

CANADA'S REPORT ON DEMONSTRABLE PROGRESS UNDER THE KYOTO PROTOCOL

DEMONSTRATION OF PROGRESS TO 2005



Government
of Canada

Gouvernement
du Canada

Canada

PREAMBLE

Canada's New Government is taking an integrated approach to the reduction of both greenhouse gas (GHG) and air pollutant emissions. Because air pollutants and GHGs share many common sources, coordinated requirements would allow for capital investment decisions that maximize synergies and cost-efficiencies among options to reduce air pollutants and GHGs. In order to maximize potential health and environmental benefits and minimize the potential for inadvertently increasing some air emissions, the Government's approach will be to take comprehensive action on all air emissions in order to find an optimal solution for mitigation of both issues.

Background

On September 28, 2006, the Commissioner of the Environment and Sustainable Development released her 2006 Report on Climate Change. The Report described that even though the federal government had announced billions of dollars in funding since 1992 toward meeting commitments to address GHG emissions, as of 2004 Canada's GHG emissions were 26.6% above 1990 levels. The Commissioner urged Canada's New Government to come up with a credible, realistic and clear plan that should address the long-neglected need to help Canadians cope with the consequences of climate change and to commit to specific actions with timeframes for completing them.

The 2006 Report of the Commissioner of the Environment and Sustainable Development is available on the Office of the Auditor General of Canada web site.

An Integrated Regulatory Approach

The cornerstone of Canada's new approach is legislation tabled in Parliament on October 19, 2006. *Canada's Clean Air Act* takes a comprehensive approach to the problem of worsening air quality and GHG emissions. Standards on air pollution and GHG emissions will provide certainty to industry to allow the greatest use of technology to make the investments needed to reduce both.

The Act represents a significant shift from a voluntary to a regulatory approach. It will work to improve the air we breathe and protect our environment in a manner that is strict but fair. It will set clear targets and timelines for key economic sectors, from the energy we consume, to the products we use, to the cars we drive.

Over the next three years, new regulations on all major sectors will be implemented. They will lead to significant and long-term reductions in air pollution and GHG emissions from industry, transportation and consumer products, as well as new standards for energy efficiency in a wide range of everyday products and appliances.

Compliance options being examined include an industry-led emissions trading system; a technology investment fund that would support the development of transformative technologies for emissions reductions to which companies, and potentially governments, could contribute; opt-in mechanisms that would enable entities not covered by regulation to voluntarily assume emissions targets; incentives that could see companies receive credit for investments in technology, such as CO₂ capture and storage which will lead to significant reductions in the future; mechanisms to recognize credit for early action; or domestic offsets in which verified emissions reductions outside the regulated system are recognized as eligible for compliance in the regulated system.

Targets for Industry

Targets are an important dimension of Canada's new approach. The Act and subsequent Notice of Intent to Regulate demonstrate a clear commitment to the establishment of short-, medium- and long-term industrial air pollution and GHG emission reduction targets. These fixed targets will compel polluters to respect emissions limits and will be at least as stringent as those in other leading environmental countries. These targets will have timelines that encourage emitters to take into account the coordinated requirements in their capital stock investment decisions.

Short-term intensity based GHG reduction targets will be set in consultation with provinces and territories and all affected industry sectors. In the medium-term, the emissions intensity approach will build towards absolute reductions in emissions and thus support the establishment of a fixed cap on emissions. The Government will establish a long-term target to reduce GHG emissions by between 45 and 65% from 2003 levels by 2050. The Government has asked the National Roundtable on the Environment and the Economy (NRTEE) to provide advice on the precise long-term target and scenarios for how this target could be achieved.

Energy Efficiency

A substantial part of the reductions Canada can achieve in air pollution and GHGs can and should come from the energy we do not waste in the first place. *Canada's Clean Air Act* gives the Government of Canada expanded authority to regulate products that affect or control energy consumption, such as thermostats, and to help Canadians purchase the most energy efficient products.

Transportation

In the medium term, there is a need for regulatory action on GHG emissions from the transport sector. Emissions from cars and trucks account for about 75% of Canada's total transportation GHG emissions, and passenger travel accounts for about half of that. Under *Canada's Clean Air Act*, the Government will issue regulations in order to limit GHG emissions from cars and trucks as soon as a voluntary Memorandum of Understanding with the auto sector expires in 2010.

Once a Memorandum of Understanding that has been negotiated with the Railway Association of Canada expires, in 2011, GHG emissions from the rail sector will also be subject to regulation.

The Government has already announced a number of initiatives that reduce emissions in the transportation sector. Initiatives included significant new investments in public transit infrastructure and a tax credit for public transit users, as well as a commitment to require 5% average renewable content in transportation fuels by 2010.

Monitoring and Enforcement

Canada's Clean Air Act also gives the Government enhanced powers to monitor polluters and requires all environmental fines levied for non-compliance go into an environmental damages fund that will be applied directly to cleaning up the environment.

Conclusion

Canada's Clean Air Act will be accompanied, in the near future, by a slate of programs to support the regulatory agenda. The Act will put in place the fundamentals for the large reductions in emissions that will be necessary now and in the future.

INTRODUCTION

This *Report on Demonstrable Progress* is being presented by Canada with reference to Article 3, paragraph 2 of the Kyoto Protocol and to Decision 22/CP.7 and Decision 25/CP.8. This report contains four chapters:

1. A description of domestic measures, including any legal and institutional steps to prepare to implement Canada's commitments under the Kyoto Protocol to mitigate GHG emissions, and any of its programmes for domestic compliance and enforcement;
2. Trends in and projections of Canada's GHG emissions;
3. An evaluation of how such domestic measures, in light of trends and projections, will contribute to Canada meeting its commitments under Article 3;
4. A description of the activities, actions and programmes undertaken by Canada to fulfill its commitments under Articles 10 and 11.

This report makes a number of references to Canada's Fourth National Communication to the United Nations Framework Convention on Climate Change. The Fourth National Communication is currently being finalized for submission to the United Nations.

CHAPTER 1

Domestic Policies and Measures to Achieve the Kyoto Protocol Commitment

Canada is committed to addressing climate change. Since Canada signed the Kyoto Protocol in 1997, strategies to address climate change have evolved, and have encompassed a number of different approaches. The policies and measures detailed below are included for the purpose of consistency with Canada's Fourth National Communication and its reporting period, detailing activities up to the end of December 2005. In January 2006, a new federal government was elected. The policies and measures outlined below do not include those currently under development.

In 1998, Canada introduced the \$150 million *Climate Change Action Fund*, a three-year fund which was renewed in 2001. The Fund was established by the federal government to help Canada meet its commitments under the Kyoto Protocol to reduce GHG emissions. It was intended to support early actions to reduce GHG emissions and to increase understanding of the impact, cost and benefits of the Protocol's implementation and the various implementation options available to Canada.

In 2001, the National Climate Change Process produced the National Implementation Strategy and First National Business Plan to address climate change. At the federal level, the first package of planned measures across all sectors was set out in *Action Plan 2000*, representing a proposed investment of \$500 million. All provinces and territories were engaged in taking action on climate change, most producing their own strategies as well.

In 2002, the *Climate Change Plan for Canada* was released, outlining how Canada could make further progress towards meeting the GHG reduction target set out by the Kyoto Protocol. Canadian provinces focused their attention on more individualized strategies to address climate change. With Kyoto Protocol ratification in December 2002, the federal government took further steps to follow through on the 2002 Plan in Budget 2003, which set aside \$2 billion over five years with a focus on implementing initiatives to reduce GHG emissions through energy efficiency, renewable energy, sustainable transportation and alternative fuels.

In April 2005, the federal government released an updated climate change plan, *Moving Forward on Climate Change*. This plan focused primarily on outlining approaches to reducing GHG emissions. The associated federal investments were envisioned to be in the range of \$10 billion over seven years.

The federal election of January 2006 resulted in a change in government and a decision to fund, on an interim basis, the majority of climate change programming until such time as the specifics of new policies and measures are developed.

Legal and Institutional Steps

Canada has undertaken a number of significant legal and institutional steps towards implementation of the Kyoto Protocol. These steps are outlined below.

A Notice of Intent to Regulate Large Final Emitters was published in the Canada Gazette, Part I on July 16, 2005. It outlined a proposal for reducing emissions of GHGs from large industrial sources. In November 2005, six GHGs were added to Schedule 1 of the *Canadian Environmental Protection Act 1999* (CEPA 1999).

Canada has implemented the first phase of mandatory reporting of GHG emissions. It focuses on a limited number of large emitters and basic reporting requirements, and lays the foundation for the development of a harmonized and efficient domestic mandatory reporting system.

As required by the National System guidelines Environment Canada has been designated the sole inventory agency, with overall responsibility for the National Inventory and the National Inventory Report. Procedural arrangements (Memoranda of Understanding and data sharing agreements) have been created between Environment Canada and other federal departments, particularly Statistics Canada, for the collection of data and inventory information.

Memoranda of Understanding are also in place between Environment Canada, the Canadian Forest Service, and Agriculture and Agri-Food Canada detailing the procedures, roles and responsibilities between the organizations on monitoring, accounting and reporting related to agriculture and forestry sinks. Fully implemented final systems, with appropriate quality assurance and quality control plans and a central archiving system are under development.

Canada continues to consider options for its National Registry.

Canada has also established an official Designated National Authority (DNA) for CDM activities and a Focal Point for JI activities housed at the Department of Foreign Affairs and International Trade, facilitating participation in the Kyoto Mechanisms by authorized Canadian entities.

More details on the historical timeline of climate change policy development and implementation in Canada are found in Chapter 4 of Canada's Fourth National Communication to the United Nations Framework Convention on Climate Change. This does not include new policies and measures currently under development.

National Circumstances

Understanding the unique elements of Canada's national circumstances and their influence on GHG emissions and response strategies is important to understanding Canada's progress on climate change and its ongoing effort to developing further mitigation and adaptation strategies. There are three elements in particular: population growth, economic growth and growth in energy-intensive natural resource sectors.

Population growth. Canada's population grew 13.4% from 1990 to 2002, compared with the G7 population weighted average of 8.5%. This high population growth contributes to increased energy demand relative to the lower rates in other countries and significantly increases Canada's total GHG emissions over time.

Economic growth. The Canadian economy generally performed well between 1990 and 2002, with a growth in GDP of 40.5% and an average annual growth of 2.9% during that period. Of all the G7 countries, Canada experienced economic growth second only to the U.S. Growth has been particularly strong in the energy- and carbon-intensive natural resource commodities sector, which now represent over 40% of national exports.

Growth in natural resource sectors. Canada is unique among the industrialized countries in that it is a net exporter of coal, oil, and natural gas, with large reserves of each, and that its exports of oil and gas have grown quickly in association with growth in fossil fuel production. Between 1990 and 2002, net oil exports grew by 449% (over 10 times the rate of growth of oil production), while net natural gas exports grew by 162% (more than twice the rate of growth of natural gas production). Emissions associated with net exports of crude oil and natural gas grew by 138% (29.6 Mt) between 1990 and 2002, with an average annual change of 12%. Overall, total energy exported increased 146% between 1990 and 2002, while emissions associated with those exports increased 154%.

More details on Canada's National Circumstances can be found in Chapter 2 of Canada's Fourth National Communication to the United Nations Framework Convention on Climate Change.

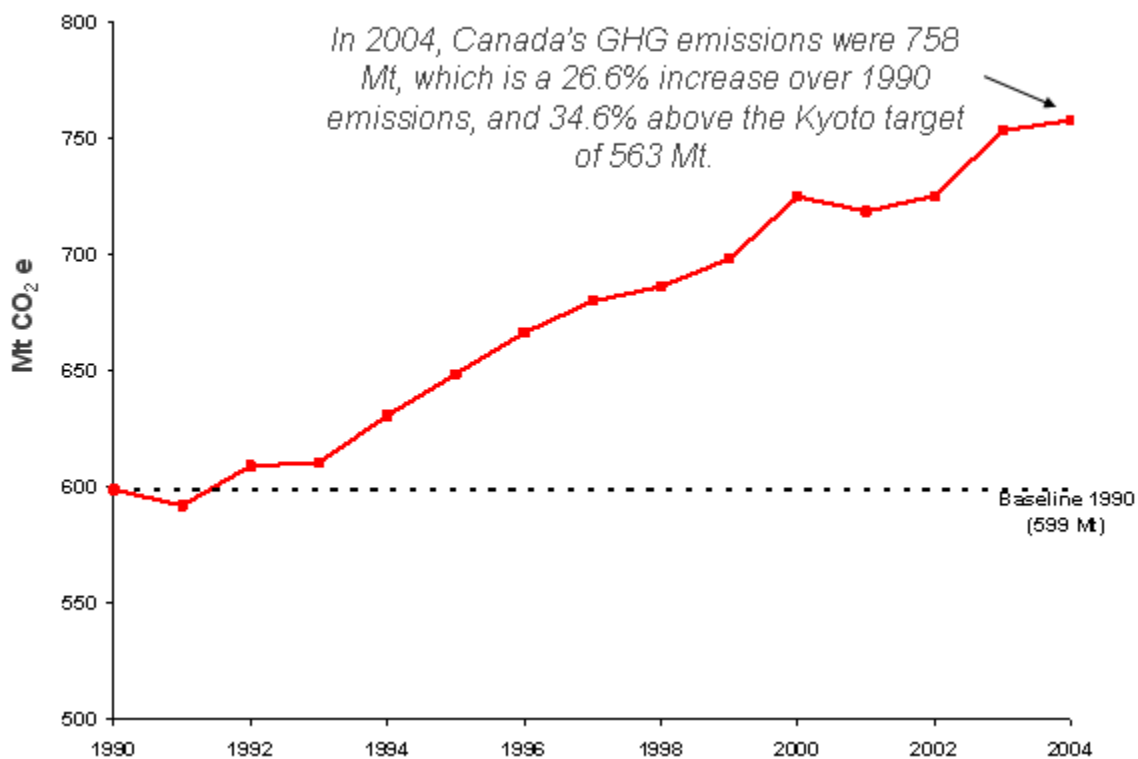
CHAPTER 2

Trends and Projections in Canada's GHG Emissions

As an Annex I Party to the UNFCCC, Canada is required, on an annual basis, to prepare and submit a national inventory of emissions by source and removals by sinks of GHGs not included in the Montreal Protocol. Canada has submitted, to the UNFCCC, its GHG Inventory for 2004.

Total GHG emissions in Canada in 2004, expressed as CO₂ equivalent, were 758 Mt. This represents a 26.6% increase over the 1990 total of 599 Mt and 34.6% above Canada's Kyoto target. (See Figure 2.1)

Figure 2.1 Canadian Emission Trends 1990-2004



Between 1990 and 2004, significant growth in oil and gas production has resulted in a dramatic increase in the emissions associated with the production and transportation of energy exports. In 2004, net emissions associated with these exports were 47.8 Mt, a 123% increase over the 1990 level of 21.5 Mt. Also between 1990 and 2004, the net increase in Canada's annual GHG emissions totaled about 159 Mt. Over the same period, emissions from the energy industries and transportation sector accounted for 80% of the overall increase.

Within these two energy sectors, the greatest contributors to the overall increase were the 36.6% increase in emissions from the electricity and heat generation sub-sector (34.9 Mt), and a 29.9 % increase from vehicles (39.1 Mt). Petroleum industries also contributed significantly, with a total increase in GHG emissions of 58.9% between 1990 and 2004. Much of the increase in the petroleum industries sector is attributable to the rapid growth in crude oil and natural gas exports over this period.

Emissions in the transportation sector rose by about 44.5 Mt, or 29.9% from 1990 to 2004. Of particular note in this sector is a 21.9 Mt or over 100% increase in the emissions from light duty gasoline trucks, reflecting the growing popularity of sport utility vehicles.

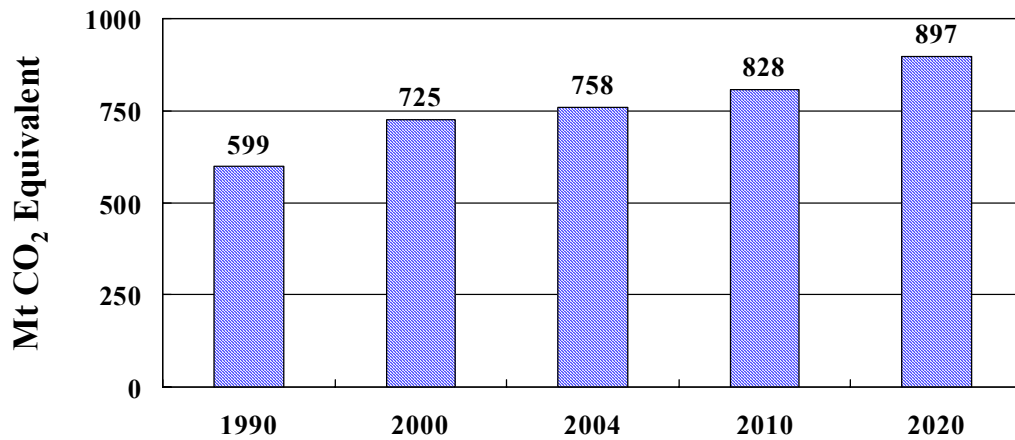
Between 2004 and 2010 the emissions from electricity are not expected to increase considerably. However, from 2010 to 2020, the emissions from the electricity sector are expected to decrease by 4 Mt, due to retirement of coal plants in Ontario, replaced largely by natural gas.

From 2010 to 2020, emissions from the upstream oil and gas sector will decline somewhat, as conventional oil production declines, while emissions from refining and synthetic crude oil production will continue to increase, due to higher production of oil sands and the refining industry's reliance on heavier crude, based on increasing energy demands. Emissions from all other sectors will increase further, notably in the transportation and industrial sectors.

Transportation will continue to have the largest share of emissions, increasing slightly from 25% in 2004 to 27% in 2010. More significant changes are expected to take place in power generation, whose share is projected to decline from 17% to 14% by 2010, whereas the refining sector's share is expected to increase from 4% to 8%.

Canada's total GHG emissions are forecasted to increase by about 1.5% annually between 2004 and 2010 and projected to reach 828 Mt by 2010 and 897 Mt by 2020 in the absence of any reductions related to initiatives implemented by Canada's New Government. (See Figure 2.2)

Figure 2.2 Projected Total GHG Emissions to 2020



More details on Canada's 2004 GHG Inventory can be found at: www.ec.gc.ca/pdb/ghg/inventory_report/2004/2004summary_e.cfm

More details on Canada's Emission Projections to 2020 can be found in Chapter 5 of Canada's Fourth National Communication to the United Nations Framework Convention on Climate Change.

CHAPTER 3

An Evaluation of the Contribution of Domestic Measures

The emission projections detailed in the previous chapter include the estimated impacts of climate change policies and measures as of the end of December 2005. These projections do not include any changes to existing policies and measures, nor any additional policies and measures currently under development.

Between 1997 and 2003, the federal government announced \$3.7 billion in climate change funding. By the end of 2003-04, Canada's Commissioner of the Environment and Sustainable Development was able to substantiate federal departmental spending of only \$1.35 billion out of the \$3.7 billion allocated

Canada's efforts to reduce GHG emissions have been out-distanced by growth in its economy, energy exports, and population since signing on to the UNFCCC. While Canada's overall GHG emissions have risen since 1990, all levels of government have delivered climate change programs aimed at reducing emissions from the level that Canada would have had, had it carried on with "business as usual".

While programs have reduced emissions from what they would have been without the programs in place ("business as usual" scenario), and given the trends outlined in the previous chapter, an evaluation of Canada's climate change policies and measures as of the end of December 2005 would indicate that the previous suite of policies and measures has not achieved the level of reductions anticipated and reported in Canada's Third National Communication. As a result, Canada's New Government is developing and will implement a new suite of policies and measures to reduce GHG emissions as part of its new environmental agenda and its overall approach to cleaner and healthier air for all Canadians. These initiatives will be effective, realistic and focused on achieving sustained reductions in emissions in Canada while ensuring a strong economy.

More details on the history of climate change policies and measures in Canada are found in Chapter 4 of Canada's Fourth National Communication to the United Nations Framework Convention on Climate Change. The Fourth National Communication does not include policies and measures currently under development as part of the new environmental agenda.

CHAPTER 4

Progress on Actions under Articles 10 and 11 (Technology and Other Cooperation, Financial Resources)

Actions undertaken by Canada in support of commitments under Article 10 and 11 can be seen in a number of areas: climate research, impact and adaptation research, financial contributions, activities on technology transfer, and in Canadian scientific actions on climate observation, adapting agriculture and rural development to changes in climate, fostering economic growth through investments in clean technologies, enhancing environmental programming in health and nutrition, providing humanitarian assistance, and linking environmental assessments to conflict prevention and security.

Canada remains committed to assisting and working with other countries to combat climate change in fulfillment of its obligations under Article 4 of the UNFCCC.

Improvements to National GHG Inventories

Annex I Parties are required to continuously improve the quality of their national GHG inventory. As new information and data become available and more accurate methods developed, previous estimates are updated to provide a consistent and comparable trend in emissions and removals. As part of its national system, Canada's inventory agency plans and implements improvement activities on a continuous basis to further refine and increase the transparency, completeness and accuracy, consistency and comparability of its national inventory. Improvements take into account results of quality assurance and control procedures, reviews and verification and result in updated methods, models and documentation to ensure internationally agreed-upon standards are met.

For example, for the 2006 inventory submission, significant improvements were implemented as a result of detailed studies on emissions from facilities in the upstream oil and gas and oil refining industries, a revision to model for estimating emissions from landfills, and improved country specific methods and factors for agricultural soil nitrous oxide emissions estimates.

A framework for a quality assurance/quality control plan for the national GHG inventory was developed in 2004 (SNC Lavalin, 2004) in order to meet the IPCC Good Practice Guidance and UNFCCC requirements.

Finally, improvements are also planned for the consumption of solid fuels category, involving the collection of carbon and energy content information on coal.

More details on other improvements to Canada's GHG Inventory can be found at:
www.ec.gc.ca/pdb/ghg/ghg_home_e.cfm

Technology Transfer and Capacity Building

Canadian governments and stakeholder partners have also been involved in technology transfer and financial contributions in support of addressing climate change internationally.

The Canada Climate Change Development Fund (CCCDF) has promoted activities in developing countries that address the causes and effects of climate change while at the same time contributing to sustainable development and poverty reduction.

Canada also contributed to the global effort on technology transfer by hosting a UNFCCC workshop in September 2004 on innovative financing to help leverage private sector investment in activities that lead to technology transfer.

Over the period 2003 to 2006, Canada supported the UNFCCC work program on monitoring, accounting and reporting of national GHG inventories.

More details on technology transfer and capacity building by Canada can be found in Chapter 7 of Canada's Fourth National Communication to the United Nations Framework Convention on Climate Change.

Cooperation in Scientific and Technical Research

Canadian governments and academics are involved in observation and research critical to better understand the climate system, impacts and adaptation issues arising from a changing climate, how the climate system works, how it fluctuates, and how human activities may affect it.

Canada contributed financial assistance and scientific expertise to the Intergovernmental Panel on Climate Change (IPCC), which was created by UNEP and the World Meteorological Organization to assess available scientific information and potential climate change impacts and to formulate strategies to respond to climate change. More than 30 Canadian scientists and experts have contributed to the IPCC's Third Assessment Report and to its Special Reports on technology transfer and other subjects.

Canada contributed financial assistance and scientific expertise to the IPCC and actively participates in the activities of the IPCC, including the IPCC's Special Reports and scientific analyses. Canadian involvement in the 4th Assessment Report is well underway, as well as Canadian participation by both authors and experts in the IPCC Inventories program and the production of the 2006 IPCC Guidelines, and the related Workshop on Waste hosted in Ottawa in the fall of 2004.

Canada also hosted the 24th session of the IPCC (IPCC-24) in Montreal in September 2005. At IPCC-24, countries accepted a Special Report on Carbon Dioxide Capture and Storage and a Summary for Policymakers, which is the culmination of an exhaustive scientific review by experts worldwide on the state of carbon capture and storage

technology as part of a suite of mitigation options. Input from Canadian governments, the private sector and research institutions were featured prominently in the final report.

Prior to 2001, the majority of the research related to impacts and adaptation in Canada focused on understanding the biophysical impacts of changing climatic conditions. Some of these investigations also took a preliminary look at adaptation options, in many cases developing lists of possible actions. Since 2001, Canada has funded 130 research projects examining vulnerability, impacts and adaptation in Canada related to water resources, food supply (fisheries, agriculture and non-commercial), forestry, coastal zones, communities, human health and well-being, tourism and recreation, transportation and landscapes and ecosystems.

More details on impacts and adaptation research and the science of climate observation in Canada can be found in Chapters 6 and 8 respectively in Canada's Fourth National Communication to the United Nations Framework Convention on Climate Change.

Assistance to Developing Countries in Implementing the Convention

Canada has supported international efforts to develop climate change solutions through financial contributions to the Global Environment Facility (GEF), World Bank, United Nations programs, regional development banks, and other international institutions.

In addition to its ongoing development assistance efforts, Canada provided new and additional funding for climate change to the GEF. Operating as a financial mechanism of the UNFCCC, the GEF provided financial resources on a grant basis for enabling, mitigation, and adaptation activities in recipient countries.

Canada has built capacity in environmental assessment and environmental monitoring, to provide information and support research in early warning systems, and to transfer technologies to developing countries. Canada supported several regional development banks whose goals include fostering economic growth, supporting human development, improving the status of women, and protecting the environment.

Canada also contributed financially to the Climate Technology Initiative (CTI). The CTI was launched in 1995 by 23 Organization for Economic Co-operation and Development (OECD) countries together with the International Energy Agency (IEA) and the European Commission. The mission of the CTI is to promote the objectives of the UNFCCC by fostering international cooperation for accelerated development and diffusion of climate-friendly technologies and practices for all activities and GHGs.

More details on historical areas of impact and adaptation research, Canada's financial contribution and activities on technology transfer to address climate change internationally, and on Canadian scientific actions in climate observation can be found in Chapters 6, 7 and 8 respectively in Canada's Fourth National Communication to the United Nations Framework Convention on Climate Change.

The Fourth National Communication does not include policies and measures currently under development in these areas as part of Canada's new environmental agenda.