	Canada-International Finance Corporation Blended Climate Finance Program (4)	Bilateral	$2,400,000.00	$1,843,743.00	$4,000,000.00	$3,072,905.00	Mitigation	Energy	Solar energy	ODA	Standard grants & loans in simple co-financing arrangements
Cambodia	Canadian Climate Fund for the Private Sector in Asia – II (2)	Bilateral	$864,541.00	$664,163.00	$3,981,567.00	$3,058,744.00	Cross-cutting	Energy	Solar energy	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Cambodia	Energy Access Relief Fund (EARF) (1)	Bilateral	$1,440.00	$1,106.00	$161,636.00	$124,173.00	Mitigation	Energy	Energy generation renewable sources multiple tech	ODA	Shares in the mezzanine / senior tranche of structured CIV

Recipient country or region	Title of the project, programme, activity or other	Channel	Amount Mobilized				Type of Support	Sector	Subsector	Additional Information	Type of Public Intervention
			Face Value		Amount of resources used to mobilize support						
			Domestic currency	USD	Domestic currency	USD					
Chile	Bilateral Support for Implementation and Achievement of Nationally Determined Contributions (NDCs) in the Pacific Alliance	Bilateral	$4,324.00	$3,322.00	$279,866.00	$215,000.00	Mitigation	Cross-cutting	Environmental policy and administrative management	ODA	Standard grants & loans in simple co-financing arrangements
Uzbekistan	Canada-International Finance Corporation Blended Climate Finance Program (5)	Bilateral	$3,028,730.00	$2,326,750.00	$3,349,871.00	$2,573,459.00	Mitigation	Energy	Solar energy	ODA	Standard grants & loans in simple co-financing arrangements
Uzbekistan	Canadian Climate Fund for the Private Sector in Asia – II (3)	Bilateral	$2,238,751.00	$1,719,867.00	$1,530,176.00	$1,175,521.00	Cross-cutting	Energy	Solar energy	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Serbia	Canada-International Finance Corporation Blended Climate Finance Program (6)	Bilateral	$2,536,545.00	$1,948,640.00	$3,633,762.00	$2,791,551.00	Mitigation	Energy	Non-renewable waste-fired electric power plants	ODA	Standard grants & loans in simple co-financing arrangements
Nepal	Canadian Climate Fund for the Private Sector in Asia – II (4)	Bilateral	$141,878.00	$108,994.00	$662,047.00	$508,602.00	Cross-cutting	Energy	Hydro-electric power plants	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Costa Rica	Canadian Climate Fund for the Private Sector in the Americas II (4)	Bilateral	$8,142,969.00	$6,255,642.00	$1,321,174.00	$1,014,960.00	Mitigation	Energy	Energy conservation and demand-side efficiency	ODA	Direct investment in companies / SPVs, mezzanine / senior debt
Democratic Republic of the Congo	Energy Access Relief Fund (EARF) (2)	Bilateral	$4,926.00	$3,784.00	$552,964.00	$424,801.00	Cross-cutting	Energy	Energy generation renewable sources multiple tech	Other Official Flows, excluding export credits	Shares in the mezzanine / senior tranche of structured CIV
Ethiopia	Energy Access Relief Fund (EARF) (3)	Bilateral	$2,274.00	$1,747.00	$255,214.00	$196,062.00	Cross-cutting	Energy	Energy generation renewable sources multiple tech	Other Official Flows, excluding export credits	Shares in the mezzanine / senior tranche of structured CIV
Kenya	Land Degradation Neutrality Fund (2)	Bilateral	$574,596.00	$441,420.00	$1,916,731.00	$1,472,483.00	Mitigation	Energy	Agricultural development	ODA	Direct investment in companies / SPVs, equity
Kenya	Energy Access Relief Fund (EARF) (4)	Bilateral	$35,014.00	$26,899.00	$3,930,297.00	$3,019,357.00	Mitigation	Energy	Energy generation renewable sources multiple tech	Other Official Flows, excluding export credits	Shares in the mezzanine / senior tranche of structured CIV

Recipient country or region	Title of the project, programme, activity or other	Channel	Amount Mobilized				Type of Support	Sector	Subsector	Additional Information	Type of Public Intervention
			Face Value		Amount of resources used to mobilize support						
			Domestic currency	USD	Domestic currency	USD					
Liberia	Energy Access Relief Fund (EARF) (5)	Bilateral	$455.00	$350.00	$51,043.00	$39,212.00	Cross-cutting	Energy	Energy generation renewable sources multiple tech	Other Official Flows, excluding export credits	Shares in the mezzanine / senior tranche of structured CIV
Malawi	Energy Access Relief Fund (EARF) (6)	Bilateral	$4,896.00	$3,761.00	$549,561.00	$422,187.00	Mitigation	Energy	Energy generation renewable sources multiple tech	Other Official Flows, excluding export credits	Shares in the mezzanine / senior tranche of structured CIV
Mozambique	Energy Access Relief Fund (EARF) (7)	Bilateral	$8,034.00	$6,172.00	$901,756.00	$692,753.00	Mitigation	Energy	Energy generation renewable sources multiple tech	Other Official Flows, excluding export credits	Shares in the mezzanine / senior tranche of structured CIV
Nigeria	Energy Access Relief Fund (EARF) (8)	Bilateral	$6,063.00	$4,658.00	$680,571.00	$522,832.00	Mitigation	Energy	Energy generation renewable sources multiple tech	Other Official Flows, excluding export credits	Shares in the mezzanine / senior tranche of structured CIV
Zimbabwe	Energy Access Relief Fund (EARF) (9)	Bilateral	$1,213.00	$932.00	$136,114.00	$104,566.00	Mitigation	Energy	Energy generation renewable sources multiple tech	Other Official Flows, excluding export credits	Shares in the mezzanine / senior tranche of structured CIV
Rwanda	Energy Access Relief Fund (EARF) (10)	Bilateral	$3,865.00	$2,969.00	$433,864.00	$333,306.00	Mitigation	Energy	Energy generation renewable sources multiple tech	Other Official Flows, excluding export credits	Shares in the mezzanine / senior tranche of structured CIV
Senegal	Energy Access Relief Fund (EARF) (11)	Bilateral	$9,246.00	$7,103.00	$1,037,871.00	$797,319.00	Mitigation	Energy	Energy generation renewable sources multiple tech	Other Official Flows, excluding export credits	Shares in the mezzanine / senior tranche of structured CIV
Sierra Leone	Energy Access Relief Fund (EARF) (12)	Bilateral	$5,608.00	$4,308.00	$629,528.00	$483,620.00	Mitigation	Energy	Energy generation renewable sources multiple tech	Other Official Flows, excluding export credits	Shares in the mezzanine / senior tranche of structured CIV
United Republic of Tanzania	Energy Access Relief Fund (EARF) (13)	Bilateral	$152.00	$117.00	$17,014.00	$13,071.00	Mitigation	Energy	Energy generation renewable sources multiple tech	Other Official Flows, excluding export credits	Shares in the mezzanine / senior tranche of structured CIV

Recipient country or region	Title of the project, programme, activity or other	Channel	Amount Mobilized				Type of Support	Sector	Subsector	Additional Information	Type of Public Intervention
			Face Value		Amount of resources used to mobilize support						
			Domestic currency	USD	Domestic currency	USD					
Uganda	Energy Access Relief Fund (EARF) (14)	Bilateral	$7,427.00	$5,706.00	$833,699.00	$640,470.00	Mitigation	Energy	Energy generation renewable sources multiple tech	Other Official Flows, excluding export credits	Shares in the mezzanine / senior tranche of structured CIV
Zambia	Energy Access Relief Fund (EARF) (15)	Bilateral	$3,941.00	$3,028.00	$442,371.00	$339,841.00	Mitigation	Energy	Energy generation renewable sources multiple tech	Other Official Flows, excluding export credits	Shares in the mezzanine / senior tranche of structured CIV
Africa	Energy Access Relief Fund (EARF) (16)	Bilateral	$41,865.00	$32,162.00	$4,699,342.00	$3,610,157.00	Mitigation	Energy	Energy generation renewable sources multiple tech	Other Official Flows, excluding export credits	Shares in the mezzanine / senior tranche of structured CIV
India	Energy Access Relief Fund (EARF) (17)	Bilateral	$10,459.00	$8,035.00	$1,173,985.00	$901,886.00	Mitigation	Energy	Energy generation renewable sources multiple tech	Other Official Flows, excluding export credits	Shares in the mezzanine / senior tranche of structured CIV
Asia	Energy Access Relief Fund (EARF) (18)	Bilateral	$4,699.00	$3,610.00	$527,442.00	$405,195.00	Mitigation	Energy	Energy generation renewable sources multiple tech	Other Official Flows, excluding export credits	Shares in the mezzanine / senior tranche of structured CIV

A5.7 Table III.4: Information on support for technology development and transfer provided under Article 10 of the Paris Agreement

Title	Recipient entity	Description and objectives	Type of support	Sector	Subsector	Type of technology	Status of measure or activity	Activity undertaken by	Additional information
Provision of the Carbon Budget Model of the Canadian Forest Service	Global	Canada, through the Canadian Forest Service (CFS) at Natural Resources Canada (NRCan), provides knowledge, mentoring, and guidance on forest GHG emissions mitigation and forest management adaptation using the Carbon Budget Model (CBM-CFS3) and Generic Carbon Budget Model (GCBM). Financial support provided to Moja Global for FLINT software development, facilitating GHG estimation for forestry and land use.	Mitigation and Adaptation	LULUCF	NA	Carbon Budget Model (CBM-CFS3) and FLINT software	Ongoing	Public sector	2021-22 included pilots in Chile and Kenya. these pilots contributed to the interest expressed by ten countries that were part of a joint proposal with the International Union for the Conservation of Nature (IUCN)
Global Fire Early Warning System / Fire Danger Rating System	Global	Canada, through the CFS at NRCan, provides Fire Early Warning System (EWS) / Fire Danger Rating System (FDRS) expertise, utilizing the Canadian Fire Weather Index (FWI) System. This includes open-source technology and documentation to generate FWI outputs, ensuring preparedness in fire danger rating.	Adaptation	LULUCF	NA	Fire Danger Rating System	Ongoing	Public sector	2021-22 activities included a virtual workshop to support the Malaysian FDRS / EWS with MetMalaysia, and a seminar to support Argentina with its FDRS and EWS.
Support for Phase-down of Hydrofluorocarbons and Energy Efficiency in Refrigeration	Colombia, Mexico, Senegal, Peru	Canada, through Environment and Climate Change Canada (ECCC), supports the phase-down of HFCs and improvement of energy efficiency in the refrigeration subsector through technology transfer, capacity-building, and financial assistance, in collaboration with UNDP. Support is provided in four countries: Columbia, Mexico, Peru, and Senegal.	Mitigation	Energy	Refrigeration	Low-GWP CO2 transcritical technology	Ongoing	Public sector	NA

A5.8 Table III.5: Information on capacity-building support provided under Article 11 of the Paris Agreement

Title	Recipient entity	Description and objectives	Type of support	Status of measure or activity	Additional information
International Model Forest Network (IMFN)	Global	Canada supports sustainable management of forest-based landscapes through IMFN, a global network promoting forest sustainability with projects such as RESTAURacción, launched in Latin America with a focus on women's leadership, post-fire restoration, and long-term sustainable land use. The primary goal of the IMFN is to establish a global network of Model Forests that represents the majority of the major forest ecosystems of the world.	Adaptation and Mitigation	Ongoing	RESTAURacción: Wildfire Restoration in Latin America financed by Global Affairs Canada and led by the Canadian Forest Service through the International Model Forest Network Secretariat invested an initial $2.318 million in 2021 in the Latin American Model Forest Network and seven Model Forests spread over six countries of Latin America (Bolivia, Colombia, Costa Rica, Ecuador, Guatemala, and Peru). Those strong first year results unlocked an additional investment by Canada of $1.423 million in Fiscal Year 2021-22 in the Latin American Model Forest Network, based out of Costa Rica, and in one Model Forest in Bolivia. A further $2.96 million will be committed in Fiscal Year 2022-23, bringing Canada's overall investment in RESTAURacción to over $6 million.
Forest Carbon Accounting Software Training	Global	Canada provides training on CBM-CFS3, GCBM, and ANSE software for forest carbon accounting. As a result of capacity building, training, and technical support of the CBM-CFS3, GCBM, and ANSE, dozens of applications have occurred in and outside of Canada, leading to the generation of numerous publications globally.	Mitigation	Ongoing	As a result of the COVID-19 pandemic, self-guided video training for the CBM-CFS3 and GCBM was developed and made freely available online to the international user community in English and French.
Nuclear Safety	Global	Canadian Nuclear Safety Commission (CNSC) offers capacity-building on nuclear safety, regulatory standards, and supports developing countries through the IAEA framework to achieve high nuclear safety standards.	Mitigation	Ongoing	During 2021-22 activities included technical collaboration with Ghana, participation in IAEA activities, Integrated Regulatory Review Service (IRRS) missions to India and Morocco, and a Nuclear Cooperation Agreement with the Philippines.
Greening Government Initiative (GGI)	Global	Launched by Canada and the US in April 2021, the Greening Government Initiative (GGI) is a first of its kind initiative that enables countries to exchange information, promote innovation, and share best practices for sustainable government operations, with participation from developing countries.	Adaptation and Mitigation	Ongoing	GGI meetings are co-chaired by Canada and the US. Lessons shared at these meetings contribute to empowering developing countries to implement and showcase green practices.
Climate Technology Centre and Network (CTCN)	Global	Canada supports the CTCN through financial contributions and policy guidance as a member of its Advisory Board. This work promotes capacity-building and technology transfer to assist developing countries' progress towards climate objectives.	Adaptation and Mitigation	Ongoing	Finance provided under Canada's climate finance envelope
Support to Climate Resilience Execution Agency of Dominica (CREAD)	Dominica	Supports Dominica's goal of becoming the first climate-resilient country, focusing on capacity building for disaster response, project management, and community resilience.	Adaptation	Ongoing	Finance provided under Canada's climate finance envelope
Creole Garden Revalorisation	Haiti	Supports agroforestry development to adapt to climate change, with a focus on economic empowerment for women and sustainable practices in the coffee and cocoa sectors.	Adaptation	Ongoing	Finance provided under Canada's climate finance envelope

Title	Recipient entity	Description and objectives	Type of support	Status of measure or activity	Additional information
International Energy Agency (IEA)	Global	Canada contributes to global energy efficiency through the IEA's Energy Efficiency Working Party, advancing policy priorities and sharing best practices.	Mitigation	Ongoing	NA
SmartDriver Training	Chile	Canada supported the adaptation of the SmartDriver curriculum for Chilean commercial drivers, translating it into Spanish and customizing it to fit local driving conditions to help reduce emissions and fuel consumption.	Mitigation	Ongoing	Courses are available in class, online, and on-road for medium and heavy-duty vehicle drivers.