CHAPTER 4 Policies and Measures

INTRODUCTION

Canada's federal, provincial, and territorial orders of government have been addressing the challenge of climate change for more than a decade. The cornerstone of earlier efforts was the 1995 National Action Program on Climate Change (NAPCC), a framework designed to address the issue in response to Canada's 1992 ratification of the United Nations Framework Convention on Climate Change (UNFCCC). The NAPCC provided for a three-pronged approach: mitigating greenhouse gas (GHG) emissions, improving our scientific understanding of the issue, and taking action to adapt to potential climate change. Under the parameters of the NAPCC, governments have carried out their own programs and supported projects by the private sector and non-governmental organizations (NGOs).

In October 2000, at a Joint Meeting of Energy and Environment Ministers, Canada's National Implementation Strategy on Climate Change (NIS) and First National Climate Change Business Plan (FNBP) were released. They are significant steps forward in addressing climate change and building upon key overarching principles. The NIS provides a framework (a shared risk management approach) to develop strategies on climate change, while the FNBP outlines specific initiatives. Business plans will be updated annually on a three-year basis.

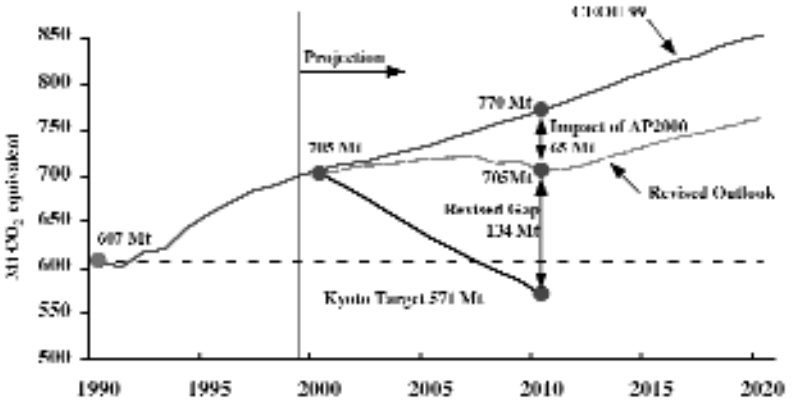
Measures in the Government of Canada's Action Plan 2000 on Climate Change, a component of the broader FNBP, are projected to reduce Canada's GHG emissions by about 65 Mt annually during the Kyoto Protocol's 2008–2012 commitment period. Action Plan 2000, announced in October 2000, provides for $500 million in funding over five years to help achieve Canada's emissions target (see Chapter 5 for more details on the breakdown). The projected reductions would cover about one-third of the gap between Canada's projected emissions in that year and its Kyoto target (Figure 4.1). Canada's commitment under the Kyoto Protocol is to reduce anthropogenic GHG emissions to 6% below 1990 levels during the 2008–2012 commitment period.

As of December 2000, there were a total of about 665 policies and measures (P&Ms) implemented or planned by federal, provincial, and territorial governments directly related to climate change, as outlined in *A Compendium of Canadian Initiatives: Taking Action on Climate Change* and in the FNBP. There are also hundreds of other P&Ms at all orders of government that have an indirect yet positive impact on reducing GHG emission levels.

In Canada, the production and consumption of energy from fossil fuels are responsible for 80% of anthropogenic GHG emissions. Fossil fuels play a critical role in transportation, electricity generation, industrial and manufacturing production processes, and commercial, residential, and institutional heating, cooling, and ventilation systems. Canada is a leader in promoting sustainable energy development both domestically and internationally and has pursued the objectives of improving energy efficiency and moving toward less carbon-intensive fuels. In its November 2000 report entitled *Dealing with Climate Change: Policies and Measures in IEA Member Countries, the International Energy Agency (IEA)* analyzed and compared energy-related P&Ms pertaining to climate change and GHG emissions in IEA member countries. This report indicates that as of 1999 (prior to the October 2000 release of Canada's FNBP and Action Plan 2000 measures), Canada had the highest number of planned and implemented energy-related P&Ms among the IEA's 26 member countries, with a total of 153 P&Ms (135 implemented and 18 planned). These energy-related P&Ms are included in the 665 total. Canada's energy-related P&Ms cover both sector-specific activity (e.g., transport, electricity, industry) and broader framework policy areas (e.g., fiscal, regulatory, research and development [R&D]).

In addition to the more than 600 planned and implemented P&Ms highlighted above, many of the municipal governments in Canada, of which there are over 5 000, have undertaken an array of climate change actions at the local level in areas such as municipal buildings, energy use, landfills, recycling, and forest sink initiatives. The Federation of Canadian Municipalities (FCM) is

Figure 4.1 Revised Update: Total GHG Emissions and Kyoto Target



Note: This chart does not capture the full impact of the FNBP (to be determined). See Chapter 5 for further details.

considering developing an inventory of these actions. Canada's private sector also actively engages in the climate change issue by registering with the Voluntary Challenge and Registry Inc. (VCR) program,[29] a not-for-profit organization established in 1994 to provide, through leadership, the means for promoting, assessing, and recognizing the effectiveness of the voluntary approach in addressing climate change. Registered companies must submit an Action Plan detailing how they intend to reduce their GHG emissions and must undergo independent review and public reporting on the progress of promised reductions. To date, a total of over 750 companies and NGOs, responsible for more than 75% of Canada's GHG emissions, have registered with VCR, and over 170 have registered with the Quebec program, ÉcoGESte.

NATIONAL CLIMATE CHANGE PROCESS

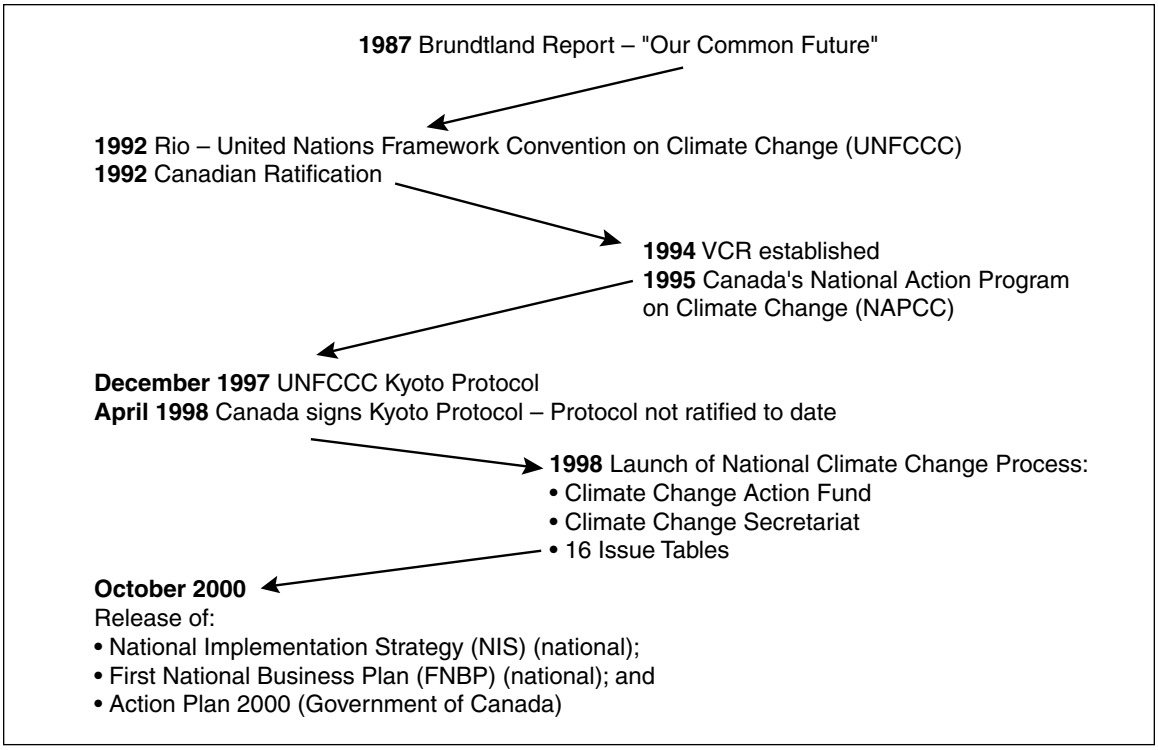
After the publication of Canada's Second National Report on Climate Change in 1997, Canada's federal, provincial, and territorial governments instituted a broad participatory National Climate Change Process (NCCP). As outlined in Chapter 2, Canada's governing structure and division of powers, particularly in relation to implementing policies on natural resources and the environment, necessitate a high degree of cooperation. The NCCP directly followed upon Canada's April 1998 signing of the Kyoto Protocol.

The Prime Minister, provincial premiers, and territorial leaders directed their energy and environment ministers to examine the impacts, costs, and benefits of implementing the Kyoto Protocol, as well as options for addressing climate change, in advance of a decision on ratification. To achieve these broad goals, the NCCP was mandated to consult stakeholders, evaluate mitigation and adaptation options, and produce a national strategy. Ministers agreed that the deputy minister–level National Air Issues Steering Committee (NAISC) would be responsible for managing the development of the national response and providing advice, based on the work of the National Air Issues Coordinating Committee — Climate Change (NAICC-CC), which operates at the assistant deputy minister level.

Also key to the process was the establishment of the Climate Change Secretariat (CCS). The CCS is composed of federal officials supporting the efforts of the Government of Canada (federal ministers) and a separate

29 In Quebec, this program is administered by the provincial government under the name "*Programme québécois d'enregistrement des mesures volontaires sur les changements climatiques*" and is referred to as "ÉcoGESte."

Figure 4.2 Timeline for Canada's Climate Change Activity



national group comprising federal, provincial, and territorial officials. The national group supports the ongoing work of the NAICC-CC in its policy, analytical, and program development activities and monitors the progress of intergovernmental initiatives.

In 1998, the NCCP established 16 Issue Tables (Working Groups) involving 450 experts from industry, academia, NGOs, and government. These Issue Tables/Working Groups examined emissions reduction options in the following areas: transportation, electricity, Kyoto Protocol mechanisms, technology, carbon sinks, credit for early action, public education and outreach, agriculture and agri-food, the forest sector, buildings, industry, enhanced voluntary action, municipalities, science and adaptation, and tradeable permits.

Each Issue Table produced two papers: a Foundation Paper analyzing the current status of the respective sector and issue and an Options Report setting out a range of short-, medium-, and long-term options, taking into consideration emissions reduction potential, opportunities and barriers, implementation time frames, competitiveness implications, and social, economic, environmental, and health costs and benefits. The work of the Issue Tables/Working Groups served as the basis for Canada's NIS and FNBP, copies of which can be found on the NCCP Web site (www.nccp.ca). Figure 4.2 sets out the timeline for Canada's climate change activity.

The work of the Issue Tables/Working Groups was funded through a portion of the $150 million three-year Climate Change Action Fund (CCAF) established in 1998 to build a policy foundation and to initiate early action to address climate change. The CCAF also funded research into climate science, impacts and adaptation, technology early action measures, and public education and outreach. The federal budget of February 2000 announced the extension of the CCAF until fiscal year 2003–2004.

National Implementation Strategy on Climate Change

Canada's NIS is a framework for a coordinated, comprehensive, and phased approach across

jurisdictions to address the issue of climate change and to reduce the uncertainties to the extent possible. The NIS involves:

- taking immediate action to reduce risk and to improve our understanding of the risks associated with climate change, as well as of the costs and consequences of reducing emissions and adapting to a changing environment;
- instituting a national framework that includes individual and joint action and that recognizes jurisdictional flexibility in responding to unique needs, circumstances, and opportunities;
- adopting a phased approach, which schedules future decisions and allows progressive action in responding to changing domestic and international circumstances and improved knowledge;
- improving our understanding of the functioning of the climate system and the national and regional climate change impacts as they affect Canada, in order to take actions to reduce emissions and adapt to a changing environment;
- understanding the necessary relationship between international and national strategies;
- developing our understanding of the implications of various emissions reduction policy options, including cross-cutting policy approaches such as emissions trading before making decisions about targets or moving to the next phase; and
- establishing an integrated national "business planning" process, which will serve as the primary mechanism for setting clear objectives, identifying specific actions to be undertaken, identifying further actions for consideration, and reporting on progress.

The five major themes for Phase One of the NIS are the following:

- enhancing awareness and understanding (focusing on public awareness);
- promoting technology development and innovation;
- governments leading by example;
- investing in knowledge and building the foundation (enhancing data collection, inventories, modelling, analytical capacity, and policy development); and
- encouraging action (including sectoral, cross-sectoral, and cross-cutting action).

First National Climate Change Business Plan and Action Plan 2000 (October 2000)

The NIS outlines an annual business planning cycle that focuses on the strategic priorities to address climate change. The FNBP, as the first business plan under Phase One of the NIS, builds on more than a decade of action on climate change by all jurisdictions. The FNBP contains federal, provincial, and territorial actions to address climate change across a number of sectors. Many of these P&Ms are applicable to a combination of jurisdictions, leading to partnerships and cooperation. The focus of the NCCP will be to coordinate the implementation of these FNBP commitments, conducting ongoing policy and analytical work and undertaking future business planning. The FNBP will evolve annually, look forward on a three-year basis, and focus on priority theme areas for the design and development of concrete P&Ms.

The actions outlined in the FNBP focus on mitigation activities planned or under way in a number of different sectors, including electricity, transport, industry, agriculture, forestry, and buildings (residential and commercial). Long-term strategies for mitigation include reducing energy use in all sectors (conservation, energy efficiency), reducing the carbon content of the energy mix (achieving carbon efficiency through fuel switching), the capture and storage of carbon dioxide (CO_2) in geological formations, sequestering carbon through biological processes (sinks), and reducing non-energy sources of emissions (e.g., livestock management). The FNBP undertakes these efforts by outlining various P&Ms built around the five major themes outlined above for the NIS.

The FNBP also sets the strategic direction for actions related to climate science, impacts, and adaptation. The key areas promoted in the

FNBP include P&Ms related to energy efficiency, technology development, strategies for adaptation, public awareness, and continuous reduction in energy and emission intensity.

As part of its contribution to the FNBP, the Government of Canada released its five-year, $500 million Action Plan 2000 on Climate Change. This federal contribution to the FNBP is in addition to previous federal investments outlined in the February 2000 budget, in which more than $600 million over five years was committed to climate change activities. Since 1995, the federal government has spent or committed a total of $1.95 billion on initiatives related to climate change. (For information on Action Plan 2000, see www.climatechange.gc.ca.)

The provinces and territories have contributed a substantial number of initiatives to the FNBP, but no estimate has been made of the potential emissions reductions. Some FNBP initiatives may also be difficult to measure, as they are laying the groundwork for future initiatives.

Monitoring and reporting progress are key components of Canada's national response to climate change. When Canada's ministers of energy and environment released the FNBP in October 2000, they committed to ongoing monitoring of progress against the overarching objectives and themes set out and to reporting these findings to stakeholders and the general public. The Progress Report on Canada's First National Climate Change Business Plan was released in September 2001 (for further information, see www.nccp.ca). As a signatory to the UNFCCC, Canada is obligated to periodically report on its national inventory of anthropogenic GHG emissions and the progress of policies and actions to reduce such emissions (see Chapter 3 for more details).

A Compendium of Canadian Initiatives: Taking Action on Climate Change (October 2000)

Since 1997, a variety of non-NIS and non-FNBP climate change measures affecting key sectors have been implemented, adopted, or proposed. Some key P&Ms outlined in the 1997 report are still ongoing, such as the VCR.

In October 2000, *A Compendium of Canadian Initiatives: Taking Action on Climate Change* was released along with the NIS and FNBP. It is broken down by key sector under the five themes of the NIS and encompasses a wide variety of activity, such as promoting fuel efficiency and alternative energy usage, technological development, and retrofitting buildings. (For further information, see www.nccp.ca.)

GHG EMISSIONS REDUCTION CHALLENGES

Canada's GHG emissions in 1999 were equivalent to 699 Mt of carbon dioxide. This figure is 15% higher than the 1990 level of 607 Mt and 21.6% higher than Canada's Kyoto target of 571 Mt (6% below 1990 levels). Canada's GHG emissions are projected to be 770 Mt in 2010 in the absence of new (post-1999) initiatives in Canada. On this basis (pre–Action Plan 2000 measures), Canada would face the challenge of reducing its emissions by 26% by 2010 to achieve its Kyoto target. (See Chapter 5 for more details on projections.)

As outlined in Chapter 2, Canada faces numerous inherent challenges in controlling growth in secondary energy use and reducing GHG emissions as a result of climate, geography, having an export-oriented economy, and possessing significant levels of natural resources for production and export. These challenges will likely be exacerbated by the projected:

- continuing economic growth and increases in consumer and business activity levels;
- increases in domestic and foreign demand for Canadian oil and natural gas;
- further expansion in global trade;
- ever-increasing requirements for "just-in-time" delivery of commodities for businesses and the resulting trend away from the more energy-efficient rail to truck transport;
- move to more energy-intensive economic activity and components of the Canadian economy; and
- increases in population mainly due to high immigration levels.

The result is likely higher GHG emissions in future years in areas such as fossil fuel production (which represents more than half of the projected growth in GHG emissions to 2010 — largely a result of export demand), increases in Canadian transportation energy consumption, and, finally, increasing usage of both coal and natural gas for electricity generation to meet increasing consumer and business demand.

POLICIES AND MEASURES

The Intergovernmental Panel on Climate Change (IPCC) has stressed the underlying importance of national circumstances in determining the appropriate mix of P&Ms.[30] Appropriate P&Ms, therefore, reflect the widely differing institutional, social, economic, technical, and natural resource endowments in individual countries and regions. Based upon the principles and strategic directions outlined in the FNBP, and utilizing the five themes of the NCCP, key broad-based actions on climate change since Canada's last National Report (1997) are identified below.

The examples provided represent P&Ms on climate change that Canadian governments either have implemented or are in the process of implementing. For a more comprehensive listing of the P&Ms currently planned or adopted by governments — and a number of activities and initiatives by the private sector (VCR/ÉcoGESte) and municipalities (FCM) — see Appendix 1, Table 1 ("Summary of Policies and Measures Affecting GHGs by Sector").

The P&Ms outlined in this Third National Report do not include an estimation of GHG reductions. It is expected that as several of the actions in this report (and the FNBP) are fully implemented and their results are reported, some estimates of impacts will be provided. However, the interaction of measures, data constraints, and the difficulty of separating the influence of individual policies and measures from that of other orders of government or other agencies (e.g., electrical and natural gas utilities) do not allow for estimates of GHG reductions on an individual P&M basis.

Nevertheless, looking at changes in the principal factors that influence energy use and related GHG emissions in the main sectors of the Canadian economy can provide an understanding of the influence of the various efforts to address climate change. The Government of Canada's Office of Energy Efficiency (OEE), part of Natural Resources Canada (NRCan), has developed some notable indicators on changes in energy use at the secondary level. OEE also provides a comprehensive and detailed presentation of energy trends and energy-related GHG emissions by sector that can be found in *Energy Efficiency Trends in Canada 1990 to 1999 — An Update*. This information places Canada among the world leaders in producing this type of analysis. Table 4.1 presents the impacts that the changes in activity, structure, weather, and energy efficiency had on secondary energy use in 1999.

Key conclusions from this analysis indicate that Canada's efforts in promoting energy efficiency have played an important role in limiting the growth in secondary energy use[31] and related GHG emissions compared with what they would have been otherwise. As Figure 4.3 indicates, overall energy efficiency improved by about 8% in Canada between 1990 and 1999. Various P&Ms, ranging from promoting technological investments and R&D to the development of standards for industrial and building codes, play an important role in these efforts.

In the absence of important energy efficiency improvements, GHG emissions from secondary energy use would have been around 32.2 Mt higher in 1999 than in 1990. From another viewpoint, had energy consumption remained at 1990 levels — secondary energy use increased 12.2% between 1990 and 1999 — GHG emissions would have been about 49 Mt lower in 1999 than actual levels owing to energy efficiency efforts. These energy efficiency achievements occurred in the face of Canada's 24.8% aggregate growth rate in gross domestic product (GDP) during the same period. (See Chapter 3 for more details.) In addition to GHG emissions reductions, the improvement in energy efficiency saved Canadians about $5.7 billion in energy

30 IPCC (1996). Technical Paper on Technologies, Policies and Measures for Mitigating Climate Change. 1, p. 5.

31 Secondary energy use is the energy used by Canadians to heat and cool their homes and workplaces and to operate their appliances, vehicles, and factories.

Table 4.1 Factors Influencing Growth in Secondary Energy Use, 1990–1999

Sectors	Energy Use (PJ) 1990	1999	1999 less 1990	Activity Effect (PJ)	Structure Effect (PJ)	Weather Efficiency Effect (PJ)	Energy Effect (PJ)	Interaction Effect (PJ)	Other (PJ)
Residential	1318	1335	17.3	240.9	16.9	-36.0	-171.8	-32.7	n.a.
Commercial	867	984	116.6	136.0	1.284	-2.8	-13.4	-3.0	-1.6
Industrial	2755	3069	313.9	759.6	-74.2	n.a.	-251.6	-119.9	n.a.
Transportation	1878	2258	380.5	365.3	138.3	n.a.	-123.0	-11.5	11.4
Passenger	1166	1323	157.15	150.0	46.6	n.a.	-44.1	15.1	-10.5
Freight	659	860	201.51	215.3	91.7	n.a.	-78.9	-26.6	0.0
Off-Road Motor Gasoline	53	75	21.84	n.a.	n.a.	n.a.	n.a.	n.a.	21.8
Agriculture	199	230	30.8	n.a.	n.a.	n.a.	n.a.	n.a.	30.8
Total	**7016.4**	**7875.4**	**859.0**	**1501.8**	**82.3**	**-38.8**	**-559.8**	**-167.1**	**40.6**

n.a. = not available.

The change in energy use between 1990 and 1999 shown in this chart and the sum of the activity, structure, weather, energy efficiency, and interaction for passenger and freight transport are slightly different because of the exclusion from the factorization analysis of the non-airline segments in passenger transport. The transport sector differences are reflected at the secondary energy use level; other differences are excluded from the factorization, such as agriculture, off-road motor gasoline, and street lighting, which are included in the "Other" column.

costs in 1999. Details on the contribution of energy efficiency efforts to reductions in GHG emissions in the various sectors of the economy are provided throughout the remainder of this chapter.

The following sections highlight the range of P&Ms, recently initiated under the five themes of Phase One of the NIS, that build upon these energy and related climate change efforts and successes of the past.

Enhancing Awareness and Understanding (EAU)

Enhancing awareness and understanding (EAU) measures are focused on:

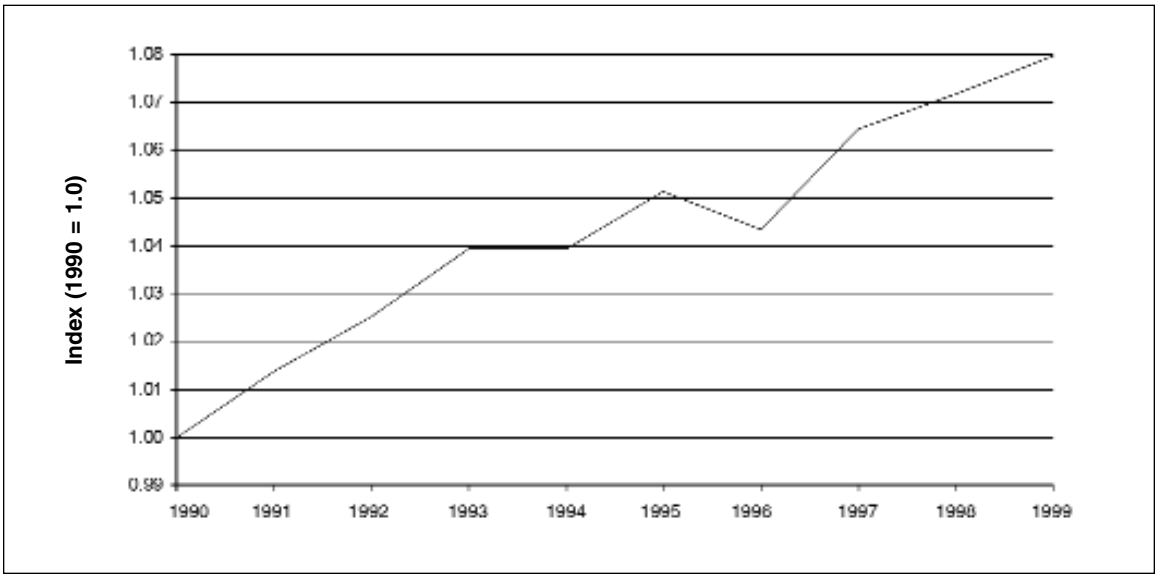
- building awareness and understanding among Canadians of climate change, including the science, impacts, and adaptation and associated environmental, economic, and social issues;
- developing support from Canadians for policy changes and actions that will be required as part of the NIS; and
- encouraging and motivating Canadians to take personal and corporate action to reduce GHG emissions.

Implementation of EAU activities is primarily through a national network of regional centres, or hubs, that will bring together all stakeholders in a province or territory to coordinate their public education and outreach activities. A national advisory team will establish baseline public opinion research against which to measure progress, develop a "toolkit" of materials for use by all stakeholders, and provide a national clearinghouse whereby individual hubs can share success stories and lessons learned (see Chapter 9).

Promoting Technology Development and Innovation

Innovative science and technology is a key policy instrument. It provides the knowledge base and technologies for a sustainable future. The Government of Canada believes that technology will play a fundamental role in its ability to successfully address the climate change challenge. The investigation, development, and deployment of a broad range of innovative products and processes are essential to reduce the concentration of GHGs. Canada has a broad range of technology

Figure 4.3 OEE Energy Efficiency Index, 1990–1999



activities that directly and indirectly address the adaptation to, and mitigation of, climate change in the different regions of the country. Canada's goal is the development of a whole range of new technologies and the continuous development of underpinning scientific and technological expertise.

Federal Government In-House Research Capability

The federal government is a key contributor to Canada's efforts to innovate and deploy new technologies. The federal government, through such science-based departments as NRCan, Environment Canada, and Agriculture and Agri-Food Canada, undertakes R&D to address climate change issues. With its strong scientific community and one-of-a-kind research facilities, the Canadian government is working closely with the private sector to address climate change through the introduction of technologies to the market or the development of the next generation of climate change technologies. This in-house research capacity is complemented by a number of funding programs, outlined below.

Technology Early Action Measures (TEAM)

Technology Early Action Measures (TEAM) was established in 1998 as part of the federal government's CCAF initiatives. TEAM is a highly coordinated $60 million federal government–led program that to year 2000 has leveraged around $600 million to support investments in cost-effective technology projects that are designed to lead to significant reductions in GHG emissions. In this process:

- TEAM serves as one of the primary tools for implementing federal climate change policy. It provides for cost-effective public–private partnership and takes the unique approach of incremental financing and extensive networking.

- TEAM has brought together partners within the industry, in communities, and internationally to encourage additional investment and accelerated development of innovative technology across all sectors of the economy.

- As of December 2000, 50 domestic and 17 international partnerships have been approved under TEAM, for a total investment of $700 million. These leveraged investments have been accomplished on the strength of a $60 million investment by TEAM and $59 million from federal delivery programs

that have redirected some of their efforts toward GHG mitigation technology. TEAM's community projects have attracted $232 million in new technology investment by municipalities, Aboriginal communities, and industry. A further $150 million of foreign government and private sector investment in international projects has provided opportunities for Canadian companies. Private industry has committed $200 million to GHG mitigation technology development under TEAM industry projects.

- TEAM has been extended until March 31, 2004.

Climate Change Technology and Innovation Program (Federal–Provincial)

This initiative aims at accelerating the development of cost-effective GHG mitigation technologies in multiple sectors, building the intellectual foundation for long-term technological advances, and building alliances and partnerships to help plan and advance the R&D. The program consists of interrelated short- and long-term measures: (i) *discovery, research and development*, to find and develop new and fundamentally different technology concepts; (ii) *fostering a collaborative approach*, to develop networks and technology roadmapping; and (iii) *technology marketing*, to support the business environment for innovation.

Sustainable Development Technology Fund (Government of Canada)

This initiative focuses on the development and demonstration of climate change and clean air technologies. It complements other research and government efforts in technological innovation, such as those by the National Research Council (NRC), Natural Sciences and Engineering Research Council (NSERC), Program of Energy Research and Development (PERD), Industrial Research Assistance Program, Technology Partnerships Canada, and TEAM.

Program of Energy Research and Development (PERD) (Government of Canada)

For 20 years, PERD has played a strategic R&D role in economically and environmentally sustainable energy technologies. This interdepartmental program supports 38 research areas, including environmental solutions for the oil and gas sector, cleaner transportation for the future, energy-efficient buildings and communities, energy-efficient industry, Canada's electricity infrastructure, and climate change (impacts, adaptation, and natural uptake). PERD works collaboratively with 12 federal departments and agencies, as well as an extensive network of companies, industry associations, regulatory agencies, and universities.

Fuel Cell Technology Development (Government of Canada)

The Government of Canada has supported the development of fuel cell and related technologies since 1983. The objective is to reduce emissions from transportation and stationary power applications and further the growth of Canadian industry. In 1999, the government announced the National Fuel Cell Research and Innovation Initiative, funded at $30 million and involving NRCan, NRC, and NSERC. Action Plan 2000, with funding of $500 million, includes funding for a program to develop the fuelling infrastructure for fuel cell vehicles.

Weyburn Carbon Dioxide Injection Monitoring Project — Capture and Storage (Governments of Canada and Saskatchewan)

This monitoring project is a four-year research program (2000–2004) to develop a comprehensive understanding of carbon dioxide injection into oil-bearing geological structures. Through detailed research and measurement, an international research team (IEA-led) will verify the effectiveness of enhanced oil recovery as a method of managing GHG emissions, providing direction and leadership for similar projects in Canada and around the world.

Saskatchewan Petroleum Research Incentive (Government of Saskatchewan)

One of the main purposes of this incentive is to reduce the environmental impact of oil and natural gas production, which includes GHG emissions reduction. The financial support provided by the incentive is in the form of oil and natural gas royalty and tax credits, which enable producers to deduct a portion of their company's approved costs for research from their oil and natural gas royalty and tax payments.

Government Leading by Example (Government Operations)

The Government of Canada and provincial and territorial governments have put in place substantive government-wide initiatives for their respective departments, agencies, and related institutions to undertake GHG emissions reductions. For example, the Government of Canada's own House in Order Initiative has set a target of reducing GHG emissions from its own operations so that emissions will be 31% below 1990 levels by 2010. A 19% reduction has already been achieved since 1990 due to downsizing and normal efficiency efforts. Under the initiative, the Government of Canada will reduce its emissions by a further 12% by 2010. To achieve these reductions, the 11 departments responsible for most of the federal government's GHG emissions are being assigned specific targets and will be required to report annually on their programs.

Emissions reductions in government operations will be achieved through an array of initiatives in areas such as fleet management and alternative fuels, facilities management (e.g., building retrofits), waste management, "green" procurement, and telework and commuting practices. Examples of initiatives include:

- *enhanced federal building and fleet strategies, and a leadership challenge* to engage all federal entities in undertaking and reporting on their own GHG reduction actions (Government of Canada);

- *a green power* purchasing incentive program for the purchase of "green" power (non-GHG emitting) for federal facilities throughout Canada (Government of Canada); and

- *energy improvements in funded buildings* (*school modernization*) to ensure that retrofits during 2000–2002 achieve high levels of energy efficiency and reduce GHG emissions, with funding coming from a portion of a $170 million fund to improve energy efficiency in school buildings (Government of Alberta).

Investing in Knowledge/Building the Foundation

A key element in generating the core knowledge on climate change was the work of the 16 Issue Tables/Working Groups over a two-year period that began in 1998. The Issue Tables undertook work that led to Foundation Papers that analyzed the current status of their respective issues and sectors and outlined various challenges and opportunities. After the Foundation Papers, members of each Issue Table began sector-specific and cross-cutting analyses of emissions reduction opportunities and barriers and identified reduction and adaptation options for consideration in developing Canada's national strategy on climate change.

Current activities that build upon the work of the Issue Tables include:

- the work of the Analysis and Modelling Group (AMG), which is conducting integrated assessments of the economic and environmental implications for Canada of implementing the Kyoto Protocol (see An Assessment of the Economic and Environmental Implications for Canada of the Kyoto Protocol, Analysis and Modelling Group, November 2000); and

- analytical work on possible domestic and international emissions trading systems in support of market-based mechanisms for GHG reductions.

Encouraging Action (Sectoral Actions)

The private sector across the Canadian economy, with assistance from all orders of Canadian government, has made consistent progress in reducing energy intensity, increasing energy efficiency and productivity, reducing emissions, and exploring new arrangements for reductions. In meeting current and future challenges, federal, provincial, and territorial governments and stakeholders have identified a series of opportunities for GHG emissions abatement within and between sectors of the Canadian economy. The following subsections provide an overview of each sector, including trends in GHG emissions, and highlights key P&Ms to tackle the GHG challenges.

Agriculture Sector

Canada's agriculture sector comprises approximately 250 000 farms, 98% of which are family-owned. Unlike other sectors, the vast majority of emissions are non-energy (non–carbon dioxide) related. Agriculture contributed 9.0% of Canadian anthropogenic

GHG emissions in 1999 (i.e., about 61 Mt CO_2 eq.) from manure, enteric fermentation, crops, and fertilizers. In 1990, the emissions were about 59 Mt CO_2 eq. Emissions from agriculture are primarily nitrous oxide (N_2O) associated with fertilizer and animal manure use and methane (CH_4) associated with cattle and livestock manure.

Canada's current and proposed P&Ms seek to develop new technologies and practices affecting a wide range of GHG emissions in areas such as fertilizer management, livestock systems, and soil management. A key area for ongoing work is the potential for agricultural soils themselves to act as a carbon sink, which could lead to substantive reductions in GHG emissions. Building upon agronomic studies, the major contributions to reductions in GHG emissions are projected to arise from the continuation of several trends in the sector: increased use of no-till land practices, reduced summer fallowing, improved nutrient management, additional land in forage crops, improved efficiency in fossil fuel use, greater use of ethanol, and reduced methane emissions from livestock and manure owing to improved feeds and management practices. The net effect of the trend toward increased fertilizer use on the Prairies requires further study: better fertility will increase plant biomass production and the potential for carbon sequestration, but nitrous oxide emissions will increase. The production of fertilizer, particularly nitrogen fertilizers, requires energy and natural gas as a raw material.

Key P&Ms in the agricultural area include:

- *The Agricultural Environmental Stewardship Initiative (AESI)*: AESI is a three-year (2000–2003) $10 million program that addresses the regional impacts of agricultural practices on water, soil, and air quality, biodiversity, and GHG emissions through education and awareness, technology transfer, and stewardship tools, including environmental clubs, environmental management systems, and land use planning (Government of Canada).

- *Planting shelterbelts*: Expanding the Prairie Farm Rehabilitation Administration's shelterbelt program, consistent with rules to be negotiated under the Kyoto Protocol, and establishing riparian buffers will reduce net GHG emissions, soil erosion, and nutrient runoff into waterways.

- *Soil conservation projects*: These projects have the objective of adjusting agricultural practices to reduce the loss and enhance the productivity of valuable topsoil and optimize nutrient use efficiency. As a result, these projects increase the uptake or reduce the production of GHGs (namely carbon dioxide, nitrous oxide, and methane) and improve both water and air quality in the process. Building soil organic matter (carbon sequestration) and reducing soil erosion and nutrient losses are the main focuses. Practices include reduced tillage, zero-till, field shelterbelts, grass strips, strip cropping, etc. (Province of Saskatchewan).

- *Sinks*: Net GHG emissions from Canadian agriculture are expected to decrease slightly as a result of the increased use of a number of economically viable practices and measures that mitigate GHG production and enhance soil sinks. Agricultural soils are expected to function as a net sink by 2010 due to decreases in summer fallow, increases in no-till farming, increased fertilizer use efficiency, and the conversion of some annual croplands to grasslands. Some studies predict that with appropriate and broad changes in land management practices, agricultural (soils) sinks could sequester, as a conservative estimate, 160 Mt of carbon dioxide in 20 years.

Buildings Sector

The buildings sector accounts for over 10% of Canada's GHG emissions and offers an opportunity to improve energy intensity by using more efficient equipment, improving new construction practices, and retrofitting existing buildings. Enhancing public education and outreach are key to achieving these goals.

Residential

The 1999 GHG inventory indicates that residential emissions account for 43 Mt (6%) of Canada's total GHG emissions, but have declined 2.2% since 1990. Energy efficiency improvements in appliances, in heating equipment, and in the thermal characteristics of houses contributed to

a decline in energy use in the residential sector between 1990 and 1999. Likewise, a relatively warm winter in 1999 contributed to reduced residential energy use. As a result, energy-related GHG emissions from this sector and associated electricity-related GHG emissions were 9.0 Mt lower in 1999 than they would have been. However, both of these declines were offset by upward pressure on residential energy use due to a significant growth in activity (more houses and increased floor area).

Ownership of single detached dwellings in suburbs has become a general cultural norm in Canada, and this type of housing typically requires more energy per square metre than other housing types. New houses also tend to be bigger than the older houses they are replacing. This is especially true of single detached houses, which account for 57% of Canadian households. Single detached dwellings built during 1996–1997 were 31% bigger than those built before 1946 and 49% bigger than those built during the 1946–1960 period. The trend is also to larger domestic appliances. For instance, the average size of refrigerators recently sold in Canada was about 17.1 cubic feet, 10% larger than in 1990. However, this tendency to purchase larger appliances is counterbalanced by the fact that the appliances are more energy efficient.

Commercial

The 1999 GHG inventory indicates that the commercial and institutional sector of the economy accounts for about 28.9 Mt (4%) of Canada's total GHG emissions. Emissions from the commercial and institutional sector increased 12% between 1990 and 1999.

Improved energy efficiency, combined with more moderate weather conditions, helped offset the effect of increased commercial activity between 1990 and 1999, limiting growth in the sector's energy use to 13.4%. Without the advances made in the energy efficiency of commercial and institutional buildings, heating and cooling equipment, lighting technology, electric motors, and control systems, energy use in the sector would have increased 15.0% between 1990 and 1999, and GHG emissions would have been 0.7 Mt higher in 1999 than they were.

Key P&Ms in the buildings sector include:

- *Green Building Retrofit Program*: This program provides an opportunity for provincially funded schools, universities, colleges, and health care institutions to upgrade existing facilities with energy and water efficiency enhancements, as well as waste-saving measures. Since the late 1970s, British Columbia has reduced energy consumption in targeted buildings by over 55% and generated over $120 million in total energy savings through retrofitting provincial facilities (Government of British Columbia).

- *EnerGuide for Houses Program*: Funding of $3 million per year over three years (1998–2001) has been allocated to the EnerGuide for Houses Program, which encourages Canadians to improve the energy performance of their homes (the program has been extended to 2006). Homeowners receive advice from independent energy efficiency experts on how to improve home comfort and reduce heating and cooling costs when making home improvements (Government of Canada).

- *Renewable Energy Deployment Initiative (REDI)*: REDI provides $12 million over three years (1998–2001) to promote renewable energy systems for space and water heating and for cooling through an incentive that funds 25% of the cost of adopting new systems (to a maximum of $50 000). Eligible systems include solar air heating, solar water heating, and high-efficiency/low-emission biomass combustion. REDI also provides market support for earth energy systems and supports pilot projects in the public institution and residential markets (Government of Canada).

- *Commercial Building Incentive Program*: Funding of $10 million per year (1998–2001) has been allocated to provide incentives that encourage building owners and developers to incorporate energy-efficient technologies and practices into designs for new commercial and institutional buildings. To qualify, a design must demonstrate that the new building will be at least 25% more efficient than a reference building that

complies with the Model National Energy Code for Buildings (Government of Canada).

- *Provincial Buildings Initiative (PBI)*: The goal of the PBI is to improve energy efficiency in government-owned buildings. The initiative uses energy performance contracting as a delivery mechanism. All government facilities that are directly funded are being considered for improvements. Efficiency improvements include physical retrofits, training, and awareness activities. PBI efficiency improvements began in November 1997 and are expected to be complete by December 2001. Over 95% of all government buildings have been considered under the initiative, resulting in $26 million in retrofit contracts in 370 buildings. Annual energy savings of $4.5 million are expected. The impacts of the initiative will be monitored over the next 10 years (Government of New Brunswick).

- *Federal Buildings Initiative (FBI)*: The FBI is designed to help an organization manage energy costs while making facilities more comfortable and productive places to work. The FBI provides a full range of products and services required by an organization to implement comprehensive energy efficiency improvements. These include information, advice, and consultation on the organization's readiness and project design, lists of energy management firms qualified to build projects, project financing options, a national network for energy management training, model tendering documents, and employee awareness products. The FBI supports partnerships with energy management firms that provide a turnkey service that includes engineering, third-party private sector financing, comprehensive training packages, and performance guarantees. By March 2000, federal government departments had utilized $180 million of private sector investment to implement FBI-type energy efficiency improvement projects in some 5 500 buildings. These projects generate $24 million in annual cost savings and reduced GHG emissions by some 128 kt annually based on preliminary estimates.

Electricity Sector

Under the Canadian constitution, electricity is primarily within the jurisdiction of the provinces. The federal role regarding electricity is restricted to nuclear energy and international and interprovincial trade. In most provinces, the industry is highly integrated, with the bulk of the generation, transmission, and distribution provided by a few dominant utilities. Although some of these utilities are privately owned, most utilities are Crown corporations owned by the provinces.

The electric power industry has a significant presence within the Canadian economy. In 1997, approximately 80 000 people were directly employed by the industry. Total revenue for the largest utilities amounted to more than $25 billion in 1999, and revenues from exports were about $1.9 billion. Exports accounted for 8% of Canada's total generation in 1999. Exports are sold primarily to markets in the New England states, New York state, the upper Midwest, the Pacific Northwest, and California. Canada's electricity prices in the residential, commercial, and industrial sectors are generally lower than those of other countries.

The Canadian electricity industry is currently responding to increasing competitive pressures and will likely undergo significant restructuring over the next decade, which may change fuel choices. Responsibility for electricity generation, transmission, and distribution and for markets in Canada generally lies with the provinces; therefore, differing systems, technologies, and GHG reduction capacities have evolved.

The electricity sector is projected to account for 16% of Canada's GHG emissions by 2010. In its VCR submission, the Canadian Electricity Association, representing Canada's electrical utilities, announced planned reductions in emissions from operations of approximately 3 Mt by 2000 as a result of mitigative actions. Discussions on electricity sector covenants to encourage GHG emissions reductions outlined in Action Plan 2000 are currently under way.

Emissions from this sector are growing, and it is estimated they will be 25% above 1990 levels by 2008–2012. To achieve GHG reductions, future emissions growth can be moderated through methods such as:

- the displacement of oil- and coal-fired generation by cleaner and more efficient natural gas– and coal-fired combustion;

- the introduction of policy instruments that increase demand and supply for alternative energy sources; and

- a switch to hydro, nuclear, and renewable energy sources.

Key P&Ms in the electricity sector include:

- *Offset programs*: British Columbia Hydro has committed over $2 million for the purchase of GHG offsets over the 2000–2001 time frame. TransAlta Utilities of Alberta has signed an agreement to purchase up to 2.8 million tonnes of carbon emission credits from farms in the United States.

- *Green power procurement and renewables*: Various provincial and federal efforts are under way to provide opportunities and incentives for the development and purchase of green power by governments. The Government of Canada has a broad commitment to purchase 20% of its electricity requirements from low- or non-GHG-emitting electricity sources.

- *CO_2 Capture and Storage Initiative*: This initiative under Action Plan 2000 includes a measure to create an inventory of suitable source and storage sites, including oil and gas reservoirs, coal deposits, and saline aquifers, for their potential to store carbon dioxide captured from coal-fired electricity generation facilities.

- *Efficient energy use*: Various programs monitor and audit energy use by customers, promote secondary energy purchases from hydroelectric generating stations, and promote public awareness and outreach.

Forest Sector

Canada's forests cover 45% of the country's land base and support a wide range of industrial, commercial, cultural, and recreational uses, all of which may be affected by climate change. In particular, much of Canada's forests will likely be altered in character and geographic distribution. Furthermore, climate change is expected to lead to an increase in natural disturbances (e.g., forest fires and insect and disease outbreaks).

Key Canadian P&Ms in the forest sector include:

- *Feasibility assessment of afforestation for carbon sequestration*: The Government of Canada (Canadian Forest Service [32]) is developing a three-year preparatory measure that focuses on assessing, planning, designing, and evaluating the feasibility of a large-scale afforestation program in Canada. As a means to assess the design, mechanics, and feasibility of developing a large-scale program, afforestation pilots, or trials, will be identified across the range of suitable lands in Canada. The primary target group for the afforestation pilots is private landowners with marginal agricultural land.

- *SaskPower Carbon Offset Agreement*: This forest-based carbon offset agreement has been submitted to the Greenhouse Gas Emission Reduction Trading (GERT) Pilot for review. It is currently being evaluated for possible registration in the pilot. The Agreement has two components. One involves planting 5 million seedlings on about 3 300 ha of land over 1999–2002. This land was harvested several decades ago but has not successfully regenerated. The second component is the establishment of approximately 225 000 ha of forest carbon reserves in 1999–2000, removing these areas of provincial forest from harvesting. These actions are intended to generate carbon credits through reforestation and protection from harvesting. The Government of Saskatchewan is transferring these credits to SaskPower in exchange for funding to carry out the afforestation. Credits equivalent to approximately 6 million tonnes of carbon will be transferred.

- *Afforestation and Reforestation Initiative*: Under an afforestation component of its private land silviculture program, New Brunswick expects to plant 500 ha of abandoned privately owned farmland per year. With respect to Crown land, land having less than 60% regeneration stocking after harvesting will be planted.

32 The Canadian Forest Service is part of NRCan.

This Crown land reforestation initiative will see about 10 000 ha planted each year (Government of New Brunswick).

Industry Sector

Canada has the most open economy among G7 countries, with trade in goods and services comprising 75% of its GDP. Resource-based industries alone comprise 40% of Canada's exports. The industry sector generally encompasses manufacturing industries, mining, forestry, construction, and the production of fossil fuels.

Industry sector GHG emissions increased 6.6% between 1990 and 1999. Two-thirds of the sector's emissions come from the consumption of energy. These emissions increased 11.4% between 1990 and 1999 as a result of growth in economic activity and a shift to more energy-intensive industries. However, the increase would have been greater if not for a 9.1% improvement in energy efficiency, achieved through the rationalization of operations, the installation of more efficient equipment, and other efforts. Those efforts are estimated to have curbed GHG emissions by 12.4 Mt in 1999 in the sector.

Five natural resource–based industries — mining, petroleum refining, iron and steel, newsprint, and primary production of aluminum — account for around 25% of this sector's GHG emissions. Due to investments in new technologies and energy efficiency, natural resource–based industries are expected to be able to maintain roughly current levels of GHG emissions, despite growing international demand for Canadian goods.

Key P&Ms in the industry sector include:

- *Canadian Industry Program for Energy Conservation (CIPEC)*: CIPEC is a 25-year-old voluntary industry–government alliance that works to identify energy efficiency potential, establish energy efficiency improvement targets, implement and manage energy efficiency improvement programs and projects, report on progress, and celebrate accomplishments. CIPEC includes 35 trade associations, representing over 3 000 companies and 90% of secondary industrial energy demand. Industry members under CIPEC include the following sectors: aluminum, brewery, cement, chemical, dairy, electrical and electronics, fertilizer, food processing, general manufacturing, lime, mining, oil sands, petroleum, pulp and paper, rubber, soft drink, steel, textile, transportation, and wood products. Industries participating in CIPEC recorded an average annual energy efficiency improvement of 1.26% for the period 1990–1998, representing the amount of energy necessary to heat 38% of all Canadian houses in 1998, while at the same time stabilizing energy-related emissions of carbon dioxide. This exceeds CIPEC's goal of a 1% annual improvement in energy intensity between 1990 and 2010.

- *Promotion of enhanced recycling*: This includes development of improved recycling technology (steel, aluminum, magnesium) and practices.

Given the importance of fossil fuel production to Canada's economy and to better explain the policy context for GHG emissions, the production of oil and gas is discussed separately throughout this report.

Fossil Fuel Production — Oil and Gas

Canada's upstream oil and gas sector is roughly a $60 billion industry, which includes $50 billion in exports. The production, transmission, processing, and distribution of fossil fuels contributed more than 100 Mt of GHG emissions in 1999.[33] Over 50% of Canada's oil and natural gas production is exported, mainly to the United States.

A large amount of energy is required to develop and transport these natural resources. A significant pipeline transportation infrastructure is in place for moving Canadian gas, oil, bitumen, synthetic crude, and liquids from other locations in western and northern Canada to local, national, and U.S. markets. GHG emissions associated with the production of fossil fuels (oil and natural gas) for export alone were responsible for around 25% of the growth of Canada's GHG emissions (estimated at more than 20 Mt) between 1990 and 1999. GHG emissions

33 In combination with coal production, the GHG emissions directly attributable to the fossil fuels sector (including pipelines and fugitive emissions) could be calculated to be as high as 134 Mt, based upon the 1999 GHG inventory data.

in this sector are derived from two principal sources:

- fossil fuel use in the exploration, development, production, and transport of crude oil, natural gas, and coal; and

- fugitive emissions (e.g., carbon dioxide and methane) from the production and transport of these raw materials.

VCR submissions from industry and related evidence suggest that significant emission reductions are possible in natural gas and oil production through improved practices and new technologies. Over the next 10 years, more than half of Canadian crude oil production is expected to come from the oil sands. However, with the adaptation of new technologies, oil sands GHG emissions on a per unit basis of production were reduced by 20% between 1990 and 1999 and are expected to drop another 20% by 2010.

Companies from this sector were founding members of the VCR. Various accomplishments related to energy efficiency improvement and emission reductions are reported in the VCR. Canada's FNBP builds upon these successes, addresses related emissions, such as fugitive GHG emissions, and promotes the storage of carbon dioxide.

Key P&Ms include:

- *Reduction of flaring and venting in the oil and gas sector*: The Clean Air Strategic Alliance (CASA) board of directors has approved a multistakeholder working group to review flaring practices in Alberta and recommend an Alberta venting management framework to improve flaring management and reductions in volumes of solution gas vented into the atmosphere (Government of Alberta).

- *Renewable energy*: This includes a variety of possible projects and funding related to wind, biomass, liquid bio-fuels (e.g., methanol, ethanol), hydroelectricity, solar energy, geothermal energy, etc. (Government of Canada).

- *Adjustments to the Capital Cost Allowance (CCA) system*: The February 2000 federal budget proposes several adjustments to improve the CCA system to encourage investment in energy-efficient manufacturing, electrical, and processing equipment (Government of Canada).

- *Oil and Gas Commission Environmental Fund*: This $400 000 fund was created to explore the feasibility of eliminating emissions (sulphur dioxide and GHG) from flaring and fugitive emissions through development of best management practices and new technology (Government of British Columbia).

- *Carbon dioxide capture and storage*: Analysis and pilot projects (initially in the Western Canadian Sedimentary Basin) will demonstrate the capture, treatment, transportation, and injection of carbon dioxide from large stationary sources (e.g., fossil fuel–based electricity operating stations) for storage in geological formations to prevent the release of carbon dioxide emissions into the atmosphere (Governments of Canada, Alberta, Saskatchewan, and others).

Municipalities

Canada's municipal governments have a direct impact on GHG emissions from their own operations in key areas such as solid waste management (landfills), sewage, buildings and facilities (retrofitting), water and energy systems, transportation (transit, vehicle fleets), and urban planning. Landfill gas, for example, accounts for 26% (1.2 Mt) of all methane emissions in Canada. Overall, municipal governments directly control approximately 6% of Canada's GHG emissions. Municipalities also have an indirect impact on general emissions through their regulatory and planning roles in the community at large. More broadly, municipalities could play a role in over half the national GHG inventory.

Experience over the past 10 years indicates that municipal governments can be effective delivery agents, in partnership with other orders of government, for programs promoting energy efficiency and the reduction of waste and GHG emissions. The goal is to achieve sustainable communities by "reaching, teaching, and equipping" municipalities to undertake these various climate change challenges. The FCM, through its Sustainable Communities program, helps municipal governments target local initiatives that improve the eco-efficiency of their operations.

Key P&Ms include:

- *Climate Change Action Fund (public education and outreach component)*: The Government of Canada provides resources for cost-shared projects, with some funds directed at municipalities. The CCAF is designed to assist municipalities with program delivery and to assist supporting national and regional organizations. One of the projects funded under this category was the FCM's Infrastructure Risk: Adapting to Climate Change project. The project was launched in July 2000 to complement an existing FCM program, the Partners for Climate Protection Program, which promotes the benefits of GHG reductions across 90 participating municipalities (Government of Canada).

- *The Green Municipal Enabling Fund (GMEF) and the Green Municipal Investment Fund (GMIF)*: These are endowment funds that provide support for a variety of municipal infrastructure improvements that benefit the environment, such as the FCM's Sustainable Communities program. The GMEF pays 50% of the cost of feasibility studies, while the GMIF provides loans for up to 25% of the cost of capital projects. Both funds are managed by the FCM, which operates in partnership with the Government of Canada. The five-year, $25 million GMEF supports feasibility studies for innovative environmental projects within municipal operations (e.g., waste management, transportation systems, and renewable energy technologies). The $100 million GMIF provides loans and loan guarantees to eligible recipients to carry out environmental projects within municipal operations as well as grants and long-term loans for pilot projects. Both funds began operating in fiscal year 2000–2001 (Government of Canada).

- *Federation of Canadian Municipalities Municipal Building Retrofit Program*: To advance the adoption of energy efficiency in the municipal sector, the FCM offers municipalities a comprehensive program that includes the elements necessary to identify, develop, and implement comprehensive building energy retrofits, as well as assist in gaining access to financing. Some $1.6 million was provided in the 1999 federal budget (Government of Canada).

- *Landfill gas capture*: Such programs update regulations and management criteria for landfills, including requirements for collection and management of landfill gas, and support the development of local government proposals to utilize landfill gas (Government of British Columbia and regional and local governments). The Municipal Options Report indicates that total landfill capture at 37 sites across Canada is 5.4–6.7 Mt CO_2 eq. annually.

- *Energy audits for municipal buildings*: Energy audits develop the capacity to assist Alberta municipalities in reducing GHG emissions associated with their operations (Government of Alberta).

- *Canada Infrastructure Program*: Through cost-sharing with provincial and municipal partners, this federal program will help accelerate and enhance infrastructure works for local communities. Green municipal infrastructure will be a top priority. The types of investments that would fall under green municipal infrastructure include water, waste management, and efficient energy services (Government of Canada).

- *Landfill standards*: The Ontario government introduced stringent new landfill standards that require the capture of methane emissions. Methane is a GHG 20 times more potent than carbon dioxide. Ontario is one of the first jurisdictions in Canada to enact such a requirement (Government of Ontario).

Transportation Sector

Transportation is a large and diverse sector, accounting for 27% of Canada's GHG emissions in 1999. GHG emissions from the transportation sector increased 24% from 1990 to 1999.

However, energy efficiency improvements in both freight and passenger transportation limited growth in energy use between 1990 and 1999, partially offsetting the growth in vehicle activity and an increase in the amount of freight shipped by truck (a relatively energy-intensive mode of transportation). Without energy efficiency efforts and the ongoing implementation of advanced technologies across the sector, transportation-related GHG emissions would have been 8.9 Mt higher.

The transport sector comprises urban, inter-urban, and rural transportation across a variety of transportation modes and regional systems. The main determinants of road energy demand (and GHG emissions) are the stock of vehicles, their average fuel efficiency, and distance travelled per vehicle. These are, in turn, affected by demographics, geography, economic structure, and levels of economic growth.

The challenges imposed by geography are compounded by continuing growth in the demand for transportation resulting from both population and economic growth. Without further mitigative action, GHG emissions from the transport sector (freight and passenger) are expected to exceed 1990 levels by 33% in 2010.

Growth in the transportation sector, particularly in aviation, trucking, and off-road vehicles, has outstripped significant annual efficiency gains and environmental improvements. For example, there has been a shift in consumer preference from cars to greater GHG-emitting minivans and sport utility vehicles (SUVs). In 1999, SUVs accounted for 11.6% of all new vehicles sold in Canada and about 5.5% of all vehicles on the road. Freight activity increased 32.7% between 1990 and 1999, while passenger activity increased 13.3%, which includes the substantial growth in the SUV market. Table 4.2 shows the actual and projected increase in vehicles on the road and in road traffic from 1990 to 2010.

Automobile ownership is high in Canada, largely for reasons of necessity (due to urban sprawl and long distances between city centres), but also for convenience and comfort. The 1994–1996 Canadian National Private Vehicle Use survey shows an average of 1.3 vehicles per household. The average number of vehicles per household in France, Germany, and the United Kingdom is lower. Moreover, during the same period, 45% of Canadian households owned at least one light-duty vehicle (passenger car, pickup truck, or van), and 36% owned two vehicles or more.

The policy approach to transportation GHG emissions requires the close coordination of federal, provincial, and territorial governments and includes promotion of behavioural changes, infrastructure modernization and adaptation, urban planning upgrades for efficient and integrated transport systems, and technology development (e.g., fuel-efficient vehicles, low- or non-carbon fuel systems). Canada–U.S. cooperation is also required, given the integrated North American vehicle production market and the goal of achieving harmonized new fuel efficiency standards by 2010.

Key P&Ms include:

- *Intelligent transportation systems (ITS)*: In Alberta, ITS measures such as incident management, adaptive signal control systems, and traveller information are facilitated through provincial funding. Some $4.38 million has been budgeted (Government of Alberta).

- *SkyTrain expansion*: The Province of British Columbia has committed $1.167 billion to extend Greater Vancouver's rapid transit SkyTrain line, linking Vancouver to Coquitlam and New Westminster, and purchase 60 new SkyTrain vehicles, as the result of a June 1998 agreement with Bombardier Inc. Completion of the first phase is expected in 2002 (Government of British Columbia).

- *Transit enhancement*: The cities of Calgary and Edmonton have identified transit bus renewal and light rail expansion as investment areas in their respective transportation infrastructure investment plans. This has been budgeted at $420.5 million, covering 2001–2005 (Government of Alberta).

- *Canadian Transportation Fuel Cell Alliance*: This proposal is for a five-year federal program, with additional co-funding from provinces and the private sector, to demonstrate GHG reductions, evaluate various fuel routes for fuel cell vehicles, and develop the necessary supporting framework for the refuelling infrastructure, including technical standards, codes, training, certification, and safety (Government of Canada).

Table 4.2 Growth in Canadian Transportation, 1990–2010

	1990	1995	2000	2005	2010
Light-Duty Vehicles					
Passenger Car Stock (millions)	11.1	10.9	11.4	11.9	12.2
Light-Duty Truck Stock (millions) (vans and pickup trucks)	3.5	4.5	4.8	5.4	6.2
Cars and Light-Duty Truck Travel (billion vehicle-kilometres travelled)	266	290	300	307	340
Heavy-Duty Trucks					
Heavy-Duty Truck Stock (thousands)	271	300	308	330	367
Heavy-Duty Truck Travel (billion vehicle-kilometres travelled)	14	19	21.6	23.5	26

Source: Natural Resources Canada (Analysis and Modelling Division)

- *Fuel efficiency*: The Government of Ontario is preparing best management practices to improve the fuel efficiency and the emissions performance of vehicle fleets in the public and private sectors (Government of Ontario).

Cross-Sectoral Actions: Framework and Partnership Actions

Broader actions by all Canadian sectors on mitigation and adaptation are required to address climate change. The FNBP, which includes Action Plan 2000, is designed to assist in these efforts by building partnerships with provinces, territories, and stakeholders, setting a course of action for comprehensive emission reduction strategies within and across all industrial sectors, addressing particular GHG issues related to regional situations, and leveraging more funding for GHG reduction efforts. This range of activity includes enhancing frameworks for voluntary commitments, eliminating policy barriers, and encouraging voluntary systems for trading emissions.

Voluntary Actions — Voluntary Challenge and Registry Inc. (VCR) and ÉcoGESte

VCR is a stand-alone, not-for-profit corporation dedicated to encouraging private and public sector organizations to voluntarily limit their net GHG emissions as a step toward meeting Canada's climate change goals. In effect, VCR and ÉcoGESte are registries that encourage organizations to develop and implement GHG reduction plans. Developed in late 1994, VCR became a core element of Canada's NAPCC. VCR completed its transition from a government-incubated program to a stand-alone private–public partnership in 1997, with two-thirds of its funding coming from the private sector and one-third from federal and provincial governments. Organizations from all sectors of the economy have joined the initiative, including the federal government and all provincial/territorial governments. VCR's roles and responsibilities include:

- recording and documenting participation, as well as the action plans, best practices, and achievements of registrants;
- analyzing actions and achievements, considering potential for further progress, and providing related support to registrants;
- recognizing, publicizing, and promoting registrants who are making progress toward achieving Canada's climate change objectives with the support of the VCR Technical Advisory Committee; and
- preparing progress reports and annual reports and identifying issues for consideration in the evolution of VCR.

Participation in VCR has risen steadily since the program's inception. By the end of 1998, VCR counted 874 registrants, representing over 75% of the opportunity for business and governments to reduce GHG generation, including companies and organizations from all sectors of the economy. Membership was strongest in the sectors highlighted in Table 4.3.

Membership is growing in non-automotive transportation, general manufacturing, the agriculture sector, commercial and institutional sectors, and financial services (see www.vcr-mvr.ca

Table 4.3 Sectoral Participation in VCR

Participants	Registry (%)
Government of Canada	100
Provincial Governments	100
Territorial Governments	100
Oil and Gas Pipelines	100
Petroleum Products Refining	100
Coal	100
Electricity	100
Chemical	100
Steel	100
Aluminum	100
Cement	98
Oil and Gas Producers	93
Natural Gas	80
Oil Well Drillers	71
Metal Mining	45

www.menv.gouv.qc.ca/air/changement/ecogeste.htm).

Baseline Protection Initiative (BPI)
On January 12, 2000, federal, provincial, and territorial governments officially announced the BPI under the NCCP. The BPI ensures that businesses will not be disadvantaged by future policy actions with respect to the allocation of emissions, by having baseline emission levels take into account prior business actions (early actions since 1990) on climate change that are real, measurable, and verifiable. Companies can register these early actions with VCR or ÉcoGESte in Quebec. Baseline protection is intended to remove disincentives to early emissions reduction actions. Through BPI, those who take steps to reduce their GHG emissions will be able to ensure that they are not disadvantaged if a future climate change policy initiative based on past emission levels is adopted. Organizations with early actions registered in the BPI registries can adjust their baseline emissions to reflect the early emissions reduction actions they have already taken.

Encouraging GHG Emissions Reductions
Efforts are under way to test the feasibility of establishing incentives to promote emissions reduction. These pilots will seek emissions reductions in strategic program areas and will focus on dollar-based incentives:

- *Domestic Emissions Trading (DET) Study*: This ongoing federal, provincial, and territorial study is looking at emissions measurement, broad versus narrow DET coverage, transition to DET, harmonization with any U.S. DET system, and permit allocation options.

- *Greenhouse Gas Emission Reduction Trading (GERT) Pilot*: The B.C. government is spearheading implementation of the national GERT Pilot to test the effectiveness of emissions trading to decrease emissions. The GERT Pilot is recognized internationally as being on the leading edge in the search for practical approaches to emissions trading. The GERT Pilot has been extended for another two years to December 31, 2001 (Governments of Saskatchewan, Nova Scotia, Alberta, and Canada).

- *Pilot Emission Reduction Trading Project (PERT)*: Established in 1996, the Pilot Emission Reduction Trading Project is an industry-led, multistakeholder environmental initiative. The federal and Ontario governments and national companies are utilizing PERT to evaluate, in part, the effects of climate change (see www.pert.org for more information).

CONCLUSION

Since the Second National Report of 1997, Canadian governments have instituted a comprehensive NCCP through the NIS and FNBP. As a component of the FNBP, it is estimated that the policies and measures announced in the Government of Canada's Action Plan 2000 will reduce GHG emissions by 65 Mt annually during the 2008–2012 commitment period. Including climate change efforts by the private sector, Canada has implemented and will continue to implement an array of substantive policies and measures designed to significantly reduce GHG emissions across all key sectors. These policies and measures encompass science, impact, and adaptation-related matters. A complete list of Canada's planned or implemented policies and measures on a sector-by-sector basis, including Action Plan 2000 measures, appears in Appendix 1, Table 1. Canada has also made important progress in areas such as increasing energy efficiency and reducing the energy intensity of GHG-emitting fuels. Emissions would have been higher without these important efforts.

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National Climate Change Process (NCCP)

Joint Ministers of Energy and Environment:

- Communiqué (released at meetings: April 1998, October 1998, March 2000, and October 2000)
- Records of Decision (released at meetings: March 2000 and October 2000)
- Backgrounder: Key Elements of a National Implementation Strategy (released March 2000)
- Communiqué and Backgrounder: Baseline Protection Initiative (released January 2000)

Issue Table/Working Group Reports (released between November 1999 and November 2000):

- Agriculture and Agri-Food: Foundation Paper and Options Report [34]
- Analysis and Modelling Group: Final Report (forthcoming); presents preliminary findings from the microeconomic, macroeconomic, and environment and health impacts analyses
- Buildings: Foundation Paper and Options Report
- Credit for Early Action: Foundation Paper and Options Report
- Electricity: Foundation Paper and Options Report
- Enhanced Voluntary Action: Foundation Paper and Options Report
- Forest Sector: Foundation Paper and Options Report
- Industry: Overview Report and Options Reports from seven subsectors
- Kyoto Mechanisms: Foundation Paper and Options Report
- Municipalities: Foundation Paper and Options Report
- Public Education and Outreach: Foundation Paper and Options Report
- Science, Impacts and Adaptation: Foundation Paper and Options Report
- Sinks (Carbon Sequestration): Foundation Paper and Options Report
- Technology: Foundation Paper and Options Report
- Tradeable Permits Working Group: Foundation Paper and Options Report
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www.fcm.ca

Government of Canada Climate Change Web site
www.climatechange.gc.ca

Issue Table/Working Group Reports: Foundation Papers and Options Reports
www.nccp.ca

Links to all provincial government Web sites and key non-government sites
http://climatechange.gc.ca/english/actions/what_are/regional.shtml

Natural Resources Canada
www.nrcan.gc.ca

Voluntary Challenge and Registry Inc.
www.vcr-mvr.ca

Appendix 1, Table 1: Summary of Policies and Measures Affecting GHGs by Sector

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Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Agriculture / Aquaculture					
Government of Canada					
Agricultural Environmental Stewardship Initiative	Addresses the impacts of agricultural practices on water, soil, and air quality, biodiversity, and GHG emissions.	N_2O, CH_4, CO_2, NH_3	Education Information	Implemented	Agriculture and Agri-Food Canada
Agro-Climate Monitoring and Information Transfer	Includes analyzing alternative long-term strategies for drought monitoring, reporting, and responses, and the application of long-range climate forecasts to prairie agriculture. Activities also include identification of long- and short-term climate trends and their impact on long-range climate forecasts.	N_2O, CH_4, CO_2	Voluntary Research	Implemented	Prairie Farm Rehabilitation Administration
Agro-Ecosystem Research	Extensive research studies aimed at reducing uncertainties in agro-ecosystem emissions estimates; comparisons of modelling methods; emissions estimates from manured fields and during composting; seasonal GHG fluxes from soils in different prairie soil zones; farm-level GHG measurement; expert systems to assess the effect of different agricultural management practices on GHG emissions; and understanding the soil carbon storage mechanism, nitrogen flows, and N_2O emissions.	CO_2, CH_4, N_2O	Research	Implemented	Agriculture and Agri-Food Canada
Canadian Adaptation and Rural Development Fund	To increase research capacity and coordination to position the agriculture sector to respond to climate change.	N_2O, CH_4, CO_2	Research	Implemented	Agriculture and Agri-Food Canada, Canadian Agri-Food Research Council
Canadian Economic and Emissions Model for Agriculture	An integrated agro-ecological economic modelling system that can be used to simultaneously assess the economic and GHG emission impacts of agricultural policies at regional and national levels. The model is a quantitative tool that can contribute to climate change goals through analyses of changing agricultural economics and production practices relative to patterns of GHG emissions.	N_2O, CH_4, CO_2	Research	Implemented	Agriculture and Agri-Food Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Climate Change Funding Initiative	Improves the scientific understanding of the agriculture sector's contribution to GHG emissions through four major components: developing and increasing the pool of experts in the field of climate change, placing priority on the creation of science networks, where integrated teams of experts and industry partnerships address fundamental knowledge gaps and technology development, the dissemination of information, and the coordination of climate change activities in Canadian agriculture.	N_2O, CH_4, CO_2	Research Information	Implemented	Agriculture and Agri-Food Canada, Canadian Agri-Food Research Council
Climate Change Skills and Knowledge Initiative	Increase awareness of producers as to the impact of climate change on the agriculture sector, including the coordination and development of "grassroot" provincial teams to raise farmers' awareness of climate change issues; the development of information tools; the holding of provincial workshops on GHG-reducing activities; and a national conference to further raise understanding of climate change issues.	N_2O, CH_4, CO_2	Information	Implemented	Agriculture and Agri-Food Canada, Soil Conservation Council of Canada
Community Pasture Program	To remove lands from unsuitable or unacceptable land uses and to facilitate improved land use through their rehabilitation, conservation, and management.	CO_2, CH_4, N_2O	Voluntary	Implemented	Prairie Farm Rehabilitation Administration
Countryside Canada	Recognition and award program for on-farm/ranch stewardship.	CO_2	Voluntary Information	Implemented	Wildlife Habitat Canada, Canadian Federation of Agriculture
Environmental Rehabilitation and Food Security – Mali	This project builds capacity in local, decentralized institutions to deal with natural resource management and supports specific environmental interventions as they relate to both adaptations to desertification due to climatic changes and issues of improved food production.	CO_2	Information	Implemented	Canadian International Development Agency, Unitarian Service Committee, Government of Mali
Green Fund Extension – Jamaica	This project supports community-based initiatives that will contribute to the sound management and conservation of Jamaica's natural resources and improve advocacy and development through more effective networking. Projects have dealt with improved agriculture and agro-forestry practices and alternative sources of energy.	CO_2	Policy Information	Implemented	Canadian International Development Agency

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Hebei Dryland Project – China	This project develops and transfers ecologically sound dryland management technology and improves water efficiency, as well as balanced fertilization practices.	N_2O	Information	Implemented	Agriculture and Agri-Food Canada, Canadian International Development Agency
Hog Environmental Management Strategy	A partnership between the federal and provincial governments and the hog industry that provides a coordinated approach to finding effective and affordable solutions to the environmental challenges facing the industry. Environmental issues in hog production pertain primarily to the storing, handling, and application of manure. The three key concerns are odours, soil and water quality, and air pollution (which includes the GHGs CH_4 and N_2O).	N_2O, CH_4	Voluntary Research Information	Implemented	Agriculture and Agri-Food Canada
Irrigation and Water Management Technology Transfer	Demonstrates appropriate management techniques for water and fertilizer applications to improve the efficiency of the production system.	CO_2, CH_4	Voluntary Research	Implemented	Prairie Farm Rehabilitation Administration
Livestock Environmental Initiative	This initiative includes two components: research and development, as well as assessment and transfer of technology to the livestock industry; and an assessment of possible environmental certification systems for the hog industry.	CH_4, N_2O	Research Technology Transfer	Implemented	Agriculture and Agri-Food Canada, Livestock Initiative National Committee, Canadian Pork Council
Marginal Land Information Management	Addresses conversion of environmentally sensitive lands in annual cultivation to more appropriate forage and pasture. In addition, significant carbon sequestration potential is estimated on these lands.	CO_2	Voluntary Research	Implemented	Prairie Farm Rehabilitation Administration
Matching Investment Initiative	Increase collaborative research activity between the private sector and government. The initiative, by involving industry research investors directly, will also help speed up the process of transferring new technology to the private sector. The initiative also contributes to the promotion and implementation of GHG-reducing practices in such areas as soil nutrient management, manure management, grazing strategies, feeding strategies, water management, agro-forestry, food processing, and soil carbon sequestration.	CO_2, N_2O, CH_4	Fiscal Research	Implemented	Agriculture and Agri-Food Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Natural Resource Management – Honduras	This project seeks to build capacity for effective policies related to the sustainable management of natural resources, including forests, agricultural land, water, and marine/coastal areas. Subcomponents of the project focus on helping Honduras establish a focal point for participation in the Clean Development Mechanism and a Cleaner Production Centre, as well as sponsoring a study on energy efficiency opportunities in Honduras.	CO_2	Policy	Implemented	Canadian International Development Agency
Nutrient Management and Strategies for Sustainable Development – China	This project aims to promote environmentally sustainable development by enhancing the capacity of farmers, decision makers, and policy makers in China to promote the balanced use of fertilizers and improved soil management.	CO_2, N_2O	Policy Information Voluntary	Implemented	Canadian International Development Agency, Phosphate & Potash Institute of Canada, Canadex
Permanent Cover Program	The primary objective is to reduce soil degradation on environmentally sensitive lands that have high erosion risk under annual cultivation. Marginal lands were targeted for conversion to alternative sustainable uses under permanent cover.	CO_2	Voluntary	Implemented	Prairie Farm Rehabilitation Administration
Range Management Technology Transfer	Working to develop firmer supporting science on carbon sequestration potentials and other GHG impacts.	CO_2, CH_4, N_2O	Voluntary Research	Implemented	Prairie Farm Rehabilitation Administration
Shelterbelt Program	A permanent program for the distribution of seedlings to farmers and Conservation Boards for planting shelterbelts or for conservation and land reclamation projects. This program includes a research component (tree improvement, agro-forestry, and carbon sequestration) and a communications component. Direct results from this program include the creation of wildlife habitat, conservation of soil, sequestration of carbon, significant energy reductions in farmsteads, management of snow, and stabilization of crops.	CO_2	Voluntary Research	Implemented	Prairie Farm Rehabilitation Administration

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Soil Management, Manure Management and Resource Planning Activities	Offers soil management advice on topics such as tillage, summer fallow, cropping, stubble management, straw harvest, manure management, intensive livestock sitting, and riparian area management. Ongoing planning with and for clients in the prairie region, as well as offering analytical services on resource conservation and development issues.	CO_2, CH_4, N_2O	Voluntary Research	Implemented	Prairie Farm Rehabilitation Administration
Alberta					
Agricultural Food Processing Practices	The program allows for agricultural food processors in Alberta to provide significant savings in energy costs and reduce GHG emissions from facilities. Complete energy audits on 34 companies representing 46 processing facilities.	CO_2, CH_4	Information	Implemented	Government of Alberta
Alberta Reduced Tillage Initiative	Coordinates and presents programs and activities that disseminate quality, practical production information that will lead to the adoption of reduced tillage technology by Alberta producers. The partnership is based on a common philosophy about the benefits of reducing the amount and intensity of tillage. The GHG benefit is reduced fuel use and increased carbon storage in soil, which helps to reduce net GHG emissions.	CO_2, CH_4	Information	Implemented	Alberta Agriculture, Food and Rural Development
Education and Awareness Program for Food Producers	Raise awareness and understanding of how adopting GHG-reducing management practices now can create savings in the future.	CO_2, CH_4	Information Education	Implemented	Alberta Agriculture, Food and Rural Development
Farm Business Management Program	This program focuses primarily on improving financial and other business management skills. Production (nutrient) management is one component of the program that can provide GHG reduction benefits.	CO_2, CH_4	Voluntary Information	Implemented	Alberta Agriculture, Food and Rural Development
Greenhouse Gas Program for Agriculture	Focuses on identifying best practices that support climate change mitigation and adaptation.	CO_2, CH_4	Information	Implemented	Alberta Agriculture, Food and Rural Development

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Alberta (*continued*)					
Prairie Soil Carbon Balance Research Study	Supporting a multiyear research study to better understand soil carbon dynamics. The purpose of the study is to develop scientifically sound methods to assess changes in soil carbon based on management practices.	CO_2, CH_4	Research	Implemented	Alberta Agriculture, Food and Rural Development
Regulatory Framework for Livestock Feeding Operations	One component of this proposed framework for Alberta is a standards document to deal with manure storage and nutrient management. This is a way to identify and encourage adoption of practices and technologies to reduce GHG emissions.	CO_2, CH_4	Voluntary Information Technology Transfer	Adopted	Alberta Agriculture, Food and Rural Development
British Columbia					
Adaptation in Fisheries Sector	Activities include researching climate change impacts on fish and fish habitat; establishing gene banks to protect diversity of fish populations affected by climate change; cooperating with other agencies to restore fish habitat; adopting technology and techniques for selective fisheries; developing and diversifying new fisheries; and communicating with professionals and the public. In addition, changes to the *Fish Protection Act* and related regulations protect in-stream flows for fisheries and riparian vegetation, helping to mitigate climate change impacts.	n.a.	Research Information Regulatory	Implemented	Ministry of Agriculture, Food and Fisheries
Agricultural Soil Carbon Sequestration Potential	Research will enable development of a policy for the accounting of agricultural soil sinks. Alternative cropping practices will be identified for areas with a potential to increase soil organic matter.	CO_2	Research Information	Adopted	Ministry of Agriculture, Food and Fisheries
Consultation and Extension on Agricultural Practices	Workshops and information sessions to explore agricultural practices that reduce or sequester GHG emissions.	CO_2, CH_4, N_2O	Information	Implemented	Ministry of Agriculture, Food and Fisheries

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Ontario					
Agricultural Best Management Practices	Provide farming sector with current technical advice on soil and water conservation and management of GHG-producing agricultural activities, with focus on farm nutrient management and reduced tillage.	CO_2, CH_4, N_2O	Voluntary Information	Adopted	Ministry of Agriculture, Food and Rural Affairs
Ontario Agrometeorology Research and Services Committee	Current research to understand N_2O emissions from agricultural systems has required that NO and NO_2 fluxes be measured. The latter gases are also central to the chemistry of ground-level ozone; therefore, a spinoff emerging from the N_2O research is a better understanding of the holistic role of agricultural surfaces in regional air quality. Preliminary modelling suggests that agriculture is a strong sink for both ozone itself and its precursors.	N_2O	Research	Implemented	Ministry of Agriculture, Food and Rural Affairs
New Brunswick					
Agriculture Initiatives	Support proposals to strengthen the adoption of new technology, to improve the education and awareness of livestock producers on best management practices that reduce odour and methane emissions, and to advance the proper storage and handling of manure.	CO_2, CH_4	Voluntary Information	Implemented	Department of Agriculture and Fisheries
Nova Scotia					
Annapolis Atmosfarm Project	The purpose of the project is to increase understanding of climate change, reduce GHG emissions, and increase carbon sequestration on commercial farms. In addition, the project will identify longer-term measures for the agricultural industry.	CO_2, CH_4, N_2O	Voluntary Information	Implemented	Clean Annapolis River Project, Environment Canada, Acadia Centre for Estuarine Research, Nova Scotia Natural Resources, DalTech, Agriculture and Agri-Food Canada, Nova Scotia Organic Growers Association, Annapolis County of Agriculture, Nova Scotia Agriculture and Marketing
Prince Edward Island					
Capture and Use of Methane Gas at Agri-food Processing Plants	To capture CH_4 and use it as a replacement for heavy fuel oil.	CO_2, CH_4	Economic	Implemented	PEI Department of Fisheries, Aquaculture and Environment

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Prince Edward Island (*continued*)					
Livestock Management and Grazing Management	To reduce emissions from digestive processes and manure storage and application; to increase nutritional quality of pasture grasses. The focus will continue to be on fencing and watering options to prevent livestock access to watercourses and to prevent water contamination by manure.	CH_4, N_2O	Voluntary Information	Implemented	PEI Department of Agriculture and Forestry
Quebec					
Increased Yield Policy	Planting program for species of trees that grow rapidly on wild lands unsuitable for agricultural purposes.	CO_2	Policy	Adopted	Department of Agriculture, Fisheries and Food
Saskatchewan					
Agricultural Burning Awareness Program	Pilot is being expanded to increase farmer awareness and to provide information to farmers leading to improved decision making and to encourage reduction/stopping of crop residue burning.	CO_2	Voluntary Information Technology Transfer	Implemented	Saskatchewan Agriculture and Food, Saskatchewan Health, Regina Health District, Saskatchewan Environment and Resource Management, Rural Municipalities, Environment Canada
Conservation Cover Program	This program is a four-year initiative of the Saskatchewan government to contribute to the converting of cropland to perennial cover.	CO_2, CH_4, N_2O	Fiscal Education	Implemented	Saskatchewan Agriculture and Food
Crop Nutrient Management	Extension of soil fertility management practices/cropping systems for major and diversified crops to maximize nutrient use efficiency while sustaining and improving the health of soil. Soil and plant tissue testing are major tools in achieving this objective, along with information on the form, timing, and placement of fertilizers, with a focus on nitrogen.	CO_2, CH_4, N_2O	Promotion Information Research		Saskatchewan Agriculture and Food, University of Saskatchewan, Agriculture and Agri-Food Canada, Industry Canada
Greenhouse Gas Initiatives in Saskatchewan Agriculture	This initiative will summarize the currently available information on GHG and carbon sequestration in Saskatchewan agriculture and review and discuss policy options for emission abatement. It will also identify various economic scenarios for the Saskatchewan agriculture industry and producers and provide options and recommendations.	CO_2, CH_4, N_2O	Policy	Implemented	Saskatchewan Agriculture and Food

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Saskatchewan (*continued*)					
Improved Grazing Management	Improve and sustain rangeland and pasture resources through continued research and providing technical advice and training to producers involved in range/livestock production and to encourage multiple use of rangeland and environmental sustainability.	CO_2, CH_4, N_2O	Voluntary Information Technology Transfer	Implemented	Saskatchewan Agriculture and Food, Grazing and Pasture Technology Program, Prairie Farm Rehabilitation Administration, Saskatchewan Stock Growers Association, Agriculture and Agri-Food Canada
Processing of Surplus Crop Residues	Encourage processing of surplus crop residues to produce value-added products (fibre products, strawboard, alternative energy products).	CO_2	Voluntary Research Economic Technology Transfer	Implemented	Saskatchewan Agriculture and Food, Industry Producers
Pulse and Legume Crop Diversification	Pulse and legume crop diversification assists in achieving sustainability; pulses and other legumes fix nitrogen from the air, reducing the need for nitrogen fertilizer; value-added processing encouraged locally; encourages longer rotations and reduction in summer fallow acres.	CO_2, CH_4, N_2O	Voluntary Legislative Economic Research Information Technology Transfer	Implemented	Saskatchewan Agriculture and Food, Crop Development Centre, University of Saskatchewan, Agriculture and Agri-Food Canada, Industry Producers
Soil Conservation	Soil conservation projects reduce the loss and enhance the productivity of valuable topsoil. Building soil organic matter (carbon sequestration) and reducing soil erosion are the two main focuses. Practices include reduced tillage, zero-till, field shelterbelts, grass strips, strip cropping, etc.	CO_2, CH_4, N_2O	Voluntary Research Information Technology Transfer	Implemented	Saskatchewan Soil Conservation Association
Strategy for Sustainable Manure Management	Managing manure as a resource. Manure when used properly can be a valuable source of plant nutrients and organic matter to improve crop production and soil quality. Manure is a source of soil organic matter (sequestered carbon).	CO_2, CH_4, N_2O	Voluntary Legislative Policy Research Information Technology Transfer	Implemented	Saskatchewan Agriculture and Food, Beef Development Centre, Industry Producers, University of Saskatchewan, Agriculture and Agri-Food Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Buildings					
Government of Canada					
Advanced Integrated Mechanical Systems	This initiative is designed to help manufacturers develop products and the market infrastructure for natural gas–fuel appliances that integrate ventilation, space, and hot-water heating into a single system.	CO_2	Research	Implemented	Natural Resources Canada
Building Heat Management Research Program	The purpose of this program is to develop and disseminate knowledge and technology that will contribute to a reduction in GHG and other emissions through improvements in building energy efficiency, and help build the energy efficiency industry in order to capture growing domestic and international markets.	CO_2	Research Information	Implemented	Natural Resources Canada
Buildings Energy Technology Advancement Plan	A cost-sharing program aimed at developing, commercializing, and encouraging the adoption by industry of a new generation of technologies and residential and large buildings with improved energy efficiency and indoor air quality.	CO_2	Technology Transfer	Implemented	Natural Resources Canada
Commercial Buildings Incentive Program	This program provides financial incentives to encourage building owners to incorporate energy-efficient technologies and practices in designs for new commercial and institutional buildings.	CO_2	Economic Information	Implemented	Natural Resources Canada
EnerGuide for Houses	The program encourages Canadians to improve the energy performance of their houses. Homeowners receive advice from independent energy efficiency experts on how to improve home comfort and reduce heating and cooling costs when making home improvements.	CO_2	Information	Implemented	Natural Resources Canada
Federal Buildings Initiative (FBI)	Helps organizations manage energy costs, while making their facilities more comfortable and productive workplaces. The program offers, to executive and managerial support, a complete package of tailored technical, planning, and contractual support needed to implement an energy-saving project on a turnkey basis. The FBI also offers access to tools and services to assist organizations in planning a strategy to implement energy efficiency in federal buildings.	CO_2	Information	Implemented	Natural Resources Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Federal House In Order Strategy	A Government of Canada initiative to demonstrate federal leadership in the reduction of GHG emissions. The government's aim is to lower emissions from its own operations to an amount comparable to what is expected of all other Canadian organizations. An emissions reduction target for 2010 is being determined for the federal government as a whole, based on information provided by departments.	CO_2	Policy Information	Adopted	Natural Resources Canada, Lead Federal Departments
Federal Industrial Boiler Program	The Federal Industrial Boiler Program ensures that energy-efficient and environmentally responsible technologies are considered when federal departments, agencies, Crown corporations, or private sector clients replace or modify their heating and cooling systems. Program develops site-specific strategies to help building operators meet higher equipment performance targets and provides turnkey project management services on new or retrofit projects. These management services include preparing technical specifications, reviewing tenders, and overseeing the installation and commissioning of new equipment.	CO_2	Information Research	Implemented	Natural Resources Canada
Green Power Procurement Initiative	This initiative commits the Government of Canada to displacing purchases of high-carbon electricity with electricity from emerging renewable sources, referred to as "green power." In addition to reducing GHG and other emissions in federal operations, this initiative provides a demand for green power and encourages electric utilities to market this type of power to other customers.	CO_2	Policy	Implemented	Natural Resources Canada, Environment Canada
Healthy Housing	Program aims to foster change in how new homes are built, how existing homes are renovated, and how communities are planned. Program is based on five principles: occupant health, energy efficiency, resource efficiency, environmental responsibility, and affordability.	CO_2	Research	Implemented	Canada Mortgage and Housing Corporation
Heating, Ventilation and Air Conditioning Energy Efficiency Rating System	This program provides consumers with energy efficiency ratings for gas and propane furnaces, central air conditioning equipment, and air-to-air heat pumps. Oil-fired furnaces will soon be added to the rating system. Ratings are published at the back of manufacturers' brochures in order to provide consumers with the	CO_2	Information Technology Transfer	Implemented	Natural Resources Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
	information needed to purchase energy-efficient home heating and air conditioning products. This program is operated in association with the Heating, Refrigeration and Air Conditioning Institute, which provides contractors with the tools to promote the sale of more energy-efficient equipment.				
Industrial Buildings Incentive Program	This program will offer an incentive to companies building new industrial facilities to offset additional design costs inherent in the initial attempts at energy-efficient designs. 59 contribution agreements covering 59 buildings, and 18 training workshops resulting in 1 000 trained professionals.	CO_2	Economic Policy	Implemented	Natural Resources Canada
Model National Energy Code for Buildings and Houses	This program aims to increase the energy efficiency of new Canadian houses and buildings by specifying minimum energy requirements, supporting the implementation and adoption of these model national energy codes by relevant authorities having jurisdiction for buildings and houses, and monitoring and analyzing the impact of such codes.	CO_2	Policy	Implemented	Natural Resources Canada
R-2000 Home	The R-2000 Home program uses a quality assurance process to ensure that certified R-2000 houses meet the voluntary performance standard for energy efficiency, indoor air quality, and environmental sustainability. The program is delivered provincially by more than 30 industry partners and provides technical support, builder training, and industry infrastructure.	CO_2	Voluntary Information	Implemented	Natural Resources Canada
Refrigeration and Intelligent Buildings	This program focuses on the development and deployment of technologies in the areas of ground source heat pumps, refrigeration, and intelligent buildings.	CO_2	Technology Transfer	Implemented	Natural Resources Canada
Renewable Energy Deployment Initiative	This program promotes renewable energy systems for space and water heating and for cooling through an incentive that funds 25% of the cost of adopting new systems (to a maximum of $50,000). Eligible systems include solar air heating, solar water heating, and high efficiency/low emission biomass combustion. Initiative also provides market support for earth energy systems and supports pilot projects in the public institutions and residential markets.	CO_2	Economic Technology Transfer Information	Implemented	Natural Resources Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Sponsorship Program	Provides Canadian homeowners with consumer information on residential energy efficiency through a network of sponsors that includes hardware and building supply retail sectors, utilities, media, and industry associations.	CO_2	Information	Implemented	Natural Resources Canada
Alberta					
Alberta Government Voluntary Challenge and Registry Action Plan	Sets an overall target for reduction of Alberta government emissions from 1990 levels by the year 2000, reduction of its GHG emissions to below 1990 levels, and exceeding the emission targets in both quantity and time.	CO_2	Voluntary	Implemented	Alberta Environment
CO_2 Diet Program In-reach Initiative	Program encourages government staff to take personal action to reduce GHG emissions at work and at home. The program involves bi-weekly educational sessions on topics such as climate change science, policy, and personal action, featuring speakers from government, industry, and non-governmental organizations.	CO_2	Voluntary Information	Implemented	Alberta Environment
Destination Conservation School Retrofit Program	Enrols school jurisdictions in a retrofit program. Students, teachers, and other school staff audit their school's energy consumption and develop plans to reduce consumption through retrofits and lifestyle changes.	CO_2	Information	Implemented	Alberta Environment
Energy Efficiency Standards for New Schools	New standards and guidelines have been created for the building of new schools and modernization of existing ones.	CO_2	Policy	Implemented	Government of Alberta
School Buildings Guidelines	Development of new standards and guidelines for the building of new schools and the modernization of existing ones. These guidelines incorporate life cycle costing and energy efficiency requirements.	CO_2	Policy	Implemented	Alberta Environment
British Columbia					
Energy Measures	Piloting energy efficiency upgrades of schools and other publicly funded buildings.	CO_2	Policy Information	Implemented	BC Hydro, Ministry of Finance, Ministry of Employment and Investment, Ministry of Energy and Mines

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
British Columbia (*continued*)					
Green Buildings	Facilitates growth of the British Columbia green buildings sector through strengthening networks, facilitating opportunities, and building alliances that attract investment and expand exports.	CO_2	Information	Implemented	Ministry of Employment and Investment
Green Buildings – New Buildings Program	The program objective is to develop a policy for the incorporation of green building principles and practices in the design of provincially funded buildings. Development of this policy will be informed by a series of pilot projects that will incorporate sustainable development principles. The goal of the program is to develop government facilities consistent with the concept of responsible and sustainable development.	CO_2	Policy	Implemented	Ministry of Employment and Investment, Ministry of Finance and Corporate Relations
Green Buildings – Retrofit Program	Provides opportunities for provincially funded schools, universities, colleges, and health care institutions to upgrade existing facilities with energy and water efficiency enhancements, as well as waste-saving measures.	CO_2	Technology Transfer	Implemented	Ministry of Employment and Investment, Ministry of Finance and Corporate Relations
Tax Exemption for Energy Conservation Materials and Equipment	A provincial sales tax exemption is provided for certain energy conservation materials and equipment, including insulation materials for buildings (e.g., various types of insulation material, double-paned windows, doors) and certain wind, solar, and micro-hydro equipment.	CO_2	Economic	Implemented	Ministry of Finance and Corporate Relations
New Brunswick					
Energy Accounting	The objective of the program is to provide energy accounting information to government building managers, which will allow them to manage energy use. Activities involve the collection, analysis, and reporting of energy use.	CO_2	Information	Implemented	Government of New Brunswick
Energy Efficient Standards for Buildings	The objective of this program is to increase the level of energy efficiency in new facilities by promoting the use of energy efficiency standards for buildings. A variety of activities are undertaken to support this effort. New Brunswick is a member of the Canadian Consortium for Building Energy Compliance Software, which has released a software package that measures compliance under the Model National Energy Code for Buildings. The province also supports R-2000 and requires that social housing be built to the R-2000 standard. The penetration	CO_2	Technology Transfer Voluntary Information	Implemented	Government of New Brunswick

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
New Brunswick (*continued*)					
	of R-2000 homes in New Brunswick has had a significant impact on the standard levels of energy efficiency in new homes, which are close to the R-2000 standard.				
Provincial Buildings Initiative	The objective is to improve energy efficiency in government-owned buildings. The initiative uses energy performance contracting as a delivery mechanism. All directly funded government facilities are being considered for improvements, including physical retrofits, training, and awareness activities.	CO_2	Information Education	Implemented	Government of New Brunswick
Northwest Territories					
Energy Conservation Capital Program	Program assists territorial and community-funded departments, boards, and agencies, as well as non-profit organizations, by providing grants to support and finance projects that reduce usage of electrical and heat energy and water.	CO_2	Economic	Implemented	NWT Housing Corporation, NWT Association of Municipalities, NWT Public Utilities Board
Good Building Practice for Northern Facilities	Preparation of a set of building design guidelines to help ensure that facilities are designed and constructed to minimize life cycle costs. As utility costs are a major component of the owning and operating costs of a facility, there is considerable emphasis on energy efficiency in the guidelines.	CO_2	Information	Implemented	NWT Housing Corporation, NWT Association of Municipalities, NWT Public Utilities Board
Inuvik Conversion Assistance Program	This program provides financial assistance to residential homeowners to convert from oil heat to natural gas. The amount of the grant is matched by the gas supplier. The major objective of the program is to assist in the rapid conversion of residential homeowners to a local, cleaner energy source for heating.	CO_2	Economic	Implemented	NWT Housing Corporation, NWT Association of Municipalities, NWT Public Utilities Board
Nova Scotia					
Commercial Buildings Incentive Program	Use of energy simulation modelling and incentives to encourage use of optimal investment in energy efficiency in new buildings and retrofits.	CO_2, N_2O	Information Economic	Implemented	Government of Nova Scotia, Government of Canada
Energy Efficient Housing	Education and awareness on energy-efficient new housing and retrofit.	CO_2	Information	Implemented	Department of Natural Resources

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Nova Scotia (*continued*)					
Halifax Home Tune-Up Program	The goal of this two-year program is to improve energy efficiency, conserve water, and improve waste management practices and air quality in 2 000 homes in the greater Halifax area, by providing low-cost in-house environmental assessments. Homeowners receive written reports, including recommendations for improvements, an information package, a water conservation kit, and a list of long-term retrofits requiring contractor assistance.	CO_2	Information Voluntary Economic	Implemented	Department of Natural Resources
Light Better for Less	Improve lighting efficiency in small commercial operations. Electrical contractors are trained to perform lighting energy audits on small commercial facilities and recommend and install energy-efficient lighting. Wholesalers are asked to increase stock of lighting projects. Seminars and other marketing are directed at small commercial operators.	CO_2, N_2O	Information Voluntary	Implemented	Department of Natural Resources
Residential Energy Advisory Service	This program encourages the use of energy efficiency measures and renewable energy in new home construction and renovation. Activities are directed at contractors and homeowners. The program includes support for R-2000 Home program, EnviroHome projects, energy-efficient and renewable energy demonstration projects, and publications and videotapes on energy efficiency.	CO_2	Economic Voluntary Information	Implemented	Department of Natural Resources
Ontario					
Amendments to the Ontario Building Code	Amendments allow designers and builders to introduce more cost-effective energy efficiency measures to reduce GHGs, as well as facilitate the use of recycled building materials.	CO_2	Regulation	Implemented	Ministry of Municipal Affairs and Housing
EnerGuide for Houses	Provides a means for homebuyers to measure energy efficiency by providing information on energy-efficient housing.	CO_2	Information	Implemented	Ministry of Energy, Science and Technology
Reduction in Government Facilities and Operations	Program seeks to reduce GHG emission from government facilities and operations by 40% from the 1990 baseline levels.	CO_2	Policy	Implemented	Ministry of Environment

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Quebec					
Energy Efficiency Action Program in the Institutional Sector	The program provides financial support to encourage institutions to change their ways and promote energy efficiency. This assistance is intended for institutions that conduct energy analyses and feasibility studies that lead to the implementation of measures or projects designed to reduce energy bills by 10%.	CO_2	Voluntary Information	Implemented	Energy Efficiency Agency
NOVOCLIMAT Program	The goal of this program is to support initiatives designed to improve the energy performance of new houses by training and accrediting persons involved in the residential construction sector. The program will make it possible to develop a product and skills that will benefit consumers.	CO_2	Information	Implemented	Energy Efficiency Agency
Rules Governing Energy Performance Contracts	Amendment of the regulations governing construction contracts to allow all parts of the education system to award contracts designed to achieve savings as a result of energy improvements to buildings. These contracts are paid for with the savings achieved and include both professional services and construction work.	CO_2	Regulatory	Implemented	Government of Quebec
Saskatchewan					
EnerGuide for Houses	Objective is to further improve the energy efficiency and reduce the environmental impact of Canadian low-rise housing. EnerGuide for Houses evaluates the energy-related features of a house, estimates the home's annual energy requirements, and provides a comparative energy efficiency rating.	CO_2	Information	Implemented	Sun Ridge Group, Saskatchewan Energy and Mines, Natural Resources Canada
Energy Management Initiative	This initiative makes affordable improvements to health facilities to obtain optimum energy efficiency and cost benefits.	CO_2	Technology Transfer Information	Implemented	Saskatchewan Health
Energy Reduction Program	An initiative to modify or replace inefficient building systems such as lighting and heating, ventilation, and air conditioning systems, as well as to install building control systems to increase the energy efficiency of government-owned buildings. The goal of the program is to reduce energy consumption by 20%.	CO_2	Technology Transfer	Implemented	Saskatchewan Property Management Corporation

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Saskatchewan (*continued*)					
Northern Energy Efficiency Feasibility Study	This study is assessing the potential for pilot projects for improving the energy efficiency of public buildings in Northern Saskatchewan communities.	CO_2	Research	Implemented	Saskatchewan Environment and Resource Management
R-2000 Home	R-2000's goals are to promote energy-efficient housing in Saskatchewan and to provide the framework and procedures whereby builders may construct houses to the R-2000 standard and whereby the houses may receive a national R-2000 identification certificate.	CO_2	Voluntary Information	Implemented	Saskatchewan Homebuilders' Association
Residential Rehabilitation Assistance Program	Program includes several repair programs that benefit low-income homeowners and renters by bringing their homes up to minimum health and safety standards and improving energy efficiency. Also included is a program to encourage landlords to convert appropriate non-residential buildings to residential uses.	CO_2	Voluntary	Implemented	Saskatchewan Municipal Affairs, Culture and Housing
Yukon					
C-2000	Objective is to encourage increased energy efficiency and environmental performance in commercial buildings through enhanced awareness and understanding among building owners and through training courses for building designers and construction contractors.	CO_2	Information Education	Implemented	Yukon Housing Corporation
Commercial Energy Management Program	This program helps communities, First Nations, and private building owners and tenants to implement energy-efficient renovations, energy audits, general information, and financial incentives.	CO_2	Information Education	Implemented	Yukon Housing Corporation
Domestic Hot Water Timer Project	The Domestic Hot Water Timer Pilot Project is an initiative of the Yukon Development Corporation to help determine the compatibility of household hot water consumption use with pre-programmed control timers. The timers will be moved to new residences each year for three years to test their suitability in a total of 150 homes. The pilot project is a trial run for a broader peak reduction program for hot water tanks, which will help to decrease the reliance on diesel generation.	CO_2	Research	Implemented	Yukon Development Corporation

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Yukon (*continued*)					
EnerGuide for Houses	Provides site visits by energy auditors who test the home to determine its energy rating and consult with occupants on suggested improvements. Also provides low-interest financing to help carry out the energy audit recommendations.	CO_2	Information Voluntary	Implemented	Yukon Housing Corporation
Energy Audit	An energy audit was completed for City of Whitehorse facilities such as office buildings and arenas in 1998. The audit produced information about energy consumption rates and costs. Results of this audit have been used to identify priorities for building maintenance initiatives and retrofits to improve energy consumption and reduce costs.	CO_2	Information	Implemented	The City of Whitehorse
Energy Efficiency Initiative	This initiative promotes the efficient use of energy in the home and in the workplace by providing information to homeowners and businesses. A pilot project involving visits to over 100 homes has been completed. Demonstrations of energy-saving options for businesses are being conducted.	CO_2	Information	Implemented	Yukon Housing Corporation
Energy Management Plan for Government Buildings	The Yukon government is striving to set the example of sound energy management by demonstrating energy-saving systems and by providing a market for energy efficiency products and services. It has developed energy performance standards for Yukon government facilities. An overall energy management plan identifies opportunities to reduce operating costs and GHG emissions.	CO_2	Information	Implemented	Government of Yukon
Green Mortgages	This program encourages energy-efficient construction and the use of local labour and building materials through preferred mortgage rates. Homes must meet a strict energy budget.	CO_2	Economic	Implemented	Yukon Housing Corporation
Home Repair Program	This program is intended to upgrade Yukon homes to current building code standards of safety and comfort. As part of this, it also addresses energy efficiency.	CO_2	Policy	Implemented	Yukon Housing Corporation

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Yukon (*continued*)					
House Calls Energy Efficiency Program	This program promotes energy efficiency and information about climate change to residential consumers.	CO_2	Information	Implemented	Yukon Conservation Society, The Yukon Electricial Compant Ltd., Yukon Energy, Natural Resources Canada
Parking Lot Timer Project	The Parking Lot Timer Pilot Project is an initiative of the Yukon Development Corporation to reduce energy use through the installation of temperature-sensitive parking lot timers. The device triggers at a certain temperature and increases the flow of power to a vehicle as the weather becomes colder. The pilot project has been initiated at six locations in Whitehorse, and data will likely be compiled for three years. This information will be reviewed to examine a broader application of the program to reduce energy use during peak winter hours and decrease the reliance on diesel generation.	CO_2	Research	Implemented	Yukon Development Corporation
R-2000 Home	Promotes low-maintenance, energy-efficient housing through training, builder registration and certification, performance standards, inspections, testing, research and development, and information.	CO_2	Information Education	Implemented	Yukon Housing Corporation
Rental Rehabilitation Program	This program provides low-interest loans to landlords to improve the energy efficiency of rental units.	CO_2	Economic	Implemented	Yukon Housing Corporation
Residential Energy Management Program	This program provides low-interest loans to replace electric heat in residences with alternative heating systems.	CO_2	Economic Technology Transfer	Implemented	Yukon Housing Corporation

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Energy					
Government of Canada					
Accelerated Standards Action Program	This program builds on performance standards that are prescribed under the *Energy Efficiency Act*. The minimum standards are estimated to have accounted for over 10 Mt of annual aggregate emissions reductions in the year 2000.	CO_2	Policy	Implemented	Natural Resources Canada
Advanced Combustion Technologies Program	Program supports the development of pollution abatement and novel combustion technologies aimed at reducing emissions of acid rain precursors, GHGs, particulates, and hazardous substances from stationary power sources fuelled by coal, oil, natural gas, or biomass.	CO_2, CH_4, N_2O	Research	Implemented	Natural Resources Canada
Advanced Materials Technologies Program	Conducts research into innovative materials and processes that respond to environmental requirements and concerns and contribute to climate change mitigation.	CO_2	Research	Implemented	Natural Resources Canada
Asia Pacific Economic Cooperation Energy Working Group	This working group seeks to enhance understanding of policy issues and build the capacity of developing economies to implement energy policies consistent with sustainable development. Expert groups deal with energy efficiency and conservation, "clean" use of fossil fuels, new and renewable energy technology, and energy data and outlook, including CO_2 inventories and indicators.	CO_2	Information Technology Transfer Education	Implemented	Natural Resources Canada
Bio-Fuel Turbine Power Generation Systems	The project consists of the development and testing of systems for engine operation on liquid bio-oil fuel. Bio-oil fuels are derived from feedstock such as wood, grasses, wastepaper, and agricultural residues. The project will further advance the engine technology by redesigning and refining the combustion system and developing specifications for a full-scale power generation system.	CO_2	Research	Implemented	Industry Canada, Orenda Aerospace Corporation
Canada Climate Change Development Fund	The goal of the fund is to contribute to Canada's international objectives in climate change by promoting activities in developing countries that seek to address the causes and effects of climate change while at the same time contributing to sustainable development and poverty reduction. The focus will be on technology transfer and related activities in four programming areas: emission reduction, carbon sequestration, adaptation, and core capacity building for climate change.	CO_2, CH_4, N_2O	Information Technology Transfer	Implemented	Canadian International Development Agency

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Canada Energy Efficiency Project – India	This project builds Indian capacity to promote environmentally sound development through public and corporate policy making and cooperation in the fields of energy efficiency and GHG emissions.	CO_2, CH_4, N_2O	Policy Information Technology Transfer	Implemented	Canadian International Development Agency, Tata Energy Research Institute, International Institute for Sustainable Development
Canada/ European Union Science and Technology Agreement	This broad agreement covers all fields of science and technology including energy and enables Canadian researchers from either the public or private sectors to submit proposals for participation in the European Union's Framework Research and Development programs. The agreement also provides opportunities to participate in basic and applied research in non-nuclear energy.	CO_2, CH_4, N_2O	Information Research	Implemented	Natural Resources Canada
Canada India Rural Energy – India	This project aims to increase the utilization of alternative energy technologies among poor households in India. It also seeks to strengthen the capacity of a network of non-governmental organizations to deliver energy-related activities. An educational component of the project includes the development of curricula related to energy for secondary schools.	CO_2, CH_4	Information Education Technology Transfer	Implemented	Canadian International Development Agency, Partners in Rural Development, The Alternative Energy Network
Chamera Hydroelectric Project – India	This project seeks to upgrade the capacities of the National Hydroelectric Power Corporation to design and construct a hydroelectric dam.	CO_2	Information Technology Transfer	Implemented	Canadian International Development Agency, National Hydroelectric Power Corporation, SNC/Acres Joint Venture
Community Energy Systems	Program helps Canadian communities meet their energy needs by identifying and developing opportunities for the use of district heating and cooling, combined heat and power (co-generation), waste heat recovery, thermal storage, and local sources of renewable energy, particularly biomass.	CO_2	Information	Implemented	Natural Resources Canada
Electricity Energy Efficiency Project – Brazil	Through this project, the Brazilian National Energy Efficiency Program (PROCEL) is building its capacity by drawing on successful Canadian models of demand-side management to change consumer patterns of electricity consumption and to improve efficiencies, in order to slow the expansion of electrical energy consumption.	CO_2	Information	Implemented	Canadian International Development Agency

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
EnerGuide for Equipment	Program ensures that new major household appliances and room air conditioners comply with the *Energy Efficiency Act* and show a yearly energy consumption rating (major household appliances) or an energy efficiency ratio (air conditioners). All ratings are based on standard test procedures. Labelling helps consumers obtain consistent and reliable information on energy performance.	CO_2	Legislative	Implemented	Natural Resources Canada
Energy Efficient Equipment and Appliances	Regulation aimed at eliminating inefficient energy-using equipment from market by prescribing minimum performance levels.	CO_2	Regulatory	Implemented	Natural Resources Canada
Extension of the Manufacturing and Processing Tax Credit	Tax credit designed to encourage investment in new electrical generating capacity.	CO_2	Economic	Implemented	Department of Finance
Government Purchases of Electricity from Renewable Resources	The federal government will displace its purchases of carbon-intensive sources of electricity with emerging renewable sources. The target under this measure is to purchase 400 000 MWh of electricity annually. The electricity must be generated from a source or the new portion of an expanding generating facility commissioned after April 2001.	CO_2, CH_4, N_2O	Economic Policy	Implemented	Government of Canada
Greenhouse Gas Emission Reduction Trading Pilot	Program is designed to test the effectiveness of emission reduction trading for GHGs in the Canadian context. Buyers and sellers of emissions reductions submit documentation on traded projects to a multistakeholder committee for review. If the emissions reductions satisfy the requirements of the pilot, they are registered and will be eligible for recognition against future compliance obligations.	CO_2, CH_4, N_2O	Economic	Implemented	Government of Canada, Government of Alberta, Government of Nova Scotia, Government of Saskatchewan, Government of Quebec
Green Power Procurement Initiative	This initiative commits to displacing purchases of high-carbon electricity with electricity from emerging renewable sources, referred to as “green power.” In addition to reducing GHG and other emissions in federal operations, this initiative provides a demand for green power and encourages electric utilities to market this type of power to other customers.	CO_2, CH_4	Economic	Implemented	Natural Resources Canada, Environment Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Hemispheric Energy Initiative	This initiative is the primary vehicle for multilateral energy cooperation and information sharing with Latin America. Initiatives promote information exchange and the identification of areas for future cooperation linked to energy-efficient buildings and equipment, including the development of energy standards.	CO_2	Information	Implemented	Natural Resources Canada
Impact Assessment and Studies of Electrical Distribution Network – Senegal	The studies will help build capacity by determining the best design for high-voltage transmission lines, which will improve the efficiency of the distribution network, thereby reducing GHG emissions.	CO_2	Policy	Implemented	Canadian International Development Agency
Improved Tracking and Reporting of Energy Efficiency and Emissions Trends	This program involves enhancing and extending the industrial portion of the National Energy Use Data Base by better aligning the existing survey instruments administered by Statistics Canada and by increasing the scope and timeliness of their results.	n.a.	Information	Implemented	Natural Resources Canada, Statistics Canada
India Canada Environment Facility – India	This umbrella project seeks to enhance Indian capacity to implement sustainable development activities in the water and energy sector. There are over 15 projects currently under way, a number of which have a climate change component. Includes tree plantations, coastal wetlands, wind energy, and other initiatives.	CO_2	Information	Implemented	Canadian International Development Agency, Canadian High Commission India
International Energy Agency	Emphasizes climate change policy options and their impacts, and develops International Collaborative Research and Development agreements.	CO_2	Policy Research	Implemented	Natural Resources Canada
Kerala State Electricity Board Systems Enhancement Project – India	This project aims to increase the availability of electricity in Kerala State in part through reduction of energy losses in the transmission and distribution systems. It will also build capacity for operating efficiency related to water and energy use management.	CO_2	Information Technology Transfer	Implemented	Canadian International Development Agency, SNC/Lavalin, Kerala State Electricity Board, Thiruvananthapuram, Kerala, Andhra Pradesh State Electricity Boards

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Market Incentive Program	The purpose of this program is to provide incentives to electricity retailers to purchase or produce electricity based on emerging renewable electricity sources from new or expanded generating capacity, or to promote the sales of electricity from emerging renewable energy sources.	CO_2	Fiscal	Implemented	Natural Resources Canada
Memorandum of Understanding – Chinese Ministry of Water Resources	Involves cooperation in small hydro power research and development, training of technical personnel, and technology transfer.	CO_2, CH_4, N_2O	Research Technology Transfer	Implemented	Natural Resources Canada
Memorandum of Understanding – Korean Ministry of Commerce, Industry and Energy	Seeks to promote discussion and information exchange and facilitate bilateral cooperation on climate change. The MOU also provides opportunities for joint projects under the Clean Development Mechanism.	CO_2	Information	Implemented	Natural Resources Canada
Memorandum of Understanding – Korean Institute of Energy Research	Provides for cooperation on energy and environmental research and development and on technology transfer.	CO_2	Information Research Technology Transfer	Implemented	Natural Resources Canada
Memorandum of Understanding – Mexican Secretariat of Energy	Provides for cooperation to increase energy efficiency in both countries and encourage use of alternative energy. The memorandum also enhances trade, investment, technical, and other exchanges with respect to energy-efficient products, energy management services, and alternative energy goods and services.	CO_2, CH_4, N_2O	Information	Implemented	Natural Resources Canada
Memorandum of Understanding – United States Department of Energy	Provides for cooperation in research and development in all areas of non-nuclear energy research and development, including energy efficiency in buildings, industry, and transportation, renewables, and cleaner fossil fuels. Cooperation is effected through Implementing Arrangements.	CO_2	Research	Implemented	Natural Resources Canada
Mining and Mineral Science Laboratories	Conducts research in underground mine environment and mine mechanization and automation to reduce energy use in the mining industry.	CO_2	Research	Implemented	Natural Resources Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Model Electrical Utility at Jacmel – Haiti	The project is creating the first electrical utility that will operate with low losses in Haiti. This is being achieved mainly through training and development of the electrical utility's staff.	CO_2	Voluntary Technology Transfer	Implemented	Canadian International Development Agency
Model National Energy Code	Aims to increase the energy efficiency of new Canadian houses and buildings by specifying minimum energy requirements. This program supports the implementation and adoption of these model national energy codes by relevant authorities who have jurisdiction for buildings and houses. This program also monitors and analyzes the impact of such codes.	CO_2, CH_4	Regulatory	Implemented	Natural Resources Canada
National Energy Use Database Initiative	This initiative enables monitoring and evaluation of progress toward its goal of limiting GHG emissions, providing information to support the development of future initiatives, and ensuring the development of a base of expertise in the analysis of energy consumption at the end use level.	CO_2, CH_4, N_2O	Information Research	Implemented	Natural Resources Canada
National Fuel-Cell Research and Innovation Initiative	This initiative involves collaborative industrial research, technology development, demonstration, and deployment related to the use of fuel cells for alternative energy production.	CO_2, CH_4, N_2O	Research	Implemented	Natural Resources Canada
Oil and Gas Project Phase II – Bolivia	This project has assisted Bolivia in building the capacity to develop environmental regulations and guidelines and contributed to increases in gas reserves, which will help reduce CO_2 emissions in Bolivia.	CO_2	Information	Implemented	Canadian International Development Agency
Oil and Gas Technology Transfer Programme – China	This project assists in the optimal recovery of China's oil and gas resources by upgrading the capacity of selected petroleum institutions and research centres. Canadian experts were sent to China to conduct specialized courses in various aspects of oil and gas engineering, and selected Chinese experts were sent to Canada for the latest training in oil and gas technology used in Canada.	CO_2, CH_4	Research Information	Implemented	Natural Resources Canada
Petroleum Regulatory Assistance – Peru	This project focuses on strengthening the regulation and monitoring of the hydrocarbon sector. With a better regulatory system for the natural gas sector, the use of this resource will replace current fuels, resulting in lower emissions.	CO_2	Regulatory	Implemented	Canadian International Development Agency, CIPID

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Program of Energy Research and Development	This fund focuses on the economic and environmental impacts of the non-nuclear energy sector. It supports and complements a wide range of energy science and technology initiatives undertaken by 11 federal departments and agencies in Canada. The program supports the development of a range of environmentally and economically sustainable energy production and end use technologies.	CO_2, CH_4, N_2O,	Policy Research Information	Implemented	Natural Resources Canada
Regional Electrical Energy Project – Central America	This project supports the reform of the electrical subsector and enhances regional collaboration in the exchange of electricity. Its activities include increasing efficiencies, reducing losses, introducing demand-side management, helping develop strategies for increased use of hydroelectric resources, and providing support for an initiative to determine the feasibility of importing natural gas into the region. The project builds the capacity of the region to effectively manage its energy resources. The outcome of these initiatives is the reduction of the level of CO_2 emissions.	CO_2	Policy Technology Transfer	Implemented	PREEICA, Canadian International Development Agency
Renewable Energy and Hybrid Systems for Remote Communities	Program accelerates the deployment of renewable energy technologies to more than 300 remote communities that are not connected to the main electricity grid or natural gas networks.	CO_2	Technology Transfer	Implemented	Natural Resources Canada
Renewable Energy Technologies Program	Program supports efforts to develop and commercialize advanced renewable energy technologies that can serve as cost-effective and environmentally responsible alternatives to conventional energy generation. The program supports the development of technologies — including active solar, wind energy, small hydro (less than 20 MW), and biomass.	CO_2	Research	Implemented	Natural Resources Canada
SADC Industrial Energy Management Project	The project is increasing the capacity of consulting engineers, industrial firms, and educational institutions in the SADC region to develop industrial energy management programs, undertake energy efficiency projects, and offer education/training programs in energy conservation and management in Africa.	CO_2	Information Technology Transfer	Implemented	Canadian International Development Agency

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Strategic Energy Planning for Southern China	This project transfers appropriate processes and techniques to build capacity in China for developing a comprehensive strategy to provide power and coal for Southern China within an economically, environmentally, and socially sustainable energy management framework.	CO_2, CH_4	Technology Transfer Information	Implemented	Canadian International Development Agency
Support to the Electricity Sector in Bamako – Mali	This project supports and builds capacity for strategic planning activities directed toward improving operational efficiency and maintenance of high-voltage transmission systems of hydroelectricity.	CO_2	Policy	Implemented	Canadian International Development Agency
Tax Incentive for Flare Gas Generation	Made generating equipment fuelled by flare gas at oil fields eligible for a higher capital cost allowance under federal tax regulations. This helps to reduce GHG emissions in the oil and gas industry due to a more controlled combustion process, as well as through the displacement of coal-fired electricity generation.	CO_2	Economic	Implemented	Department of Finance
Tax Incentive for Renewable Energy and Energy Efficiency	Improved access to financing for renewable energy and energy efficiency by relaxing the "specified energy property" rules and expanding the eligibility for flow-through shares to include pre-production costs pertaining to eligible investments in the renewable energy industry. The specified energy property rules were relaxed to allow manufacturing and processing and mining companies undertaking energy efficiency and renewable energy investments to claim the accelerated tax write-offs associated with these investments against income from all sources.	CO_2	Economic	Implemented	Department of Finance
Technology Early Action Measures	Provides funding support for early action technology projects to reduce GHG emissions domestically and internationally, while sustaining economic and social development.	CO_2, CH_4, N_2O, PFCs, SF_6, HFCs	Technology Development and Demonstration	Implemented	Government of Canada
Voluntary Challenge and Registry Inc.	This not-for-profit corporation is dedicated to encouraging private and public sector organizations to voluntarily limit their net GHG emissions by having registered action plans. Federal and provincial governments are represented on the Board of Directors.	CO_2, CH_4, N_2O, PFCs, SF_6, HFCs	Voluntary	Implemented	Voluntary Challenge and Registry Incorporated

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
WARSEK Rehabilitation Project – Pakistan	This project will assist the Water and Power Development Authority to rehabilitate the WARSEK dam and power station through engineering services, capacity building, and technology transfer.	CO_2	Information	Implemented	Canadian International Development Agency, SNC Lavalin, Water and Power
Alberta					
Geological Sequestration of CO_2 in Alberta Project	This project is assessing the suitability of subsurface for CO_2 sequestration in one of five ways: use in enhanced oil recovery; use in enhanced coal bed methane recovery; storage in depleted oil and gas reservoirs; injection and sequestration in deep saline formations; and storage in salt caverns.	CO_2	Research	Implemented	Development Authority, Department of Resource Development
Improved Coal Combustion Research	An ongoing project to evaluate the combustion, heat transfer, and pollutant characteristics of coal combustion in an enriched oxygen medium with recycled CO_2 from flue gas. Research is aimed at providing a credible database for the development of more energy-efficient fossil-fired power generation cycles, which can produce a purified stream of CO_2 for direct removal from a power plant.	CO_2	Research	Implemented	Department of Resource Development
Injection of CO_2 into Deep Alberta Coal Beds for the Production of Methane	Research is directed toward developing synergies with O_2/CO_2 recycling technology, utilizing the O_2/CO_2 combination furnace to produce a pure CO_2 flue gas that would be captured and used in the coal bed methane technology for the recovery of CH_4. This would result in a zero-emission scenario.	CO_2, CH_4	Research	Implemented	Department of Resource Development
Removal of Barriers to Use of Otherwise Flared Solution Gas	Key priorities have been the creation of a royalty waiver program removing barriers to electricity generation using solution gas that otherwise would be flared.	CO_2, CH_4	Regulatory Voluntary	Implemented	Department of Resource Development, Energy and Utilities Board
British Columbia					
BC Hydro Greenhouse Gas Initiatives	Several initiatives designed to reduce GHG emissions by making 10% of all BC Hydro's new electrical generation resource acquisitions green resources, identifying realistic green energy options, including green energy supplies, new products or services, and new business ventures, and a customer energy efficiency program. BC Hydro is also increasing the energy efficiency of its own operations and facilities.	CO_2	Voluntary	Implemented	BC Hydro

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
British Columbia (*continued*)					
Cleaner Power	Purchasing and developing less GHG intensive power. Meeting 10% of new demand with "green energy."	CO_2, CH_4, N_2O	Voluntary	Implemented	BC Hydro
Energy Futures Program	Program identifies realistic green energy options, including green energy supplies, new products or services, and new business ventures. Options being considered are wind, micro-hydro, wood waste, community energy planning, and green energy certification.	CO_2, CH_4, N_2O	Voluntary	Implemented	BC Hydro
GHG Offsets	Buying emissions reductions.	CO_2, CH_4, N_2O	Voluntary	Implemented	BC Hydro
Green Power Procurement and Renewables	BC Hydro is engaged in purchasing power from independent power producers who generate electricity using proven green technologies such as hydro and biomass.	CO_2, CH_4, N_2O, SF_6	Economic Policy	Implemented	Government of British Columbia
Power Smart	Helping customers reduce their electricity consumption through energy efficiency.	CO_2, CH_4, N_2O	Information Economic	Implemented	BC Hydro
Resource Smart	Improving the energy efficiency of the operations and facilities of British Columbia's electrical utility.	CO_2, CH_4, N_2O, SF_6	Voluntary	Implemented	BC Hydro
Renewable Energy Technology	The program provides financial assistance for public education and outreach projects and demonstration projects that test the commercial viability of renewable energy technologies in thermal and electricity generation applications.	n.a.	Technology Development	Implemented	Government of British Columbia
New Brunswick					
Co-generation Policy	A policy to encourage the purchase of electricity by the utility in cases where an industry is modernizing or expanding. The project reduces annual emissions, while opportunities to increase the level of co-generation are continually being sought.	CO_2	Policy	Implemented	Department of Natural Resources and Industry
Energy Efficiency Standards for Equipment	The objective of this program is to improve the energy efficiency of selected products and eliminate the use of inefficient ones. Numerous types of equipment, such as refrigerators, washers, electric motors, and lighting, are regulated for minimum energy efficiency levels.	CO_2	Regulatory	Implemented	Department of Natural Resources and Industry

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Northwest Territories					
Energy Conservation Capital Program	Assists territorial and community-funded departments, boards, and agencies, as well as non-profit organizations, by providing grants to support and finance projects that reduce usage of electrical and heat energy and water.	CO_2	Economic	Implemented	Arctic Energy Alliance
Establishment of the Arctic Energy Alliance	The mandate of the Alliance is to help communities, consumers, producers, regulators, and policy makers to work together to reduce the cost and environmental impacts of energy.	CO_2	Information	Implemented	Arctic Energy Alliance NWT Power Corporation, NWT Housing Corporation, NWT Association of Municipalities, NWT Public Utilities Board
The Public Awareness Program	Program provides information about the wise use of energy to all segments of the population.	CO_2	Education Information	Implemented	Arctic Energy Alliance
Nova Scotia					
Energy-Efficient Appliances Act and Regulations	This program sets minimum efficiency levels for energy-using appliances and equipment sold or leased. The act and regulations are intended to increase the energy efficiency of energy-using equipment available in the marketplace and to prevent the dumping of energy-inefficient appliances in the marketplace.	CO_2	Regulatory	Implemented	Nova Scotia Natural Resources
Green Energy and Renewables	Work with utility to establish green power purchase program and increase access for green energy.	CO_2, CH_4, N_2O, SF_6	Policy Economic	Implemented	Government of Nova Scotia, Nova Scotia Power Inc.
Nunavut					
Energy Management	The energy management program promotes energy management and community energy planning with local government, regional staff, and other decision makers, raises awareness, performs energy assessments of major buildings and facilities, and determines the potential for energy management projects that would ensure benefits to the community.	CO_2	Information Education	Implemented	Government of Nunavut
Solarwall Demonstration Project	This passive solar technology preheats air before it is drawn into a building's heating and ventilation system. In order to assess its use in the north, the test project is being conducted on a school in Ranken Inlet.	n.a.	Technology Development and Demonstration	Implemented	Government of Nunavut

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Ontario					
Electricity Sector Reform Egypt – Special Institutional Support Program	This project aims to support reform of the energy sector in Egypt and encourage greater efficiency, through capacity building of local authorities to reduce electricity losses.	CO_2	Information	Implemented	Ontario Hydro, ARA, KPMG
Energy Competition Act	Encourages investment in clean power generation with greatly reduced or negligible GHG emissions. The Act also seeks to create an open electricity market and opportunities for renewable energy sources and high-efficiency generation.	CO_2, CH_4, N_2O	Legislation	Implemented	Ministry of Energy, Science and Technology
Energy Education Program	This program provides information about the environmental benefits of energy efficiency and conservation to teachers and students, allowing them to make informed choices about energy use.	CO_2	Information Education	Implemented	Ministry of Energy, Science and Technology
Energy Efficiency Act and Regulations	The purpose of this program is to prohibit the sale or lease of specified inefficient energy-using appliances or products from the Ontario marketplace by regulation. Performance standards are harmonized with similar requirements in other jurisdictions. Randomly chosen appliances and products are periodically retested to determine compliance with the Act and Regulations.	CO_2	Regulatory	Implemented	Ministry of Energy, Science and Technology
Environmental Information Disclosure	This tool enables electricity retailers to market power supplied from renewable sources. It requires electricity retailers to inform consumers about their generation sources.	CO_2	Information	Implemented	Ministry of Energy, Science and Technology
Legislation Reducing Taxes for Environmentally Friendly Water Power	Encouraging new investment in hydroelectric power stations, which emit negligible amounts of GHGs.	CO_2	Legislation Economic	Implemented	Ministry of Energy, Science and Technology

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Prince Edward Island					
Atlantic Wind Test Site – North Cape	The site facilitates the evaluation, development, and demonstration of wind energy systems and equipment.	CO_2, N_2O	Research	Implemented	Department of Development and Technology
Wind Powered Electrical Generation Facility	Project includes the erection of eight utility grade wind turbines with a nominal capacity of 5.2 MW to annually produce approximately 16 600 MWh of emissions-free electricity.	CO_2, N_2O	Technology	Implemented	Prince Edward Island Energy Corporation, Natural Resources Canada, Maritime Electric
Quebec					
ÉcoGESte Program	The Quebec program to record voluntary action on climate change aims to involve as many people as possible from all areas of activity in taking voluntary action to reduce GHG emissions to their 1990 level.	CO_2, CH_4, N_2O	Voluntary Education	Implemented	Department of the Environment, Department of Natural Resources
Energy Efficiency Agency	This agency has formed partnerships with various organizations to promote energy efficiency. Clients targeted are mainly the industrial and institutional sectors, small- and medium-sized firms, and homeowners.	CO_2, N_2O	Policy Information	Implemented	Department of the Environment
Energy Productivity Program	Program is designed for industries, institutions, municipalities, and agriculture and transportation sectors whose yearly energy bill is greater than $50 000. The program supports feasibility studies and demonstration projects.	CO_2, CH_4, N_2O	Policy	Implemented	Department of Natural Resources
House and Building Regulations	Modified regulations on the energy efficiency of equipment powered by electricity or hydrocarbons to include new equipment. New efficiency requirements for equipment already covered by this regulation have also been introduced. These regulatory changes will have a dual effect, since they will contribute to stabilizing the energy bills of consumers while reducing GHG emissions.	CO_2	Regulatory	Implemented Planned	Energy Efficiency Agency
Support Service for Low-Income Households	The object of this educational activity is to support the efforts made by households to make more efficient use of the energy they consume and thus reduce their energy bills. This is done in partnership with organizations in the community.	CO_2	Information	Implemented	Energy Efficiency Agency

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Quebec (*continued*)					
Support Service for the Municipal Sector	Provides support for municipal authorities to offer education, training, and awareness raising concerning energy efficiency and the technical implementation of research and development and demonstration projects for the purpose of reducing their energy expenditures and the bills paid by their residents.	CO_2	Information	Implemented	Energy Efficiency Agency
Saskatchewan					
Climate Change Action Plan Initiative	Projects include research and development that have focused on clean coal technology, the capture and storage of CO_2, and terrestrial carbon sequestration.	CO_2	Research Technology Transfer	Implemented	SaskPower
Climate Change Initiative	This initiative searches for new and additional ways to reduce impacts on the environment by improving the energy efficiency of businesses and the public and help them reduce their GHG emissions. These initiatives consist of workshops, natural gas vehicle conversions, residential, industrial, and commercial building energy management programs, and various research and development initiatives.	CO_2	Voluntary Information Economic	Implemented	SaskEnergy
Internal GHG Initiative	This program establishes a commitment to purchase green power from SaskPower for several government buildings and vehicles. Projects include wind farm operation, monitoring and reporting, and market penetration studies.	CO_2, N_2O	Fiscal Economic Policy Technology	Implemented	Government of Saskatchewan, SaskPower
International Test Centre for Carbon Dioxide Capture	This facility will develop technologies to reduce CO_2 emissions, especially those produced by the energy sector.	CO_2	Technology Transfer Research	Implemented	SaskPower, Natural Resources Canada
Weyburn CO_2 Injection Monitoring Project	Program to develop a comprehensive understanding of CO_2 injection into oil-bearing geological structures.	CO_2	Research	Implemented	SaskPower
1-800 Energy Conservation Line	Providing energy efficiency and conservation information to Saskatchewan residents through this toll-free telephone service.	CO_2	Information	Implemented	SaskEnergy

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Yukon					
Energy Awareness Month	This education/awareness campaign is held each year in November. The campaign includes speakers, workshops, and articles in various media.	CO_2	Education Information	Implemented	Government of Yukon
Energy Infrastructure Loans for Resource Development Projects	Program is designed to encourage the responsible and efficient use of energy in the development of resources in the Yukon. It assists Yukon's resource development sector by deferring the high capital cost of building energy infrastructure.	CO_2	Economic	Implemented	Government of Yukon
Energy Solutions Centre	The Canada/Yukon Energy Solutions Centre is a joint initiative led by Yukon Development Corporation and Natural Resources Canada. It provides technical services to facilitate energy solutions for residential, commercial, and government consumers and to improve the delivery and effectiveness of federal and territorial energy programs. It contributes to training and development of Yukon expertise and conducts public awareness and outreach activities relating to energy and climate change.	CO_2	Information	Implemented	Yukon Development Corporation, Natural Resources Canada
Green Power Initiative	This initiative encourages the production of energy from renewable sources in an environmentally sustainable manner. Program seeks to displace diesel electricity production and reduce GHG emissions, especially in communities served only by diesel-generated electrical power.	CO_2	Research Information	Implemented	Government of Yukon
Mayo-Dawson Transmission Project	This initiative will connect the City of Dawson to the Mayo hydro plant to make use of surplus electricity. Connecting Dawson (and residents between Mayo and Dawson) to the grid will eliminate primary dependence on diesel generators. While this project was first considered in 1991–1992, it was only recently that it became economically justifiable. Bids will be reviewed in spring 2001, and the new transmission line should be complete by the end of 2002.	CO_2	Economic	Proposed	Government of Yukon
Renewable Energy Resource Assessment	The Yukon Development Corporation works to identify Yukon's renewable energy resource potential on a comprehensive and systematic basis to assess the value for future supply. This involves assessments, database	CO_2	Economic	Implemented	Government of Yukon

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Yukon (*continued*)					
	development, mapping renewable hydro potential for wind, geo-thermal, and biomass resources, as well as pilot projects, such as the commissioning of a portable solar/hybrid prototype and investigating hydro feasibility. The Renewable Energy Resource Assessment also monitors and participates in initiatives that impact on land use, such as the Protected Areas Strategy and regional land use planning.	CO_2	Research	Implemented	Yukon Development Corporation
Renewable Power Sales Incentive Program	This program encourages the use of surplus renewable electricity to displace fossil fuels used for space and water heating. The program will guarantee a return on investment to customers who install the equipment necessary to purchase secondary power.	CO_2	Economic	Implemented	Government of Yukon
Rural Electrification Program	This program is available to Yukon residents in areas not serviced by utility power. It encourages the installation of renewable alternative energy systems through information and low-interest loans. Approximately 20 solar energy projects have been completed since the program was introduced in 1998.	CO_2	Research	Implemented	Government of Yukon
Trade Training	The Yukon Housing Corporation in cooperation with Yukon College and other institutions sponsors various courses for tradespeople on energy-related subjects. These courses include heating systems, ventilation systems, and R-2000 technologies.	CO_2	Information Education	Implemented	Yukon Housing Corporation, Yukon College
Wind Power Program	Applied research and development on wind energy. The goal of this program is to overcome the technical barriers (primarily ice accumulation) to commercial-scale wind energy production.	CO_2	Research	Implemented	Government of Yukon
Wind Research and Development Initiative	The Yukon Development Corporation and Yukon Energy Corporation are conducting applied research and development on wind energy on a pilot project basis. Various test sites throughout the Yukon have been monitored over the last five years, and more are in progress through the Community Wind Resource Assessment Program to better determine the viability of the wind regime. Two commercial wind turbines are in production at Haeckel Hill near Whitehorse. The program's goal is to overcome the technical barriers (primarily ice accumulation) and improve the cost-competitiveness of commercial-scale wind energy.	CO_2	Research	Implemented	Yukon College, Yukon Development Corporation, Yukon Energy Corporation

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Forestry					
Government of Canada					
Afforestation Program Development Initiative	Planning and designing afforestation program in Canada, including cost-shared pilots with provinces/territories. This is a preparatory action to carry out program development work that may lead to a larger-scale Phase Two national afforestation program.	CO_2	Policy	Implemented	Natural Resources Canada
Agroforestry Sector Development	Encourage sustainable use of existing timber stands; new stands of fast-growing trees; shelterbelts on cultivated land.	CO_2	Voluntary Education	Implemented	Natural Resources Canada
Asia Regional Fire Danger Ratings System	This project seeks to increase Asian capacity to develop long-term solutions for responding to and monitoring forest fires in the Association of Southeast Asian Nations region.	CO_2	Information	Implemented	Natural Resources Canada
Assessing the Carbon Budget of Circumpolar Forests	This project, a joint initiative with the United Kingdom, Russia, and Scandinavia, involves collaboration to improve our understanding and management of the role of circumpolar boreal forests in the global carbon budget cycle.	CO_2	Information	Implemented	Natural Resources Canada
Boreal Ecosystems Productivity Simulator (BEPS)	BEPS is a remote sensing approach to quantifying the terrestrial carbon cycle. The development of BEPS and its validation and application has been the focus of a government–industry team led by scientists.	CO_2	Research	Implemented	Natural Resources Canada
Broadleaf Forest Development – Honduras	Through this project, sustainable forest management practices are being introduced to reduce deforestation, improve knowledge about protection and harvesting of forests, and manage land use.	CO_2	Information	Implemented	Natural Resources Canada
Chiloe Model Forest Technology Transfer Fund – Chile	Fund supports work with the Chilean Ministry of Agriculture to enhance its capacity to introduce Canada's "model forest" approach in Chiloe.	CO_2	Technology Transfer	Implemented	Canadian International Development Agency

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Developing a National Upscaling Strategy for Carbon Budgets of Canada's Forest Ecosystems Using Remote Sensing, Tower Flux, and Inventory Data	This strategy will improve national estimates of how much carbon is stored in Canada's forests. The project will combine the measurement of CO_2 exchanged between the ecosystem and the atmosphere, obtained from tower-based instruments, with satellite information on what types of vegetation are in the forests. The use of satellite imagery will also allow scientists to develop models of the amount of carbon in our forests. This will assist in predicting how forests are responding to climate change.	CO_2	Research Information	Implemented	Natural Resources Canada
Economic Development for Economic Conservation – Costa Rica	This project supports ecological conservation through organic agriculture and appropriate ecotourism initiatives. Through improved conservation of forests, it contributes to reducing GHG concentrations in the atmosphere.	CO_2	Information	Implemented	Canadian International Development Agency
Energy for the Forest	Program funds research relating to biomass energy production. The program seeks to advance the understanding of the role of biomass production in the global carbon cycle.	CO_2	Research	Implemented	Natural Resources Canada
Fire Protection – Adaptation Responses to Climate Change	Project in place, as part of its climate change research program, focused on improving our fire and insect prediction capabilities and devising improved options and strategies to adapt and respond to future fire conditions.	CO_2	Research	Implemented	Natural Resources Canada
Global Observation of Forest Cover	This program aims to improve the quality and availability of satellite observations of forests at regional and global scales and, together with *in situ* observations, produce useful, timely, and validated information.	CO_2	Information	Implemented	Natural Resources Canada
GlobeSAR-2 RADARSAT – South America	This project is assisting in resource management by tracking deforestation and reduction of wetlands. This knowledge will contribute to increased capacity of South American decision makers to sustainably manage their forest resources. This will result in the protection of these important carbon sinks.	CO_2	Information	Implemented	Canadian International Development Agency

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Implications of Climate Change for Canada's Forest: Climate Change Research	This program aims to improve Canada's understanding and prediction of the impacts of climate change on our forest ecosystems and develop forest management options and responses for adapting and responding to these impacts.	CO_2	Research	Implemented	Natural Resources Canada
International Institute for Applied Systems Analysis	Collaborates on research related to forest carbon cycles in the Siberian forest and links with research being conducted by the International Boreal Forest Research Association.	CO_2	Research	Implemented	Natural Resources Canada
KALTIM Social Forestry Project – Indonesia	This project seeks to build capacity for the establishment of an approach and methodology for community-based forest management, which will result in a more sustainable management of carbon sinks.	CO_2	Information	Implemented	Canadian International Development Agency
Kunming Horticulture Exposition – China	This project provides support for reforestation and enhanced awareness of the importance of trees for environmentally sustainable development in China.	CO_2	Education	Implemented	Canadian International Development Agency
Old Crow Flats Wetlands Assessment	Environment Canada, in partnership with Laval University, is conducting a retrospective analysis of changes in water cover of the Old Crow Flats. The Old Crow Flats is a Ramsar site (a wetland of international significance). Satellite imagery is being used to track changes in this permafrost-melt landscape. Residents of the aboriginal community of Old Crow have told scientists that the wetlands are drying up due to the changing climate. This Northern Ecosystem Initiative demonstration project is developing methodology that can be applied to other extensive northern wetlands.	CO_2	Research	Implemented	Environment Canada, Laval University
Role of Canada's Forests in the Global Carbon Cycle	This program consists of projects that aim to improve our understanding of carbon storage and release from forests under past, present, and future conditions. The projects also seek to define and evaluate forest management activities that might enhance and sustain storage of atmospheric carbon in forest areas.	CO_2	Research	Implemented	Natural Resources Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Sustainable Forest Management – Cameroon	The objective of this project is to support the implementation of Cameroon's sustainable forest management policies through institutional support.	CO_2	Information	Implemented	Canadian International Development Agency
Tree Canada Foundation	The Foundation provides education, technical assistance, resources, and financial support through working partnerships to encourage Canadians to plant and care for trees in urban and rural environments in an effort to help reduce the climate change effects of CO_2 emissions.	CO_2	Policy Information	Implemented	Tree Canada
Tree Growers Cooperative – India	This project seeks to create a sustainable model for village-based community forestry through local capacity building. It will contribute to the protection and enhancement of carbon sinks.	CO_2	Information	Implemented	Canadian International Development Agency
Tree Link – Southeast Asia	This project helps to build the capacity of the region to manage its forest resources. Specifically, it supports the development and implementation of policies and practices for forest renewal, conservation, and protection.	CO_2	Information	Implemented	Canadian International Development Agency
Zambezi Wetlands Conservation – South Africa	The primary objective of this project is conservation and sustainable use of the Zambezi wetlands. This will be accomplished through information dissemination to decision makers, which will help build their capacity to manage these wetlands. A by-product of such action is the preservation of a carbon sink.	CO_2	Information	Implemented	Canadian International Development Agency
Alberta					
Build Awareness to Determine Best Forest Management Practices in Relation to Sinks	Work with private landowners (especially those with agricultural activities) to ensure that they have sufficient knowledge, from both an afforestation and an agricultural activity perspective, to make informed decisions about which programs to undertake. This type of program would be built in partnership with those in the sector with appropriate experience.	CO_2	Information Education	Implemented	Alberta Environment
Foothills Model Forest/ Sustainable Forest Management Network	Supports research into the carbon dynamics of forests and other landscapes of the boreal forest. The Foothills Model Forest has compared the impact of wildfire disturbance and wood products manufacture on the sequestering of carbon. In the last two years, the Network investigated the size and	CO_2	Research	Implemented	Alberta Environment

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Alberta (*continued*)					
	dynamics of some of Alberta's largest carbon pools, such as peatlands. During the next few years, the Network plans to investigate the accuracy of measurement of carbon fluxes in Alberta's forest landscapes.				
British Columbia					
Afforestation Initiative – Regional Pilot	A two-phase development/implementation program to afforest privately owned marginal agricultural land, to be developed as a public/private partnership and in cooperation with the federal government.	CO_2	Voluntary	Implemented	Ministry of Forests
Carbon Budget Modelling	Program analyzes carbon emissions for tree farm licences and timber supply areas under combinations of potential accounting rule scenarios.	CO_2	Research	Implemented	Ministry of Forests
Ethanol Production from Wood Waste	The objective of the initiative is to facilitate the establishment of a new technology approach to ethanol production from wood waste.	CO_2	Research	Implemented	Ministry of Employment and Investment, B.C. Trade and Investment Office
Fire Management Technology Transfer Project – Argentina	Project is working with the Argentinean National Fire Management Organization to develop a national infrastructure for the prevention and management of forest fires in Argentina.	CO_2	Technology Transfer	Implemented	Ministry of Forests
Research and Modelling Towards Developing a Carbon Management Accounting Framework	Development of a carbon management accounting framework for forests that focuses on four key areas: developing standards for carbon measuring, reporting, and monitoring for the province with links to national standards; investigating the development of a carbon information system, enabling forest companies to submit operational data for automatic processing/reporting; researching soil carbon storage to develop regionally specific conversion factors relating merchantable volume to estimates of soil carbon storage; and investigating legislative changes required to establish non-timber rights to sequestration credits as an incentive to forest carbon sink projects.	CO_2	Research Information	Implemented	Ministry of Forests
New Brunswick					
Afforestation and Reforest-ation Initiative	An afforestation component of its private land silviculture program that is planting trees on abandoned, privately owned farmland.	CO_2	Voluntary	Implemented	Government of New Brunswick

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Nova Scotia					
Forestry Projects to Improve Knowledge of Carbon Sinks	Intensification of forest sample plots to measure growing stock and growth rates, resulting in increased carbon storage in forests.	CO_2	Information Education	Implemented	Nova Scotia Natural Resources
New Forestry Regulation and Requirements to Increase Level of Structure	Increase forest growth through prompt regeneration; compel wood buyers to finance silviculture on lands of origin.	CO_2	Regulatory	Implemented	Nova Scotia Natural Resources
Ontario					
Improved Forest Management and Wood Harvesting Methods	Methods introduced to protect healthy forest growth and minimize damage in order to increase the natural GHG absorption potential in forests.	CO_2	Policy	Implemented	Ministry of Natural Resources
Wetlands Program	Program aim is to conserve and restore wetlands and prohibit development on significant wetlands, thereby increasing the significant GHG absorption potential in wetlands.	CO_2	Policy	Implemented	Ministry of Natural Resources
Saskatchewan					
A Framework for Assessing Climate Change Adaptation Options for the Forestry Sector in the Prairie Provinces	This project will develop a framework for identifying ways in which forest companies can adapt to climate change impacts.	CO_2	Research Information	Implemented	Prairie Adaptation Research Cooperative, University of Saskatchewan, Saskatchewan Environment and Resource Management, Research Council of the University of Saskatchewan
Saskatchewan Carbon Sequestration Agreement	This program involves silviculture activities, including the planting of approximately 5 million trees and the establishment of a Forest Carbon Reserve. The transfer of GHG emission reduction credits is equal to the amount of the sequestration from the silviculture activities.	CO_2	Economic	Implemented	SaskPower
Vulnerability of the Western Canadian Boreal Forest to Climate Change	This project will determine the vulnerability of the western boreal forest to climate change in terms of insect/disease outbreaks, frequency and intensity of forest fires, and impacts of moisture stress.	CO_2	Research	Implemented	Government of Saskatchewan, Natural Resources Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Industry					
Government of Canada					
Advanced Combustion Technologies Program	The program supports the development of pollution abatement and novel combustion technologies aimed at reducing emissions of acid rain precursors, GHGs, particulates, and hazardous substances from stationary power sources fuelled by coal, oil, natural gas, or biomass.	CO_2	Research	Implemented	Natural Resources Canada
Advanced Energy Technologies for High Temperature Processes Program	Focus is on coke-making and pulverized coal injection on behalf of coal and steel producers. Activities include improving the energy efficiency of the iron-making process, supercoke, extending coke oven life, mineral additions to improve coke quality, and pulverized coal injections. Computer modelling capabilities for blast furnace optimization are also developed.	CO_2	Research	Implemented	Natural Resources Canada
Advanced Materials Technologies Program	The program conducts research into innovative materials and processes that are critical to the competitiveness of industry and vital to respond to new environmental requirements and concerns and to contribute to climate change mitigation. Research areas include lightweight materials for transportation applications and advanced metallic powders for rechargeable batteries.	CO_2	Research	Implemented	Natural Resources Canada
Advanced Separation Technologies	Conducts fundamental and applied research to develop and implement leading-edge separation technologies for the petroleum and environmental industries. Focus is to find solutions for industrial science and technology problems. This approach is based on a fundamental understanding of the principles governing industrial processes and is enhanced by strategic partnerships and collaborative initiatives with industry, educational institutions, governments, and the scientific community. Program activities can provide reduced operating and energy costs and reduce GHG emissions.	CO_2	Research	Implemented	Natural Resources Canada
Bio-Fuel Turbine Power Generation Systems	The project consists of the development and testing of systems for engine operation on liquid bio-oil fuel. Bio-oil fuels are derived from feedstock such as wood, grasses, wastepaper, and agricultural residues. The project will further advance engine technology by redesigning and refining the combustion system and developing specifications for a full-scale power generation system.	CO_2	Research	Planned	Industry Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Boiler Emission Upgrade – India	This project aims to increase the capacity of Indian stakeholders through increased awareness of and means to introduce viable technology to revamp old and failing power plants using circulating fluidized bed technology.	CO_2	Voluntary Information	Implemented	Canadian International Development Agency, Benegal Engineering College, National Power Training Institute, West Benegal State Electricity Board, Greenfield Research Inc, Dalhousie University
Canada China Cooperation Project in Cleaner Production – China	In this project, emphasis is placed on pollution prevention, conservation of raw materials and energy, and eliminating use of toxic raw materials by strengthening institutional capacity to implement cleaner production. In collaboration with China's State Economic and Trade Commission and national Environmental Protection Agency, the project will strengthen the institutional capacity of these institutions to promote the implementation of cleaner production techniques.	CO_2	Policy	Implemented	Canadian International Development Agency, Coopers & Lybrand, SNC Lavalin Environment, Essa Technology, State Economic and Trade Commission, State Environmental Protection Agency
Canada-China Jiangsu SME Applied Management and Environment Project – China	This project seeks to build management and environmental/ business capacity for small and medium-sized enterprises through increasing awareness and demonstration projects around waste minimization, cleaner production, etc. The project will also support sectoral linkages and information exchange between Canadian industries and Jiangsu village enterprises in the focus sectors of the project, initially chemical and metal working industries.	CO_2	Education Information	Implemented	Canadian International Development Agency, Foundation for International Training, MOFTEC and Jiangsu COFTEC, EPB and Bureau of TVEs
Canadian Industry Program for Energy Conservation (CIPEC)	The Canadian Industry Program for Energy Conservation (CIPEC) helps industrial task forces set and achieve targets for improving energy intensity in their sectors. CIPEC's 21 voluntary sector task forces determine the potential for energy efficiency improvements within their sector, establish a means of reporting and tracking progress, and create action plans for reaching targets. They also provide a forum for identifying common needs in such areas as energy management planning, technical information, financing, training, and employee awareness. The Office of Energy Efficiency of Natural Resources Canada then works with the task forces to develop appropriate services to satisfy these needs.	See below	Voluntary	Implemented	Natural Resources Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
CIPEC: Aluminum	Voluntary targets to improve energy efficiency in the aluminum sector. Significant improvements will come from the construction of new, state-of-the-art smelters and the phasing out of older facilities. Seventy percent of the total aluminum production currently comes from modern facilities, and developing effective economic models for the continued introduction and funding of new facilities remains a significant industry challenge. The expansion of aluminum recycling is also a sectoral priority. Aluminum is fully recyclable, and reforming scrap into useful metal requires only 5% of the energy consumed in the production of primarily aluminum.	CF_4, C_2F_6, CO_2	Voluntary	Implemented	Natural Resources Canada
CIPEC: Brewery	Voluntary targets to improve energy efficiency in the brewery sector. Enhanced metering, monitoring, and control have enabled many breweries to improve the energy usage performance of boilers and CO_2, air distribution, pasteurizer, condensate, and stream-handling systems. Procedural changes have been supported by the establishment of in-plant energy committees and employee education and training programs, in many cases employing NRCan's energy awareness kits and active communication efforts. Within the industry, companies are expanding energy awareness education and encouraging employees to participate in energy management workshops.	CO_2	Voluntary	Implemented	Natural Resources Canada
CIPEC: Cement	Voluntary targets to improve energy efficiency in the cement sector. Cement manufacturers are looking to the use of waste materials as an economical source of fuel. The industry continues to promote concrete as an energy-efficient product and to make cement and concrete the materials of choice in the environmental industry. It is also working to develop an appropriate methodology for the life cycle assessment of cement-based materials and products. Cement, in the form of concrete, has a number of energy-saving advantages.	CO_2	Voluntary	Implemented	Natural Resources Canada
CIPEC: Chemical	Voluntary targets to improve energy efficiency in the chemical sector. While all industry subsectors report significant energy efficiency gains, there are substantial variations in energy consumption patterns. Nearly all industry subsectors are meeting their energy intensity performance targets, matching, and in some cases substantially improving on, benchmark 1990 levels. Contributing to the sector's performance is the installation of co-generation facilities, which results in the more efficient use of hydrocarbon fuels to generate heat and electricity.	CO_2	Voluntary	Implemented	Natural Resources Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
CIPEC: Dairy	Voluntary targets to improve energy efficiency in the dairy sector. The National Dairy Council of Canada continues to encourage industry-wide participation in energy conservation efforts. Each product subsector is encouraged to implement its own comprehensive set of low-cost, no-cost, and retrofit improvement in dozens of plant operations. These include thermal storage of recovered hot water, exterior tanker recycled water washes, and improved control of air and water leakage. Information on expected cost savings and payback periods is provided to companies seeking to make such improvements. The industry supports the energy efficiency achievements of dairy plant managers through research and educational materials. The industry is also profiling and evaluating new energy-saving technologies. Such concepts include expert control systems, non-thermal pasteurization systems, pulsed drying systems, and just-in-time dairy manufacturing concepts. Training is available to help energy managers measure energy efficiency and to direct them to global studies on successful dairy product energy management strategies and practices.	CO_2	Voluntary	Implemented	Natural Resources Canada
CIPEC: Electric and Electronic	Voluntary targets to improve energy efficiency in the electric and electronic sector. While the electric and electronics industry is Canada's least energy-intensive manufacturing sector, individual companies continue to include energy efficiency as a vital component in their efforts to control costs. Between 1990 and 1997, the sector's energy consumption dropped 11% despite a substantial growth in production. Combined, these trends have resulted in a decrease in energy intensity of almost 50%.	CO_2	Voluntary	Implemented	Natural Resources Canada
CIPEC: Fertilizer	Voluntary targets to improve energy efficiency in the fertilizer sector. Canadian fertilizer manufacturers are constantly improving production methods, reducing emissions, and increasing energy efficiency. Their efforts have made Canada an acknowledged world leader in energy efficiency and the control of emissions from its fertilizer production facilities. Producing nitrogen and potash fertilizers is energy-intensive, making energy conservation and efficiency a key industry priority.	CO_2, N_2O	Voluntary .	Implemented	Natural Resources Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
CIPEC: Food	Voluntary targets to improve energy efficiency in the food sector. Companies continue to invest in energy efficiency. The installation of energy-efficient air pressure blanket doors and air reclaimers as well as the modernization of equipment and facilities have helped to improve energy efficiency. Food processors have also actively pursued fuel switching. Companies are changing from carbon-intensive fuels such as oil to natural gas. Since 1990, electricity use has remained stable, while steam use has increased and heavy fuel oil use has declined.	CO_2	Voluntary	Implemented	Natural Resources Canada
CIPEC: Foundry	Voluntary targets to improve energy efficiency in the foundry sector. Most of Canada's foundries continue to seek ways to improve their energy efficiency and reduce GHG emissions. Many firms, for example, no longer use GHG-generating fuels such as coal, oil, or coke in their operations. Many have also eliminated the use of steam produced by coal-generated electricity. The potential cost savings resulting from energy efficiency improvements made by the foundry industry are estimated to be in the range of $9 million per year.	CO_2	Voluntary	Implemented	Natural Resources Canada
CIPEC: General Manufacturing	Voluntary targets to improve energy efficiency in the general manufacturing sector. The sector is represented by an energy conservation task force made up of 14 leading companies in a variety of industries, including construction materials, floor coverings, imaging products, insulation, and adhesives, among many others.	CO_2	Voluntary	Implemented	Natural Resources Canada
CIPEC: Lime	Voluntary targets to improve energy efficiency in the lime sector. Canada's commercial lime producers, represented by the Canadian Lime Institute, are active participants in an ongoing effort to reduce the energy component in their products. Merchant lime producers operate from 15 producing sites staffed by 650 employees. Natural gas is the principal fuel used, with coke and coal making up most of the balance.	CO_2	Voluntary	Implemented	Natural Resources Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
CIPEC: Mining	Voluntary targets to improve energy efficiency in the mining sector. The mining industry's energy mix is heavily weighted toward electricity, at 44% of the total energy demand. Heavy fuel oil and distillates satisfy most of the remaining energy requirements. An active program of fuel switching in the industry has led to substantial reductions in the use of coal.	CO_2	Voluntary	Implemented	Natural Resources Canada
CIPEC: Oil Sands	Voluntary targets to improve energy efficiency in the oil sands sector. The industry continues to implement measures that deliver on its commitment to reduce energy intensity and increase efficiency. Improvements are coming through a combination of operational excellence and technological innovation. Plants have improved the reliability of their operations and introduced programs to recover waste heat and improve yields through more efficient processing. Additional gains realized by introducing new technologies in the mining and extraction stages. The industry's principal focus is to reduce the use of coke by switching to natural gas.	CO_2	Voluntary	Implemented	Natural Resources Canada
CIPEC: Petroleum Products	Voluntary targets to improve energy efficiency in the petroleum products sector. The demand for petroleum products is expected to increase in step with population and economic growth, putting pressure on the industry to increase its use of energy. While the industry continues to exceed its commitment of a 1% annual improvement in energy intensity, pressures for increased production will make ongoing improvements more challenging. Fortunately, higher capacity utilization improves refinery efficiency, thereby lowering the energy required per unit of output. The industry also faces increasing pressure to reduce the sulphur levels in gasoline. Meeting increasingly stringent sulphur content requirements will require refineries to employ more energy-intensive methods.	CO_2	Voluntary	Implemented	Natural Resources Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
CIPEC: Pulp and Paper	Voluntary targets to improve energy efficiency in the pulp and paper sector. In 1997, the Canadian Pulp & Paper Association commissioned a study to explore the expanded use of surplus wood residue as a fuel for pulp and paper production. The association remains active on several committees involved in the climate change consultative process. At the mill level, companies continue to introduce energy intensity improvements and have implemented programs to switch from fossil fuels to biomass.	CO_2	Voluntary	Implemented	Natural Resources Canada
CIPEC: Rubber	Voluntary targets to improve energy efficiency in the rubber sector. As the industry's principal voice, the Rubber Association of Canada plays a crucial role in environmental issues. The association is working with local authorities to establish provincial scrap tire stewardship boards. It also sponsors a biannual international symposium on rubber recycling as a means of encouraging the commercial development of this fragile, emerging industry. The association has established and maintains an industry-wide environmental tracking grid to measure the overall performance of the rubber manufacturing sector industry. All of these activities have energy consumption and air quality implications. By focusing the industry's attention on environmental issues, the association is playing a critical role in the long-term move toward improved energy intensity and reduced GHG emissions.	CO_2	Voluntary	Implemented	Natural Resources Canada
CIPEC: Soft Drink	Voluntary targets to improve energy efficiency in the soft drink sector. The soft drink sector takes a broad perspective on the energy consumed to bring its products to market. This approach has led the industry to adopt alternative packaging strategies that are more environment-friendly, as well as less energy-intensive.	CO_2	Voluntary	Implemented	Natural Resources Canada
CIPEC: Steel	Voluntary targets to improve energy efficiency in the steel sector. The industry has made excellent progress in reducing its energy intensity and is making a solid contribution to GHG reductions.	CO_2	Voluntary	Implemented	Natural Resources Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
CIPEC: Transportation	Voluntary targets to improve energy efficiency in the transportation manufacturing sector. Canada's automotive industry is committed to continuously improving quality environmental performance and energy efficiency. Energy-efficient equipment is installed where feasible, but downsizing and internal competition for funds are challenging energy managers who are seeking to make major gains. Environmental issues, now a major component in corporate planning, have led to the implementation of costly technologies that improve the environment and friendliness of the industry's products and reduce emissions at the cost of increased energy use. This adds to the challenge of reducing energy consumption.	CO_2	Voluntary	Implemented	Natural Resources Canada
CIPEC: Wood Products	Voluntary targets to improve energy efficiency in the wood products sector. The wood products industry has made significant progress in efforts to switch to biomass fuels. Wood waste, which provided 50 245 TJ of energy in 1995, supplied 69 097 TJ in 1997, an increase of 38%. Biomass, which represented 45% of total energy used in 1995, now makes up nearly 55% of total energy consumed. Individual companies in the industry continue to implement low-cost energy efficiency measures whenever possible. However, the sector's production and energy efficiency continue to be adversely affected by economic factors. Companies have increased their focus on product improvement and marketing, efforts that have forced a change in their product mix and led to greater energy consumption.	CO_2	Voluntary	Implemented	Natural Resources Canada
Canadian Lightweight Materials Research Initiative	Initiative works to strengthen and coordinate research and development for lightweight and high-strength materials for vehicle applications. It addresses fundamental materials issues in alloy design and thermo mechanical processing and in manufacturing processing, to improve the performance or reduce the cost of implementing lightweight materials to reduce vehicle weight in order to achieve greater energy efficiency. The technologies developed can also significantly improve the performance of vehicles powered by fuel cells, electric batteries, or hybrid systems. The materials considered include manganese, aluminum, high-strength steel, metal matrix composites, plastics, and polymer-based composites.	CO_2	Research	Implemented	Natural Resources Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Canadian Environmental Technology Advancement Centres	To help meet the needs of Canada's growing environmental industry, the federal government has supported the establishment of centres, in partnership with provincial governments, environmental industry associations, and the private sector. The centres are private sector, not-for-profit corporations, operating at arm's length from government. Each centre's goal is to help small- and medium-sized enterprises commercialize environmental technologies by providing comprehensive technical services, access to investment capital, business counselling, and regulatory and market analysis.	CO_2	Information Fiscal	Implemented	Environment Canada
Capital Cost Allowance and Related Changes	Encourages investment in certain types of energy-efficient and renewable energy technologies.	CO_2, CH_4, N_2O	Economic	Implemented	Department of Finance
Centre for Research in Cleaner Manufacturing	Develops scientific and engineering platforms for evaluating and guiding innovation in clean, commercially viable technologies and production processes, including those that help reduce GHG emissions.	CO_2, CH_4, N_2O, HFCs, PFCs, SF_6	Policy	Implemented	National Research Council Canada
Confederation of Indian Industry Environmental Management Programme	This project is designed to improve the capacity of the Confederation of Indian Industry's Environmental Management Division to participate in, raise awareness of, and promote cooperation in the development of environmental policies for industry.	CO_2, CH_4, N_2O, HFCs, PFCs, SF_6	Policy Information	Implemented	Canadian International Development Agency, Vaughan/Roche EVS
Energy Benchmarking Strategy	Project provides tools to measure and compare energy performance (usage and costs) in underground bulk mining operations, in order to identify where improvements and better practices can be adopted. The project consists of the development and demonstration of a cost-effective process for the production of ethanol from a wide variety of biomass, including farm waste products such as straw and oat hulls.	CO_2	Information	Implemented	Mining Association of Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Environmental Technology Verification Program	Designed to foster the growth and marketability of the environmental industry by providing validation and independent verification of performance claims. This initiative will promote the environmental industry internationally while building sustainable industry capacity at home. A key component of the program is that it will enable innovative environmental technologies to access markets more effectively. Verification is seen as an important tool for accelerating the application of innovative technologies and creating new business opportunities and jobs, while also protecting the environment.	CO_2	Policy Technology Transfer	Implemented	Environment Canada
Ethanol from Biomass	The project consists of the development and demonstration of a cost-effective process for the production of ethanol from a wide variety of biomass, including farm waste products such as straw and oat hulls.	CO_2, NO_X	Research	Planned	Industry Canada
Gas Separation Technology for the Industrial Oxygen and Fuel Cell Markets	The project consists of the development of a unique gas separation technology that strips nitrogen and other gases from an air stream, leaving pure oxygen. This technology will allow oxygen separation to occur over 200 times faster than traditional systems, resulting in smaller industrial oxygen plants. The company is also exploring the use of the technology to increase the efficiency of fuel cells in automotive applications.	CO_2	Research	Planned	Industry Canada
Global Climate Change: Taking Action	This project supported the Pembina Institute's and Stratos's collaboration on the creation of a guide to help managers at all levels in the Canadian mining industry develop a corporate strategic response to the risks and opportunities associated with climate change and GHG emission reductions. The guide includes the rationale for progressive action on climate change, GHG emissions reduction opportunities, and business opportunities related to GHG emissions reductions that can be implemented in mining operations both within and outside Canada. The guide also includes information on how to inventory, measure, and report on climate change actions.	CO_2	Information	Implemented	Mining Association of Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Industrial Drying Technologies Program	The program aims at improving the energy intensity of the existing dryer base and of drying technologies to upgrade residues. The program focuses on improving the existing dryer base; the commercialization of the pulse fluid bed and the jet-spouted-bed dryers in the agri-food industry; the development and commercialization of intelligent control systems for dispersion-type dryers; the assessment of the opportunity for advanced controls in the drying industry; and the assessment of the potential of new residue upgrading technologies.	CO_2	Research Policy	Implemented	Natural Resources Canada
Industrial Energy Efficiency Initiative	The Industrial Energy Efficiency Initiative is a voluntary industry-government alliance that recognizes that improving energy efficiency can help Canadian industry stay competitive and help protect the environment. Also assists the manufacturing and metal/non-metal mining industries identify energy efficiency potential, establish energy efficiency improvement targets, implement and manage programs, report on progress, and celebrate accomplishments.	CO_2	Voluntary	Implemented	Natural Resources Canada
Industrial Energy Innovators Initiative	Once the CIPEC task forces have drafted targets and action plans, the Industrial Energy Innovators Initiative provides a means for turning sector commitments into company actions. Projects begin with CEOs and other senior officials committing to implement energy-saving measures in their organizations. When this commitment has been assured, the Industrial Energy Innovators Initiative provides the information and support services necessary to starting an upgrade.	CO_2	Voluntary Policy	Implemented	Natural Resources Canada
Industrial Process Integration	The Industrial Process Integration program supports the development and deployment of process integration in various industries. The program focuses on water network optimization methodologies in the agri-food, pulp and paper, and textile industries; combined heat and power optimization methodologies; total site optimization methodologies; and the building of an international-calibre Canadian capacity in process integration.	CO_2	Information	Implemented	Natural Resources Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Industrial Research Assistance Program	The Industrial Research Assistance Program (IRAP) helps Canadian companies identify and adopt technology solutions from a wide range of domestic and foreign sources. Technical advice and personal business consultations are available through a network of more than 250 IRAP advisors in 90 communities across Canada.	CO_2, CH_4, N_2O, HFCs	Policy Research	Implemented	National Research Council of Canada
Industry Energy Research and Development	The Industry Energy Research and Development program supports the development and use of energy-efficient processes, products, systems, and equipment by industry. Projects contribute to a cleaner environment and help Canadian companies increase their market competitiveness. Work is conducted with all Canadian industrial sectors. The cost of technology development is shared with industry and other project participants.	CO_2	Research	Implemented	Natural Resources Canada
Industry Heat Management Research Program	The purpose of this program is to develop and disseminate knowledge and technology that will (1) contribute to a reduction in GHG and other emissions in Canada through improvements in industrial energy efficiency, and (2) contribute to jobs and wealth creation through improvements in industrial productivity and competitiveness, and by helping the Canadian energy efficiency industry capture growing domestic and international markets. The delivery mechanism for the program is collaborative in-house research involving manufacturers, service providers, and end users.	CO_2	Research	Implemented	Natural Resources Canada
International Centre for Sustainable Development of Cement and Concrete	International Centre for Sustainable Development of Cement and Concrete conducts research activities, demonstration projects, transfer of technology, and networking for the sustainable development of cement and concrete. The objective of this program is to optimize the use of supplementary cementing materials (such as fly ash, slag, silica fume), recycled materials, and other industrial by-products in concrete for every particular application in full compliance with performance requirements.	CO_2	Research	Implemented	Natural Resources Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Mining Research	Through research programs on underground mine environments and mine mechanization and automation, Natural Resources Canada's Mining and Mineral Sciences Laboratories contribute to reduced energy consumption in the mining industry. Supplying the necessary air, temperature, light, and space requirements for workers underground is very energy-intensive. Through automated ventilation management and mine mechanization, these requirements can be substantially reduced, increasing overall efficiency and reducing energy needs in mining. For example, the mining laboratories have established a North American consortium to replace diesel with hydrogen fuel cells in underground production vehicles. This will have a significant impact on operations.	CO_2	Research	Implemented	Natural Resources Canada
Model Voluntary Agreements	Model voluntary emissions reduction agreements with binding targets.	CO_2	Voluntary	Implemented	Environment Canada
National Action Plan on Ozone Depleting Substances and their Halo-Carbon Alternatives	Regulations controlling the use of ozone-depleting substances are in place in all jurisdictions; in addition, Alberta, British Columbia, Newfoundland, Ontario, Yukon, and the federal government regulate the use of HFCs.	HFCs, PFCs	Regulatory	Implemented	Environment Canada
National Centre for Upgrading Technology	A heavy oil upgrading research alliance, which provides independent research and technical services. The centre's upgrading research and services play a vital role in the development of the heavy oil industry. Upgrading is the necessary step in changing oil sands bitumen from a black tar substance into a simulated conventional crude oil. Oil refineries can then process this changed bitumen into products such as transportation fuels. Projects can help reduce operating and energy costs and reduce GHG emissions.	CO_2	Research	Implemented	Natural Resources Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
National Fuel Cell Research and Innovation Initiative and Facility	Facility will be established at the National Research Council of Canada's Innovation Centre in Vancouver. The facility will support a research and technology demonstration and deployment program. As well, a university research fund will be established to build on work being done by the National Research Council and the Natural Sciences and Engineering Research Council.	CO_2	Research	Planned	National Research Council of Canada, Natural Resources Canada, Natural Sciences and Engineering Research Council
Petroleum Technology Research Centre	A new agency in Saskatchewan that will coordinate and promote petroleum-related research. It will coordinate work at the university's newly created Petroleum Engineering Group and the Saskatchewan Research Council's Petroleum Division. It will also act as a mechanism to transfer information on oil and gas production technology to the industry in the province.	CO_2	Research	Implemented	Natural Resources Canada
Processing and Environmental Catalysis Program	Focuses on the development of environmentally sound and economically viable technologies for the production of alternative and renewable transportation fuels, fuel additives, and petrochemicals from natural gas, light hydrocarbons, and renewable sources. Advanced catalytic systems are also being developed.	CO_2	Research	Implemented	Natural Resources Canada
Renewable Energy and Hybrid Systems Program	Program focuses on the development, implementation, and promotion of photovoltaic technologies for domestic and international markets.	CO_2	Research	Implemented	Natural Resources Canada
Renewable Energy Market Development Program	Program encourages the use of renewable energy from emerging resources and helps the supply industry take advantage of promising markets. The program also helps industry improve its delivery infrastructure through a variety of activities, including upgrading industry training programs and product standards and developing software to facilitate feasibility studies and system designs.	CO_2	Information	Implemented	Natural Resources Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Voluntary Challenge and Registry Inc.	This is a not-for-profit corporation that encourages private and public sector organizations to voluntarily limit their net GHG emissions as a step toward meeting Canada's climate change goals. To date, more than 700 companies and organizations from all sectors of the economy have registered action plans, including the Government of Canada and all provincial governments.	CO_2	Information	Implemented	Natural Resources Canada
Alberta					
Control of HFCs and PFCs	Amendments to Alberta ozone-depleting substances regulation to control releases of HFCs, PFCs, and HCFCs.	CO_2	Regulatory	Implemented	Government of Alberta
Energy and GHG Emissions Reductions Pilot Project	Energy audit pilot projects a savings in energy costs and GHG emissions reduction. Enhance awareness of GHG-reducing management practices.	CO_2	Information	Implemented	Alberta Food Processors Association
GHG Monitoring and Reporting Pilot	Begin industry reporting of GHG emissions.	n.a.	Information Research Voluntary	Implemented	Government of Alberta
Industry Workshops on International Actions	The Alberta government is sponsoring a series of one-day workshops highlighting important developments in international climate change negotiations. These workshops provide Alberta industry with information on how it can benefit from and become involved in international projects. The initial focus is on companies already doing business in Latin America. Company and government representatives from Alberta and Latin American countries are invited to a two-day conference to explore opportunities to increase awareness of Clean Development Mechanism projects in Latin America.	CO_2	Education	Implemented	Government of Alberta

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Alberta (*continued*)					
Reductions in Flaring	Alberta's Energy and Utilities Board has incorporated a 25% reduction on volumes flared by 2001 and stringent performance standards for the remaining flares.	CO_2	Policy	Implemented	Alberta Energy and Utilities Board
Removal of Barriers to Use of Otherwise Flared Solution Gas	These actions have been taken to facilitate electricity generation from solution gas that would otherwise have been flared. Key priorities have been the creation of a royalty waiver program announced in July 1999 that exempts otherwise flared solution gas from the *Electric Utilities Act*.	CO_2	Policy Economic	Implemented	Alberta Resource Development, Alberta Energy and Utilities Board
Support for Engaging Small- and Medium-Sized Enterprises	Engage small- and medium-sized enterprises to take action on climate change in Alberta. This will result in improved energy efficiency and at the same time improve the competitiveness of Alberta companies.	CO_2	Information Education Fiscal	Implemented	Pembina Institute, Government of Alberta
British Columbia					
Fuel Cell Initiative	The British Columbia government is working with the federal government, the Greater Vancouver Regional District, and university and industry representatives on a proposal to set up a national partnership that would spawn a fuel cell industry in British Columbia. The partnership would focus on establishing a national research centre on fuel cells in B.C. and testing fuel cells in stationary sites.	CO_2	Research	Adopted	Information, Science and Technology Agency
Oil and Gas Commission Environmental Fund	The oil and gas industry, through an agreement with the Government of British Columbia, established a $5 million environmental fund over five years to be administered by the Oil and Gas Commission. The fund is intended to support research related to environmental issues associated with oil and gas operations, including GHG emissions.	n.a.	Research Information	Implemented	Government of British Columbia, Oil and Gas Commission
Northwest Territories					
Integration of Climate Change in Environmental Assessments	Ensure integration of climate change considerations during the Environmental Assessment Process for all new projects.	CO_2	Policy	Adopted	Government of Northwest Territories

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Nova Scotia					
Encourage Use of Natural Gas in Nova Scotia	Maintain a regulatory framework that encourages the use of natural gas and ensure that industry locates where appropriate infrastructure is already in place.	CO_2	Policy Regulatory	Implemented	Nova Scotia Natural Resources
Light Better for Less	This program improves lighting efficiency in small commercial operations. Electrical contractors are trained to perform lighting energy audits on small commercial facilities and recommend and install energy-efficient lighting. Wholesalers are asked to increase stock of lighting projects. Seminars and other marketing are directed at small commercial operators.	CO_2	Information	Implemented	Illuminating Engineering Society, Nova Scotia Power, Nova Scotia Natural Resources
Prince Edward Island					
$mart Energy Management	This program assists manufacturers and processors in Prince Edward Island in reducing their energy costs through energy efficiency, mitigating GHG emissions in the process. The program includes energy efficiency workshops, development and distribution of an interactive CD-ROM on energy efficiency for the sector, and an energy auditing service.	CO_2	Voluntary Information	Implemented	PEI Department of Development and Technology
Quebec					
Promotion of Energy Efficiency	Any project or activity that may help to promote energy efficiency, stimulate the energy efficiency industry, or support the impact made by this industry abroad may be approved for a financial or professional contribution by the Energy Efficiency Agency. Public and para-public organizations in Quebec, non-profit companies, and non-profit organizations are all eligible.	CO_2	Economic	Implemented	Energy Efficiency Agency

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Municipalities					
Government of Canada					
Community Energy Management	Includes two broad initiatives that have taken root in the Canadian planning profession. The first of these is a move to change the way in which neighbourhoods, towns, cities, and regions are designed. The overarching principle is to create more "livable" environments that improve accessibility to services and employment, preserve green space, reduce pollution and noise, and generally create a safer urban landscape with a greater sense of place and community. The second initiative is the focus on meeting society's energy service needs in ways that minimize energy consumption, with potential economic and environmental benefits. This initiative is directed at choices about energy delivery systems, district heating and cooling, combined heat and power, renewable energy, building energy and resource efficiency, passive solar design, reduced building heat loss, and reduced water consumption and wastewater production.	CO_2	Economic Regulatory Information	Implemented	National Climate Change Process
Community Energy Systems	Assists Canadian communities to meet their energy needs by identifying and developing opportunities for the use of district heating and cooling, combined heat and power, waste heat recovery, thermal storage, and local sources of renewable energy, particularly biomass.	CO_2	Information Economic	Implemented	Natural Resources Canada
Green Municipal Enabling Fund	The Green Municipal Enabling Fund will increase municipal access to innovative and cost-effective energy services, such as district energy systems, renewable energy, and energy efficiency. The fund pays for 50% of feasibility studies for innovative environmental projects within municipal operations. The Green Municipal Enabling Fund will also address the issue of climate change by supporting projects designed to improve energy efficiency and thus reduce GHG emissions.	CO_2, CH_4	Economic	Implemented	Government of Canada, Federation of Canadian Municipalities
Green Municipal Investment Fund	The Green Municipal Investment Fund will increase municipal access to innovative and cost-effective energy services, such as district energy systems, renewable energy, and energy efficiency. The fund provides loans for up to 25% of capital projects that will allow eligible recipients to carry out environmental projects within municipal operations. The Green Municipal Investment Fund will also address the issue	CO_2, CH_4	Economic	Implemented	Government of Canada, Federation of Canadian Municipalities

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
	of climate change by supporting projects designed to improve energy efficiency and thus reduce GHG emissions. The Green Municipal Investment Fund will provide grants, loans, and loan guarantees for projects that increase the environmental efficiency and cost-effectiveness of existing municipal water, wastewater, waste, energy, and public transportation facilities.				
Landfill Gas Capture	An increasing number of Canadian municipalities are implementing landfill gas recovery. In addition to eliminating the risks related to landfill gas emissions, the gas can often be used or sold for its energy content. The 1.2 million tonnes of CH_4 currently generated at Canadian landfills has the equivalent energy of 9 million barrels of oil or enough energy to heat more than 600 000 homes annually. About 25% of the landfill gas being emitted by Canadian landfills is being captured; of that, about 70% of the gas is utilized and the remaining 30% is flared. The majority of the gas is used for electricity generation. Other applications range from simply heating buildings to providing fuel for a gypsum manufacturing plant, a cement plant, and a recycling plant.	CO_2, CH_4	Economic Regulatory	Implemented	National Climate Change Process
Municipal Building Retrofit Program	The program encourages the adoption of energy efficiency in the municipal sector by offering municipalities all of the elements necessary to identify, develop, finance, and implement comprehensive building energy retrofits.	CO_2	Information	Implemented	Natural Resources Canada, Federation of Canadian Municipalities
Partners for Climate Protection	This program is a partnership between the Federation of Canadian Municipalities and the International Council of Local Environmental Initiatives that helps municipal governments reduce GHG emissions.	CO_2	Information	Implemented	Federation of Canadian Municipalities, International Council of Local Environmental Initiatives
Alberta					
Eco-Efficient Communities Initiative	Provides municipalities with the practical information and tools to reduce GHG emissions. The program is designed for small and mid-sized communities in Alberta, which often do not have the in-house staff and resources for independent energy efficiency exploration. The program, delivered by the Pembina Institute, offers a range of project materials, workshops, and conferences that are available to any local government.	CO_2	Information	Implemented	Pembina Institute

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Alberta (*continued*)					
Greenhouse Gas Emissions Reduction Plan – Edmonton	This plan provides a strategy for reducing GHG emissions from the city's buildings, facilities, operations and transit fleet, wastewater treatment plant, and street lighting.	CO_2	Policy Information	Implemented	Government of Alberta,
Kikino Metis Settlement Pilot Initiative	A pilot project to identify GHG reduction opportunities and encourage action. The Alberta government and partners, including the Kikino Metis Settlement, TransCanada, Alberta-Pacific Forest Industries Inc., and the federal government, are working together to help shape future community engagement initiatives in other Alberta communities.	CO_2	Information	Implemented	Kikino Metis Settlement, TransCanada, Alberta-Pacific Forest Industries Inc., Government of Canada
Natural Gas Service Extended to Three Metis Settlements	Under the Rural Gas Grant Program, natural gas service was extended to three Metis settlements in Northern Alberta.	CO_2	Fiscal	Implemented	Government of Alberta
Okotoks Sustainable Development Plan	In September 1998, the Town of Okotoks, Alberta, became one of the first communities in Canada to recognize its environmental limits to growth. The community chose to see the town function within the limits of the local environmental capacity.	n.a.	Information Policy	Implemented	The Town of Okotoks
Sustainable Communities Initiative	Supports local community efforts to achieve sustainability. Initiative has helped communities develop and implement action plans on waste, green spaces, transportation, sustainable housing, and other grassroots projects. The program has been implemented in eight communities across Alberta.	CO_2	Information	Implemented	Alberta Environment, FEESA
British Columbia					
Energy Aware Committee	Works with interested local British Columbia governments to promote and support Community Energy Planning (CEP). Over the last two years, the committee has conducted workshops for local governments in the Greater Vancouver Regional District, the Central Okanagan, the Capital Regional District, and the City of Abbotsford. These workshops help communities examine the energy efficiency opportunities presented through CEP and identify opportunities to implement energy efficiency initiatives.	CO_2	Information	Implemented	British Columbia

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
British Columbia (*continued*)					
Greening Communities Initiative	The main activity of this program is to provide matched funds to a local government and community partnership for the development and implementation of projects that link strategies for GHG emissions reductions and improvement in social and economic conditions.	CO_2	Economic	Implemented	Government of Canada, Federation of Canadian Municipalities, Union of British Columbia Municipalities
Partners for Climate Protection	Several British Columbia municipalities are involved in the Partners for Climate Protection program, led by the Federation of Canadian Municipalities. The Greater Vancouver Regional District, its member municipalities, and neighbouring regional and local governments are actively involved in the Regional and Local Government Working Group on Climate Change to share information and expertise on implementation of GHG emissions reduction initiatives. The district is also actively involved in several GHG initiatives through its Air 2000 program, including high-volume flash concrete, solar thermal pool retrofits, better building partnerships, and GHG action guide.	CO_2	Information	Implemented	Federation of Canadian Municipalities, The Greater Vancouver Regional District, Government of British Columbia
TravelSmart Program, Kamloops	The city of Kamloops launched this program in 1997, which, instead of building new roads to accommodate land use plans, integrated land use and transportation planning and focused on alternative neighbourhood designs and travel modes, including transit system options and promoting changes in travel behaviour.	CO_2, N_2O	Policy	Implemented	The City of Kamloops
New Brunswick					
Partnership Initiatives	The objective is to encourage voluntary action by actively supporting the delivery of energy efficiency programs through partnership arrangements. Examples include in-kind support to the NB Lung Association in the delivery of the Wood Stove Campaign and Healthy Schools Program and the R-2000 program, which is delivered by the NB Home Builders Association.	CO_2	Voluntary Information	Implemented	Government of New Brunswick
Northwest Territories					
Establishment of the Arctic Energy Alliance	A non-profit society established through a partnership of several organizations. The mandate of the Alliance is to help communities, consumers, producers, regulators, and policy makers to work together to reduce the cost and environmental impacts of energy in the Northwest Territories.	CO_2	Information	Implemented	Government of the Northwest Territories, The NWT Power Corporation, The NWT Housing Corporation, The NWT Association of Municipalities, The NWT Public Utilities Board

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Nunavut					
Energy Management	The energy management program in Nunavut promotes energy management and community energy planning with local government, Nunavut regional staff, and other decision makers; raises awareness of the Arctic Energy Alliance and its program; performs energy assessments of major buildings and facilities; and determines the potential for energy management projects that would ensure benefits to the community. The initiative is currently active in nine communities.	CO_2	Information	Implemented	Government of Nunavut
Residual/ Waste Heat Systems	Organizations responsible for community planning, transportation, and building services need to work together to develop and implement community energy plans.	CO_2	Economic	Implemented	Government of Nunavut
Ontario					
Building Retrofit Program – Ottawa	Introduction of a comprehensive retrofit program, including street light conversions.	CO_2	Other	Implemented	City of Ottawa
Community Climate Change Action Plan – Ottawa	This plan establishes strategies that will help the city move toward long-term sustainability. This plan is updated regularly, and implementation is ongoing.	CO_2, CH_4	Policy	Implemented	The City of Ottawa
Continuous Improvement System for Waste Management – London	The City of London has a package of measures contained within the Continuous Improvement System for Waste Management. The system reexamines current efforts and pursues practical innovations to improve waste management measures. The computer model used measures GHG emissions, emissions of acid rain and smog precursors, and air emissions of heavy metals and dioxins.	CO_2, N_2O	Policy Information	Implemented	The City of London
Cornwall Electric Co-generation	Municipal power system built with a capacity to produce heat as a by-product of electrical generation.	CO_2	Policy	Implemented	Cornwall Electric
ecoPerth – Perth	The Town of Perth has become a model community in its response to the issue of climate change. The Town's ecoPerth program has the objectives of bringing climate change issues to the forefront of the community's consciousness, as well as to reduce the total GHG	CO_2, CH_4	Policy Information Education	Implemented	The Town of Perth

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Ontario (*continued*)					
	emissions by more than 20% by the year 2010 and to integrate sustainability into the social and fiscal fabric of the community.				
Energy Management Services – London	The City of London has recently completed a comprehensive energy management project in facilities the town owns and operates. The primary goal in this review was to reduce energy consumption through implementation of new technology in buildings, retrofits, building automation systems, and conversion to natural gas as a primary fuel source.	CO_2	Policy	Implemented	The City of London
Green-Up – Peterborough	Offers household evaluations of energy, waste, and water use and recommends lifestyle changes to use resources more efficiently.	CO_2	Information Education	Implemented	City of Peterborough
Residential Energy Efficiency Program	Energy appraisal system and a community-based social marketing strategy in the Waterloo Region will be completed over two years. The project seeks to build public awareness and understanding of the climate change issue and the link to personal energy consumption.	CO_2	Education Information	Implemented	University of Waterloo
Prince Edward Island					
Diversion from Landfill and Composting of Organics	The Island Waste Management Corporation (IWMC) is responsible for the management of all solid waste on Prince Edward Island, including the implementation of the Waste Watch Program. Waste Watch, which is currently running in selected areas of the province, is a three-stream source separation system that includes recycling, compost, and waste. Currently, 10 000 t of organic matter are diverted from landfill annually. The IWMC anticipates that by 2002, the Waste Watch program will be operational Island-wide and that 30 000 t of organic material will be diverted from landfill per year and composted. The quantities of CH_4 and CO_2 produced in composting are far less than those produced by the same quantity of organics in a landfill situation.	CO_2, CH_4	Policy	Implemented	Province of Prince Edward Island, The Island Waste Management Corporation

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Quebec					
Commission scolaire de la Rivière-du-Nord Budget Decentralization	Revised energy budget as a means to realize a 10% reduction of GHGs emitted by each of the Commission's 47 schools or buildings. Each building will engage in technical reviews, create an energy budget, implement energy programs, and conduct follow-up.	CO_2	Policy	Implemented	Commission scolaire de la Rivière-du-Nord
Energy Efficiency Committee – Lachine	The committee's mandate is to reduce annual energy consumption by 10%, lower GHG emissions, and provide awareness and training to employees. Improved energy efficiency and the use of alternative fuels in a number of projects have led to reductions in energy use and GHG emissions.	CO_2	Policy Information Education	Implemented	The City of Lachine
Saskatchewan					
Big Five Performance Contract – Saskatoon	The Big Five Performance Contract covers five leisure complexes within Saskatoon and provides capital funding and expertise to evaluate and implement energy-saving measures. Implementation of these measures in several municipal buildings and facilities has resulted in reduced energy use and GHG emissions.	CO_2	Policy	Implemented	The City of Saskatoon
Yukon					
Commercial Energy Auditor Service	This service trains and certifies commercial energy auditors based on the Canadian Institute for Energy Training.	CO_2, SO_2	Information	Implemented	Yukon Development Corporation
Greenhouse Gas Inventory for Whitehorse	The City of Whitehorse is planning to conduct an inventory of GHG emissions using the Federation of Canadian Municipalities database software. This will produce baseline data for sources of emissions within both the community and the City operations. This is seen as the first step toward developing programs to reduce GHG emissions.	n.a.	Research Information	Implemented	The City of Whitehorse
Project Yukon Community Development Fund	This program assists municipal and First Nations governments and community non-profit organizations to implement projects to improve the quality of community life. Energy-related projects include wind energy monitoring, solar power, an educational wind turbine, a wood-fired district energy system, and a series of workshops to increase energy efficiency in recreation facilities.	CO_2	Information Technology Transfer	Implemented	Yukon Economic Development

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Yukon (*continued*)					
Project Yukon Community Development Fund	This program assists municipal and First Nations governments and community non-profit organizations to implement projects to improve the quality of community life. Energy-related projects include wind energy monitoring, solar power, an educational wind turbine, a wood-fired district energy system, and a series of workshops to increase energy efficiency in recreation facilities.	CO_2	Information Technology Transfer	Implemented	Yukon Economic Development
Watson Lake District Heat	This project involved the installation of a heat exchanger on the exhaust of the most frequently used generators to supply heat to town facilities. Recovered waste heat is used to heat several large buildings and the town's swimming pool.	CO_2, SO_2	Policy	Implemented	The Watson Lake Council, Yukon Electrical Company
Transport					
Government of Canada					
Alternative and Future Transportation Fuels	Encourages the development, production, and use of alternative and future vehicle and fuel technologies. The focus is on a number of fuels, including propane, natural gas, and alcohols, as well as on electricity and hydrogen. The program provides support to fleet operators in the public and private sectors through economic and market studies, emissions, and safety assessments; market demonstration, communications, and awareness activities; and general and technical information about fuel options.	CO_2, N_2O	Information Education	Implemented	Natural Resources Canada
Auto $mart Program	Promotes energy-efficient practices among Canadian motorists through publications, events, joint projects, and a Student Driver Kit available to driver trainers across Canada. Motorists also receive helpful tips on buying, driving, and maintaining their vehicles to reduce fuel consumption and GHG emissions.	CO_2, N_2O	Information Education	Implemented	Natural Resources Canada
Comprehensive Transport Management Training – China	This project is designed to strengthen China's managerial, planning, and operational practices in the transportation sector, resulting in decreased GHG emissions from this sector.	CO_2, N_2O	Policy Information	Implemented	Canadian International Development Agency

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Development and Demonstration of Hydrogen Fleet Fuel Appliance	The project consists of the development of a system for improving the refuelling of hydrogen fuel cell-powered buses and other vehicles at a reduced cost. With the new high-volume refuelling system, bus companies running fuel cell vehicles will be able to refuel more vehicles overnight and thus reduce their costs by taking advantage of off-peak electricity rates.	CO_2, N_2O	Research	Planned	Industry Canada
Emissions Research and Measurement Division	Provides support to a number of industry and government programs directed at developing new technologies for reducing GHG emissions from the transportation sector. Activities include characterization of emissions for gasoline and diesel engines, hybrid vehicles, fuel conservation systems, fuel cells, and related equipment.	CO_2	Research	Implemented	Environment Canada
EnerGuide for Vehicles	The program provides prospective new-vehicle buyers with information on energy consumption and costs to enable them to compare and purchase the most fuel-efficient vehicle that meets their needs. Includes information on all new vehicles sold and a complete listing of fuel consumption information for all new vehicles, and identifies the most fuel-efficient vehicles in different categories.	CO_2, N_2O	Information Education	Implemented	Natural Resources Canada
Environmental Management Program – Bangladesh	This project aims to strengthen the institutional capacity of Bangladesh's Department of Environment. Activities include establishing environmental management demonstration areas and implementing environmental initiatives, which can help reduce GHG emissions, including a demonstration project targeting the conversion of rickshaws to natural gas.	CO_2, N_2O	Policy Information	Implemented	Canadian International Development Agency, KPMG-Halifax, Resources Futures International, University of Ottawa, Dalhousie University, Bangladesh Department of Environment
Excise Tax Exemption for Ethanol and Methanol	The federal government's Excise Tax Exemption for Ethanol and Methanol Program provides a 100% exemption from the $0.10 per litre excise tax on gasoline for ethanol and methanol made from biomass that is blended with gasoline.	CO_2, N_2O	Economic	Implemented	Natural Resources Canada, Finance Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
FleetSmart	Helps fleet managers reduce fuel costs and vehicle emissions through energy-efficient practices. The program develops energy use data and profiles for fleet segments and provides a range of products, such as an energy management tool kit, success stories and case studies that identify best practices, and training initiatives.	CO_2, N_2O	Information Education	Implemented	Natural Resources Canada
FleetWise	FleetWise aims to help federal government departments increase the efficiency of their fleets in order to cut costs and minimize the negative environmental impacts from the operation of fleet vehicles. The program builds on sound management practices by improving vehicle utilization, reducing fuel consumption, increasing the efficiency and environmental performance of vehicle operations, and encouraging greater use of alternative fuels.	CO_2, N_2O	Policy	Implemented	Natural Resources Canada
Intelligent Transportation System (ITS)	This plan sets out the federal government's strategy for stimulating the development and deployment of these systems across urban and rural Canada. The goals are to maximize the use and efficiency of existing infrastructure and meet future mobility needs more responsibly. The ITS Plan provides leadership and support to advance the application and compatibility of ITS technologies to make Canada's multimodal ground transportation system safe, integrated, efficient, and sustainable.	CO_2, N_2O	Information	Implemented	Transport Canada
MOEF Institutional Strengthening – India	This project will strengthen the capacity of the Indian Ministry of Environment and Forests (MOEF) to address a broad range of environmental issues, one of which is converting three-wheel vehicles to natural gas, thereby reducing GHG emissions.	CO_2	Policy Information	Implemented	Environment Canada, Canadian International Development Agency
Moving On Sustainable Transportation	Supports projects that produce the kinds of education, awareness, and analytical tools Canada needs if we are to make sustainable transportation a reality. Program provides funding to help support projects that will provide practical information and tools to better understand sustainable transportation needs; encourage the creation of innovative ways to promote sustainable transportation; and achieve quantifiable environmental and sustainable development benefits.	CO_2	Information Education	Implemented	Transport Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
National Biomass Ethanol Program	In December 1994, the federal government reiterated its support for the production and use of fuel ethanol by announcing the National Biomass Ethanol Program. This program introduced a $70-million, government-guaranteed line of credit that will make it easier for manufacturers to obtain private sector financing for ethanol plants, and will also provide a means of rescheduling their long-term debt in the event of financial difficulties. The line of credit is intended to assist ethanol manufacturers should a future government change the excise tax on fuel ethanol.	CO_2, N_2O	Economic	Implemented	Natural Resources Canada, Finance Canada
Natural Gas for Vehicles	An incentive program designed to encourage the production and use of natural gas vehicles. The program contributes funds for road vehicles converted to natural gas. The program also encourages the development of new refuelling outlets, cost-shared marketing and awareness activities, and co-funded research and development.	CO_2, N_2O	Economic	Implemented	Natural Resources Canada
Transportation Energy Technologies Program	Transportation Energy Technologies Program (TETP) supports efforts by Canadian industry to develop and deploy technologies and fuels that provide a cleaner, more sustainable energy mix for our roadways. TETP assists industry in responding to a growing worldwide demand for more environmentally responsible transportation alternatives, while enhancing Canada's competitive edge in the changing transportation marketplace. Key activities include the development of electric vehicles and hybrids, fuel cells, and alternative transportation fuels, including natural gas, propane, ethanol, methanol, and hydrogen.	CO_2, N_2O	Research	Implemented	Natural Resources Canada
Vehicle Fuel Efficiency Program	Program promotes improvements in vehicle fuel efficiency by encouraging motor vehicle manufacturers to meet voluntary annual company average fuel consumption targets for new automobiles. Working with vehicles, this initiative focuses on opportunities to improve vehicle fuel technology and provide information to consumers on the fuel efficiency of vehicles.	CO_2, N_2O	Voluntary	Implemented	Natural Resources Canada

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Alberta					
Green Corridors	This program seeks to mitigate GHG emissions by establishing green corridors, or alternative refuelling infrastructure, along major transportation routes in Alberta.	CO_2, N_2O	Policy Fiscal	Implemented	Government of Alberta
Intelligent Transportation System	This measure includes such actions as adaptive signal control systems and traveller information systems.	CO_2, N_2O	Policy Fiscal	Implemented	Government of Alberta
Low Emissions Transit Bus Pilot Project	Under this program, Alberta urban municipalities would have the opportunity to test-market innovative fuel-efficient bus technology.	CO_2, N_2O	Policy Fiscal	Implemented	Government of Alberta
Transit Enhancement	Measures aimed at increasing transit use in urban centres through provincial and federal funding to improve transit service and expand infrastructure.	CO_2, N_2O	Policy Fiscal	Implemented	Government of Alberta
British Columbia					
Alternative Fuel Vehicles	A purchase of 150 natural gas or propane vehicles to replace aging fleet vehicles. Fifty natural gas buses have been purchased in recent years.	CO_2, N_2O	Policy	Implemented	Ministry of Transportation and Highways
Ballard Hydrogen Fuel Cell Technology	Since 1991, Natural Resources Canada has provided technical and financial assistance to Ballard Power Systems of Vancouver to develop fuel cell technology for transportation. This involved field trials in the early 1990s, followed by field trials on a full-sized bus. The first fuel-cell-powered bus was launched in 1994. The 40-foot fuel cell bus is now operational. The current phase of the program involves testing three bus fleets of three buses each.	CO_2, N_2O	Economic	Implemented	Natural Resources Canada, Ballard Power Systems
Clean Vehicles and Fuels Program	The Clean Vehicles and Fuels Program is the strongest and most thorough program of its kind in Canada. It includes tough regulations and programs to mandate and promote cleaner fuels and vehicles, and thereby emissions.	CO_2, N_2O	Regulatory	Implemented	Ministry of Transportation and Highways
Consultation on Options to Reduce GHGs from Light Trucks and Passenger Vehicles	Consultation with stakeholders to identify and evaluate options to reduce GHG emissions from passenger vehicles and light trucks, including the option of a “feebate” system based on vehicle fuel efficiency.	CO_2, N_2O	Policy	Implemented	Ministry of Finance and Corporate Relations

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
British Columbia (*continued*)					
Cycling Network Program	Invests annually to aid the development of cycling infrastructure in various communities.	CO_2, N_2O	Economic	Implemented	Ministry of Transportation and Highways
Ethanol Development Program	Production of fuel ethanol from wood residue has major potential to reduce GHG emissions from the transportation sector, reduce wood smoke, and provide added value to the forest sector. Released a study on the feasibility of making ethanol from B.C. wood residue and the available wood-to-ethanol technologies.	CO_2, N_2O	Economic	Planned	Ministry of Environment, Lands and Parks
Fuel Cell Technology Development	Through industry, institutional and government alliances and access to a hydrogen-ready laboratory infrastructure. Facilitate technology development and demonstration projects that allow fuel cell companies to test and perfect their new, pre-commercial fuel cell technologies.	n.a.	Research	Implemented	Government of British Columbia, Government of Canada
Gasoline and Diesel Tax for Public Transit	A gasoline and diesel tax is collected on behalf of certain public transit authorities for transit, in addition to the general fuel tax on gasoline and diesel.	CO_2, N_2O	Economic	Implemented	Ministry of Finance and Corporate Relations
High-Occupancy Vehicle (HOV) and "Bus Only" Lanes	Project to encourage the use of buses, van/carpools, and other high-occupancy vehicles.	CO_2, N_2O	Policy	Implemented	Ministry of Transportation and Highways
Intelligent Transportation Systems	Involves incident management and traveller information systems on the Trans-Canada Highway.	CO_2, N_2O	Information	Implemented	Ministry of Transportation and Highways
Long-term Tax Policy for Alternative Fuels	Implementation of a long-term general tax policy for all alternative motor fuels. Under the policy, tax rates on alternative motor fuels will be phased in, based on market share and environmental benefits, with the maximum tax rate below the gasoline tax rate. This will provide suppliers and consumers of alternative fuels with certainty that alternative fuels will receive preferential tax treatment over the long term, to encourage the development and distribution of these fuels and the purchase of alternative-fuel vehicles.	CO_2, N_2O	Economic Policy	Adopted	Ministry of Finance and Corporate Relations

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
British Columbia (*continued*)					
Motor Assisted Bicycles	Legislation passed this year in British Columbia encourages people to use motor-assisted bicycles as an alternative mode of transportation. Such bicycles are fitted with an accessory motor kit for use up hills or when needed. Under the amendment to the *Motor Vehicle Act*, people riding motor-assisted cycles will not need vehicle registration, licences, or insurance.	CO_2, N_2O	Legislative	Implemented	Ministry of Transportation and Highways
Motor Fuel Tax Exemptions for Alternative Fuels	British Columbia provides a motor fuel tax exemption for natural gas and 85% ethanol and methanol blends of fuel used in motor vehicles. There is also a preferential tax rate for auto-propane of 7% of the price, significantly lower than the gasoline tax rate on an energy equivalent basis. A tax exemption will be provided for the ethanol used in lower-level gasoline–ethanol blends once a commercial-scale ethanol plant is in operation in the province.	CO_2	Economic	Implemented	Ministry of Finance and Corporate Relations
National Fuel Cell Research and Innovation Initiative	A National Fuel Cell Research Facility has been established at the National Research Council of Canada's Innovation Centre in Vancouver. The National Research Council, Natural Resources Canada, and the Climate Change Action Fund supports a research and technology demonstration and deployment program. As well, a university research fund has been established to build on work being done by the National Research Council and the Natural Sciences and Engineering Research Council.	CO_2, CH_4, N_2O, HFCs, PFCs, SF_6	Research	Implemented	National Research Council of Canada, Natural Resources Canada, Natural Sciences and Engineering Research Council
Partial Sales Tax Rebate for Factory-Produced Alternative-Fuel Vehicles and Vehicle Conversions	British Columbia provides a provincial sales tax refund of up to $500 for purchases of eligible new factory-manufactured alternative-fuel vehicles and up to $5 000 for eligible alternative-fuel passenger buses. Kits and installation labour to convert existing motor vehicles to operate on alternative fuels such as propane, natural gas, and electricity are also exempted from provincial sales tax.	CO_2	Economic	Implemented	Ministry of Finance and Corporate Relations
Regional Growth and Transportation Demand Management	The provincial government is providing technical support to local and regional governments in the main urban growth areas (Lower Mainland, Okanagan Valley, and Greater Victoria) to help them develop regional growth and transportation demand management strategies.	CO_2, N_2O	Policy	Implemented	Ministry of Transportation and Highways

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
British Columbia (*continued*)					
(TDM) Strategies	These strategies are aimed at reducing vehicle emissions by designing settlement patterns and transportation modes that decrease vehicle use and shorten travel distances. The Greater Vancouver Regional District, for example, is taking action to control vehicle-related emissions under its Air Quality Management Plan. The main initiatives involve shaping future growth in compact metropolitan communities, with improved public transit and TDM measures (e.g., the awareness-raising "Go Green" program) to discourage the use of single-occupant vehicles.				
SkyTrain Expansion	The provincial government has committed $1.167 billion to extend Greater Vancouver's rapid transit SkyTrain line and purchase 60 new SkyTrain vehicles, as the result of a June 1998 agreement with Bombardier Inc. The line, linking Vancouver to Coquitlam and New Westminster, will help control vehicle emissions (including GHG emissions) by providing a low-emission alternative to the motor vehicle. Completion is expected in 2001.	CO_2, N_2O	Economic	Implemented	Ministry of Transportation and Highways
TransLink	The B.C. legislature created the Greater Vancouver Transportation Authority, which became responsible for all transit and regional transportation functions in the Lower Mainland. Renamed "TransLink" in April 1999, this new regional transportation network is intended to improve transportation management in the region, reducing energy consumption and related GHG emissions.	CO_2, N_2O	Policy	Implemented	Ministry of Transportation and Highways
Manitoba					
Ethanol Blend Tax Relief	A tax forgiveness of 2.5 cents per litre is allowed for blends of 10% alcohol in gasoline sold in the province of Manitoba. The alcohol must be derived from biomass materials, be denatured, and not contain more than 1% water. The tax relief applies only to the gasoline containing alcohol that is produced and consumed in Manitoba.	CO_2, N_2O	Economic	Implemented	Government of Manitoba
Manitoba Conservation Vehicle Replacement Program	The Manitoba Department of Conservation has committed to replacing all vehicles due for replacement with the most fuel-efficient vehicles available for the duties required. Eighty vehicles have been replaced, and fleet sizes have been downsized where appropriate.	CO_2, N_2O	Policy	Implemented	Government of Manitoba

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
New Brunswick					
TRAX	A public education program to reduce the use of private vehicles and encourage mass transportation/car pooling/ walking/bicycling as viable healthy alternatives. Several major employers in the core of Halifax will be assisted in setting up in-house programs. Existing efficient public transportation initiatives will be supported and efforts undertaken to change/introduce legislation that will encourage more efficient public transportation. Partnership with the health field will emphasize the negative aspects of personal vehicles and the positive aspects of alternatives.	CO_2, N_2O	Information	Implemented	Ecology Action Centre, Nova Scotia Department of Natural Resources, Department of Transportation, City of Halifax, Metro Transit, Environment Canada
Nova Scotia					
Driver Education	The objective of the Driver Education Program is to encourage the adoption of energy efficiency into driver-training curriculum. The activity involves marketing of curriculum material developed by Natural Resources Canada to driving schools in the province.	CO_2, N_2O	Information Education	Implemented	Department of Natural Resources and Energy, Natural Resources Canada
Ontario					
Anti-Smog Action Plan	Plan includes current initiatives and future actions to reduce smog-causing pollutants.	CO_2	Policy	Implemented	Ministry of the Environment
Carpool Lots	A program of continued construction at selected highway interchanges of lots adjacent to the highways, to increase carpooling.	CO_2, N_2O	Policy	Implemented	Ministry of Transportation
Drive Clean and Smog Patrol	One of the most comprehensive emission-testing programs in North America. In April 1999, the Drive Clean program began mandatory vehicle testing. The truck and bus component of the program began in September 1999. Ontario will be one of only three jurisdictions in North America testing trucks and buses, as well as cars. The program is projected to reduce emissions of smog-causing pollutants from vehicles in the program area over the course of the program. GHG emissions are also projected to decline.	CO_2, N_2O	Regulatory	Implemented	Ministry of the Environment
Intelligent Transportation Systems	Integrated freeway management program to eliminate vehicle idling and traffic congestion, thereby decreasing emissions.	CO_2, N_2O	Information	Implemented	Ministry of Transportation

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Ontario (*continued*)					
Shortline Railways Act	Legislation created to facilitate the establishment of shortline rail operations. This legislation will promote shifting freight loads from road to rail and reduce truck traffic.	CO_2, N_2O	Legislation	Implemented	Ministry of Transportation
Statement of Environmental Values	Ensures that all new significant policies and programs must be screened for environmental implications and create opportunities to identify potential GHG emissions before they occur.	CO_2, N_2O	Policy Legislation	Implemented	Ministry of Transportation
Transit-Supportive Land Use Planning Guidelines	Providing guidelines for city planners and designers to promote compact urban forms, transit-supportive development densities, and mixed-use practices to reduce vehicle emissions.	CO_2, N_2O	Policy	Implemented	Ministry of Municipal Affairs and Housing
Prince Edward Island					
Advanced Fleet Management System for the Provincial Highway Maintenance Fleet	This program will utilize Intelligent Transportation Systems in planning, implementing, and deploying a fleet management system that will facilitate and foster improved route planning and scheduling of maintenance fleet; improved management of inventory control for materials; improved safety and efficiency of the maintenance fleet; real-time fleet location and status monitoring; improved response time for road salt/sand application; and reduced operating costs.	CO_2, N_2O	Policy Information	Implemented	PEI Department of Transportation and Public Works
Advanced Traveller Information System	A traveller information system that distributes information on weather, road conditions, construction zones, detours, and congestion by means of radio broadcasts, variable message signs, web pages, and/or other media. The Department is testing an Advanced Traveller Information System and is seeking ways to distribute existing information easily.	CO_2, N_2O	Information Voluntary Economic	Adopted	PEI Department of Transportation and Public Works
Greater Charlottetown Synchronized Traffic Signal System	Improving traffic flow through intersections through the application of Intelligent Transportation Systems (ITS) reduces vehicle emissions by minimizing idling times at red lights. Phase I, the widening of the intersection on the Charlottetown Perimeter Highway to allow for two through-lanes in each direction, has been completed, implementing time-based signal coordination along the	CO_2, N_2O	Regulatory Policy	Implemented	PEI Department of Transportation and Public Works

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Prince Edward Island (*continued*)					
	entire section of highway. Phase II will expand the system to include University Avenue. If funding becomes available in the City of Charlottetown, implementation of Phase III will include the upgrading of the entire signalized network system (approximately 40 signalized intersections) to be fully adaptive for all signalized intersections in the Greater Charlottetown Area.				
PEI Enerpool	The program objective is to demonstrate the energy conservation potential through ride sharing. The program sponsors two vans that provide weekday transportation to and from Charlottetown, Prince Edward Island.	CO_2, N_2O	Information Voluntary	Implemented	PEI Department of Development and Technology
Road Weather Information System (RWIS)	Improved knowledge of specific road conditions (temperature, moisture, wind speed, salt concentration) greatly improves road condition forecasting ability. RWIS enhances highway maintenance decision-making ability, leading to more efficient use of the highway maintenance fleet. Accurate, timely, and specific road condition information can help pinpoint problem areas and dispatch equipment accordingly.	CO_2, N_2O	Information	Implemented	PEI Department of Transportation and Public Works
Quebec					
Employer Program	A program developed a transport plan for businesses that includes a wide range of measures to facilitate travel by employees between home and workplace. It is designed to bring about change in travel habits by promoting public transport and ride sharing and rethinking the management of parking lots.	CO_2, N_2O	Voluntary Information	Implemented	Department of Transport
Public Transit Program	The program is designed to create conditions in the cores of major urban areas to encourage use of public transit as the main mode of travel, as well as encouraging the maintenance and development of efficient networks and services. The capital investment aspect of the program is designed to encourage maintenance of assets, improve infrastructures, and expand networks.	CO_2, N_2O	Economic Information	Implemented	Department of Transport

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Saskatchewan					
Alternative Fuels Initiative	Demonstration of cost-effective and efficient alternative fuels such as natural gas. To date, approximately 130 SaskEnergy vehicles operate on natural gas; 125 of those are bio-fuel vehicles.	CO_2, N_2O	Policy Technology Demonstration	Implemented	SaskEnergy
Ethanol Incentive	The Government of Saskatchewan introduced a five-year ethanol incentive program that began in 2000. It is a rebated portion of the Fuel Tax to the fuel wholesaler on eligible ethanol-blended fuel produced and consumed in Saskatchewan.	CO_2, N_2O	Economic	Implemented	Government of Saskatchewan
Short-line Railway Advisory Program	This program provides technical, marketing, and legal advice to groups interested in setting up short line railways. Its objectives include reducing grain producers' transportation costs relative to truck transportation; minimizing damage to thin pavements due to heavy grain truck traffic; and reducing the taxation burden on rural residents associated with the elimination of railways and elevators. Six short-line railways are currently in operation, with a seventh in the process of being established. Total short-line trackage is expected to reach 1 200 km.	CO_2	Policy Economic	Implemented	Saskatchewan Department of Highways and Transportation
Trucking Partnership Program	The program provides an opportunity for companies to improve the efficiency of their hauling operation by allowing loads in excess of weights and/or lengths that can be legally hauled on the provincial highway system. The companies must meet specific operational requirements, including the sharing of haul savings with the Department. The objectives of the program are to support economic development in Saskatchewan; provide additional revenues for road improvement; promote the use of more efficient, road-friendly vehicle technology; and ensure that the taxpayers and motoring public are not adversely affected by industrial traffic.	CO_2, N_2O	Regulatory Economic	Implemented	Saskatchewan Department of Highways and Transportation
Volatile Organic Compounds Reduction	The program is reducing emissions of volatile organic compounds by cutting down the use of trichloroethylene in asphalt testing; promoting the use of emulsified asphalt instead of cutting back asphalt where possible; and increasing the use of water-based paint on road stripping.	VOCs	Voluntary	Implemented	Saskatchewan Department of Highways and Transportation

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Saskatchewan (*continued*)					
5 Axle Sanding/Snow Plow Trucks	Through the use of new technology, reduce the number of snow plow/sanding trucks while maintaining the same level of service. Reduce the overall fuel consumption per unit of work.	CO_2	Policy	Implemented	Saskatchewan Department of Highways and Transportation
Yukon					
Alternative Fuel Vehicles	Government Services has been investigating the feasibility of using alternative fuel vehicles in the fleet. Their efforts to reduce the use of fossil fuels began with downsizing vehicle engines in 1993. They have purchased and tested propane vehicles and an electric car. The next step is to purchase a hybrid vehicle.	CO_2, CH_4	Research Information Education	Implemented	Government of Yukon
Anti-Idling Campaign	The Transportation Division of Community and Transportation Services is conducting a Vehicle Idling Reduction campaign for its employees during the winter of 2000–01. Through a series of fact sheets, the project aims to raise awareness about the environmental and financial costs of vehicle idling and discourage this practice. The effectiveness of the campaign will be assessed through a short questionnaire, as well as the calculation of maintenance vehicle fuel use. Based on these results, the program will be modified and possibly expanded to reach the entire department, Yukon government, and/or the general public.	CO_2, CH_4	Information Education	Implemented	Government of Yukon
Vehicle Emissions Testing	Yukon Renewable Resources, Environment Canada, and the City of Whitehorse collaborate on a vehicle emission-testing clinic held each June in Whitehorse. The public is invited to bring their vehicles to the clinic for a free check of air pollutants coming out of their tailpipes. Information is provided on climate change, the production of CO_2 (based on a correlation with gas consumption), vehicle maintenance, and driving tips to reduce emissions. Participants are advised how to correct problems if the vehicle does not pass the emissions test.	CO_2, N_2O	Policy Information	Implemented	Yukon Renewable Resources, Environment Canada, City of Whitehorse

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Waste Management					
Government of Canada					
Demonstration of an Innovative Technology to Convert Landfill Gas to Liquified Natural Gas and CO_2	This project carried out by CFS Alternative Fuels Inc. is demonstrating the cost-effectiveness of turning landfill gas into liquified natural gas for vehicular fuel and pure CO_2 for industrial use. The demonstration is carried out at the Hartland Capital Regional District landfill.	CO_2, N_2O	Research	Implemented	Natural Resources Canada
Demonstration of Micro-turbine Technology Using Landfill Gas as a Fuel to Produce Electricity	This demonstration project at the Regional Municipality of Ottawa-Carleton Trail Road landfill is demonstrating the use of the Honeywell 75kW microturbine using landfill gas to generate electricity.	CO_2, CH_4	Research	Implemented	Natural Resources Canada, Environment Canada
Enhanced Anaerobic Digestion of Municipal Solid Waste with Energy Recovery	The project consists of the development and demonstration of SUBBOR, an innovative approach to the treatment of the non-recyclable biomass components of municipal solid waste. The project will involve modified anaerobic digestion (a two-step process), followed by power generation and stabilization of the solid residue for use.	CO_2, CH_4	Research	Implemented	Industry Canada
Alberta					
Calgary Landfill Design Project	A project to study landfill designs for the control of landfill gas emissions (including CH_4). The project involves the building of two experimental landfill cells for studying lining/capping materials for landfills.	CO_2, CH_4, N_2O	Research	Implemented	Alberta Environment, City of Calgary, University of Calgary

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Ontario					
New Landfill Standards	Requires the collection of landfill gas from large new and expanding landfills with more than 2.5 million tonnes waste capacity.	CH_4	Policy	Adopted	Ontario Ministry of the Environment
Prince Edward Island					
Diversion from Landfill and Composting of Organics	The Island Waste Management Corporation (IWMC), a provincial Crown corporation, is responsible for the management of all solid waste on Prince Edward Island, including the implementation of the Waste Watch Program. Waste Watch, which is currently running in selected areas of the province, is a three-stream source separation system that includes recycling, compost, and waste. Currently, 10 000 t of organic matter are diverted from landfill annually. The IWMC anticipates that by 2002, the Waste Watch program will be operational Island-wide and that 30 000 t of organic material will be diverted from landfill per year and composted. The quantities of CH_4 and CO_2 produced in composting are far less than those produced by the same quantity of organics in a landfill situation.	CO_2, CH_4	Policy	Implemented	The Island Waste Management Corporation, PEI Department of Fisheries, Aquaculture and Environment
Yukon					
Waste Watch	This curbside compost collection pilot project was implemented by the City of Whitehorse in 1996. Approximately 230 participating households separate their waste into compostables, recyclables, hazards, and garbage. While residents take their recyclables and hazards to a recycling depot, the City collects compostables and garbage on alternate weeks. The objectives of this initiative are to reduce residential waste by 50%, turn waste into compost, and reduce CH_4 gas by diverting organics from the landfill.	CH_4	Economic	Implemented	City of Whitehorse

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Cross-Sectoral Initiatives					
Government of Canada					
Action Plan 2000 on Climate Change	The Action Plan 2000 on Climate Change, the Government of Canada's contribution to the First National Business Plan, will achieve a significant reduction in CO_2 emissions. This $500 million undertaking will address CO_2 emissions in a wide array of sectors, including transportation, electricity, CO_2 capture and storage, buildings, agriculture, forestry, minerals and metals, and industry.	CO_2	Economic Research Information Education	Implemented	Government of Canada
Adaptation and Impacts Research Program	Program promotes and conducts research designed to increase understanding of atmospheric change impacts and the required adaptations. These research activities are designed to provide information on the environmental, social, and economic risks and impacts caused by vulnerabilities to atmospheric change, variability, and extremes, and on the viability of adaptive responses. The program focuses on a number of key research themes (e.g., integrated assessments, health and atmospheric change, human dimensions of weather and climate, water and climate variability and change, integrated air issues, adaptation and impacts science) and works in partnership with selected universities and international collaborators.	CO_2, CH_4	Research	Implemented	Environment Canada
Adapting to Climate Change Impacts on the Landscape	This program, a combined government, university, and industry effort, is assessing how climate change could affect selected aspects of the Canadian landscape in order to help decision makers determine their adaptation options. Current topics include sea level rise impacts on the coasts of the Western Arctic and Prince Edward Island, landslides in the Rocky Mountains, slope stability implications for pipelines across Canada, drought frequency on the Prairies, permafrost thaw and impacts on infrastructure in the Northwest Territories, and flooding in the Red River Basin.	CO_2, CH_4	Research Information	Implemented	Natural Resources Canada
Arctic Climate Science Research Cooperation with Japan	A bilateral partnership with Japan, which will feed into international programs. The science generated will fill knowledge gaps and form the basis for policy deliberations on climate change impacts on biodiversity, human conditions, marine habitat, carbon sequestration potential, and issues of pollutants in the Arctic Ocean.	CO_2, CH_4	Research	Adopted	Fisheries and Oceans Canada, Natural Resources Canada, Environment Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Baseline Protection Initiative	This initiative will offer corporations/governments the opportunity to track actions resulting in emissions reductions. The initiative has both a policy-making capacity and a registry with aims complementary to other government actions.	n.a.	Information	Implemented	Government of Canada
BIOCAP	BIOCAP is a non-profit foundation that supports scientific, technological and policy research on mitigating GHG emissions through bio-based carbon sinks, energy, chemical and material resources.	CO_2, CH_4, N_2O	Research	Implemented	Government of Canada, Queens University
Canadian Council of Ministers of the Environment Indicators Study of Climate Change	This project will develop preliminary indicators of climate change in Canada and publish them in a public-friendly document.	CO_2, CH_4, N_2O	Policy Information	Adopted	Environment Canada
Canadian Environmental Solutions	An interactive database of Canadian companies that provide technological assistance to a wide range of environmental problems and renewable energy requirements.	CO_2	Information	Implemented	Industry Canada
Canadian Foundation for Climate and Atmospheric Sciences	Operates as an independent body. This is the largest single investment in university research in these areas in Canadian history. The Canadian Foundation for Climate and Atmospheric Sciences will do science research in climate change, extreme weather, and air quality.	CO_2, CH_4, N_2O	Research Education Information	Planned	Government of Canada
Canadian Glaciology Program	This program collects and analyzes core samples from High Arctic and Cordilleran glaciers for past temperatures, snow accumulation, and atmospheric concentrations of GHGs, contributing to the international body of data that is needed to understand the long- and short-term effects of climate change.	CO_2	Research	Implemented	Natural Resources Canada
Canadian GHG Verification Centre	This centre serves as a central clearinghouse for collecting, maintaining, updating, and sharing the latest documentation and tools required for the measurement and verification of GHG emissions reduction projects and technologies. The centre will also assist in developing methodologies, provide technical services, and facilitate the establishment of trained and accredited verification entities that would perform measurement, monitoring, and verification.	CO_2, CH_4, N_2O, HFCs, PFCs, SF_6	Information	Implemented	Environment Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
China Council for International Cooperation on Environment and Development – China	The project assists China in developing integrated policies highlighting the critical linkages between environmental sustainability and economic and social development. It supports the China Council for International Cooperation on Environment and Development, a high-level non-governmental consultative organization that strengthens cooperation and exchange between China and the international community on environment and development.	CO_2, CH_4	Policy	Implemented	Canadian International Development Agency, Simon Fraser University, State Environment Protection Agency
Clean Development Mechanism (CDM)/Joint Implementation (JI) Office	Canada's CDM/JI Office was established in 1998 as the federal government focal point on the Clean Development Mechanism and Joint Implementation, two project-based mechanisms under the Kyoto Protocol. The Office facilitates Canadian participation in CDM/JI, evaluates and approves project proposals submitted by Canadian entities, and assists with host country approval processes, including strategic cooperation agreements with the host countries. It also provides technical guidance to companies participating in CDM/JI.	CO_2, CH_4, N_2O	Policy Economic	Implemented	Department of Foreign Affairs and International Trade
Climate Change Action Fund (CCAF) Extension	The Climate Change Action Fund Extension was announced as a $150 million, three-year initiative over the 1998/99–2000/01 period. It funds economic and policy analysis, as well as federal policy coordination and early action to reduce emissions. The primary objectives of the CCAF were to demonstrate the federal government's commitment to ensuring that Canada meets its climate change obligations and to help lay the groundwork for a National Implementation Strategy on Climate Change, developed in concert with the provinces and territories, industry, and other stakeholders.	CO_2, CH_4, N_2O	Economic Research Information Education	Implemented	Government of Canada
Climate Change Skills and Knowledge Transfer Program	The Soil Conservation Council of Canada delivers this initiative via its "Taking Charge" program, to assist farmers in identifying best management practices that can reduce GHG emissions. Activities supported by this program include the coordination and development of "grassroot" provincial teams to raise farmers' awareness of climate change issues; the development of information tools; the holding of provincial workshops on GHG-reducing activities; and a national conference to further their understanding of climate change issues.	CO_2, CH_4, N_2O	Information Education	Implemented	Agriculture and Agri-Food Canada, Soil Conservation Council of Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Climate Modelling and Analysis Program	Program develops and uses sophisticated atmospheric and coupled climate models and advanced analysis of observed data and model output to improve understanding of present, past, and future climates. The models and analysis tools are used in short-term climate forecasting, for studies of climate predictability and variability, and to project and analyze the future climate change that will result from the anthropogenic changes in the composition of the atmosphere.	CO_2	Research Information	Implemented	Environment Canada
Climate Monitoring and Data Interpretation Program	Monitors and analyzes the Canadian and global climate to document and understand climate trends and variations, including changes in extremes, and to attribute these changes to global warming, changes in the circulation of the global atmosphere and oceans, and other causes. It also uses integrated historical and proxy data sets to extend the climate record back for 1 000–2 000 years.	CO_2	Research Information	Implemented	Environment Canada, Department of Fisheries and Oceans, Natural Resources Canada
Climate Processes and Earth Observation Program	Program conducts research to improve understanding of energy and water cycles and their component processes, particularly in cold climates. Included are the development and implementation of improved remote sensing and field measurement methodologies. Emphasis is placed on the measurement and modelling of land surface processes and on the evaluation and application of regional climate and weather models as integrating tools.	CO_2	Research Information	Implemented	Environment Canada, Department of Fisheries and Oceans, Natural Resources Canada
The Climate Research Network	Program engages the energies, ideas, and talents of the university community to expand and complement the scientific knowledge and expertise available in the country with respect to climate change and climate variability. It currently consists of a network of nine collaborative research groups in 18 Canadian universities. Each group focuses on a specific area of climate research.	CO_2	Research Education Information	Implemented	Environment Canada
Development of a National Implementation Strategy on Climate Change	A national implementation strategy to meet Canada's obligations under the Kyoto Protocol. Sixteen Issue Tables, involving some 450 experts from multiple perspectives, examined the costs, impacts, and benefits of implementing the Kyoto Protocol and the options open to Canada in developing a climate change strategy. Their work has been	CO_2	Policy Other	Implemented	Government of Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
	the foundation for the development of the National Implementation Strategy and the First National Business Plan of measures to implement the strategy.				
Eco-Action Funding Program	Provides financial support to non-profit Canadian community-based groups that want to undertake local environmental projects that have measurable, positive impacts on the environment.	CO_2	Fiscal	Implemented	Environment Canada
Education and Awareness Hub Network Pilot	The program establishes a multi-stakeholder climate change public education and outreach hub for effective coordinated local delivery of activities. They are linked and guided at the national level by the Hub Pilot Advisory Team (HPAT). Activities include an electronic clearinghouse for sharing information and best practices, baseline research, and development of indicators.	n.a.	Research Education Information	Implemented	Government of Canada
Environmental Technology Advancement Program	Develops, uses, and transfers Canadian know-how and technologies to help protect and enhance the environment at home and abroad by addressing key environmental issues, such as climate change, clean air, and clean water, while contributing to Canada's sustainable development objectives. The program supports the development and application of scientific support tools, technologies, and know-how to address environmental priorities; partners with other experts and stakeholders to maximize resources in addressing key environmental issues domestically and globally; and enhances private sector capacity to respond to environmental challenges.	CO_2, CH_4, N_2O	Research Technology Transfer	Implemented	Environment Canada
Feasibility of Identifying Heat Effects and Mortality in Canadian Seniors as a Basis for Effective Climate Change Risk Manage-ment and Adaptation	The objective of the research is to examine the effects of heat and related mortality rates in Canadian seniors. The data collected will serve as a basis for effective climate change risk management and adaptation capabilities.	CO_2	Research	Implemented	Health Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Global Array of Profiling Floats	Argo is an international program that will collect ocean data necessary for understanding and predicting phenomena that influence our global climate, enabling the development of integrated atmospheric and oceanographic models. A global array of 3 000 profiling floats will observe the ocean's upper layer in real time. Canada has committed to the purchase of more than 20 floats today and hopes to commit to 90–150 floats in the overall program.	CO_2	Research Information	Implemented	Fisheries and Oceans Canada, Environment Canada
Global Baseline Surface Radiation Network	Canada participates in an international radiation monitoring network called the Global Baseline Surface Radiation Network. Ground-based measurements are taken continuously using sophisticated equipment. These data are used along with satellite measurements to improve our understanding of how much energy is entering Earth's atmosphere and how much is leaving it. Canadian measurements are taken at Bratt's Lake in Saskatchewan and at the new stratospheric observatory at Eureka in the Canadian Arctic.	CO_2	Research	Implemented	Environment Canada
Greenhouse Gas and Aerosol Measurement Program	The overall objective is to contribute to our understanding of GHGs and aerosols — their trends, budgets, and role in climate change — by carrying out measurements, modelling, and process studies with a Canadian focus and by interfacing with other major international programs. There are currently three major areas of research: GHG and aerosol measurements as part of Canada's contribution to the WMO Global Atmospheric Watch and other international programs; assessment of the role of the Canadian boreal forest and the Hudson Bay lowlands as sources/sinks of GHGs; and assessment of the role of natural and anthropogenic aerosols in Canadian climate change.	CO_2	Information Research	Implemented	Environment Canada
Ice-Core Circum-Arctic Paleoclimate Program	This program is a Canadian-led multilateral program that collects and studies ice cores in order to determine the timing, rate, and cause of past global changes.	CO_2	Research Information	Implemented	Natural Resources Canada
Impact of Climate Change on Migratory Caribou	A program in which herd-specific assessments and other tools are used to evaluate public policy options. This research project is led by Environment Canada's Northern Conservation Division and extends across northern North America.	n.a.	Research	Implemented	Environment Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Inter-governmental Panel on Climate Change	Assesses the available scientific information, assesses the potential impacts, and formulates strategies to respond to climate change. Canadian scientists have been lead authors, contributors, and reviewers for the IPCC's First and Second Assessment Reports, produced in 1990 and 1995, respectively. More than 30 Canadian scientists are participating as authors and editors of the IPCC's Third Assessment Report, scheduled for completion in 2001.	CO_2	Research Information Policy	Implemented	Environment Canada, Natural Resources Canada
International Capacity Building	Encourages partnerships with developing countries. These partnerships will help developing countries undertake projects to start reducing their GHG emissions; provide opportunities for business to sell its world-class technology and know-how; secure cost-effective emissions reduction credits; and help level the playing field in the race to meet the growing world demand for climate-friendly goods and services.	CO_2, CH_4, N_2O	Information Technology Transfer	Implemented	Government of Canada
International Geosphere-Biosphere Program	This multilateral program researches, monitors, and assesses biomass burning.	CO_2	Information	Implemented	Natural Resources Canada
International Guidelines for Assessing the Health Impacts of Climate Change	WHO and Health Canada will jointly produce international guidelines for the development of health impacts assessment methodologies in relation to climate change. The guidelines will increase the ability of Canada and other signatory countries of the UNFCCC to assess the health impacts of climate change within their own country by providing methodologies that will enable valid comparisons of impact assessment results and optimum national and international health risk management.	CO_2	Research	Implemented	Health Canada, World Health Organization
Millennium Eco-Communities	Communities initiative brings together resources for those interested in making a difference in their local community by improving the environment. The program shares information in the form of a comprehensive resource on environmental issues, best practices, tools, tips, and networking opportunities.	CO_2	Information	Implemented	Environment Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Monitoring Past and Present Climate Change	Collects and analyzes cores from High Arctic and Cordilleran glaciers, contributes to the international body of knowledge that is needed to understand long- and short-term climate change. In addition, research scientists from the Geological Survey of Canada operate a permafrost and active layer monitoring network, supporting the detection and monitoring of climate change in the Arctic. This network contributes to international climate observation programs under the World Meteorological Organization's Global Climate Observing System.	CO_2	Research Information	Implemented	Natural Resources Canada
National Climate Change Secretariat	Manages and supports the national engagement process and the development of Canada's National Implementation Strategy. Assists in ensuring a broad communications link with the public and stakeholders. It is also responsible for consolidating and integrating the work of 16 Issue Tables/Working Groups and from other processes. The Secretariat is a stand-alone body composed of federal and provincial representatives.	CO_2, CH_4, N_2O	Policy Other	Implemented	Government of Canada
National Energy Use Database Initiative	This initiative enables the monitoring and evaluation of progress toward its goal of limiting GHG emissions, provides information to support the development of future initiatives, and ensures the development of a base of expertise in the analysis of energy consumption at the end use level. The development of energy end use data includes reviews of existing data, assessment of information needs, expansion of existing surveys or the creation of new ones to meet these data needs, and the establishment of energy end use data and analysis centres at selected universities.	CO_2	Information Education Research	Implemented	Natural Resources Canada
National Round Table on the Environment and the Economy	An independent agency established by the federal government committed to providing decision makers and opinion leaders with reliable information and objective views on the current state of the debate on the environment and the economy. Serves as a catalyst in identifying, explaining, and promoting the principles and practices of sustainable development. The programs focus on climate change; GHG emissions trading; sustainable development; and health, environment, and the economy.	CO_2	Policy Information Other	Implemented	Government of Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Paleo-Reconstruction of Climate	A major Canadian database documenting a wide array of environmental conditions over the past 20 000 years based on information from tree rings, lake and marine sediments, and the fossil record. Those data provide information about ice coverage, sea level, precipitation, wind directions, and permafrost, among other things. Continuing work in partnership with university- and industry-based researchers to add to this database, which provides a look at the long-term climate variability in Canada and the impacts associated with it.	CO_2	Research Information	Implemented	Natural Resources Canada
Pilot Emission Removals, Reductions and Learnings (PERRL) Initiative	PERRL is a federal/provincial/territorial initiative to purchase incremental GHG emissions reductions in strategic areas.	CO_2, CH_4, N_2O, HFCs, PFCs, SF_6	Fiscal	Approved	Government of Canada
Public Information Program	Through a variety of communication and marketing activities, the Public Information Program increases Canadians' awareness of the environmental impact of energy use and encourages Canadians to adopt energy-efficient practices and to use alternative transportation fuels.	CO_2	Information Education	Implemented	Natural Resources Canada
Remote Sensing Data Sets for Global Climate Modelling	Initiative provides climate-modelling researchers with global data on surface radiation retrieved from satellite measurements and the ability to use these data sets to assess and improve the performance of general circulation models.	CO_2	Research Information	Implemented	Natural Resources Canada
Research and Development for Innovative GHG Reduction Technologies	This initiative will provide funding to support the research, development, and demonstration of 11 separate climate change technology projects by federal departments and research organizations. Projects include oxygen-fired combustion, advance power cycles, microturbines in distributed power systems, CO_2 sequestration in oil sand tailings and gas hydrates, cogeneration from agricultural and municipal wastes, energy efficiency improvements in multi-phase flow, clean combustion of flare gas, gas from biosolids for fuel cells, and power from landfill gas.	CO_2, CH_4, N_2O	Fiscal Research	Implemented	Government of Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Roundtable on Climate Change and Health	Increase the health sector's understanding of the links between air quality and climate change, from a health impacts perspective, and its ability to engage and support climate change health-related actions undertaken by federal department and private sector organizations. It will also identify the role of health professionals, associations, and academics in informing Canadians and encouraging behavioural modification, and in advocating for action to reduce the negative health effects of climate change. The purpose of the project is to support reductions in GHG emissions and to promote and protect the health of the public in the context of climate change.	CO_2	Information	Implemented	Health Canada
Satellite Monitoring of Vegetation	Satellite data are used to develop and demonstrate procedures for monitoring the seasonal development and carbon uptake of vegetation across the Canadian land mass. Vegetation strongly influences regional weather systems, as well as climate. In turn, weather affects vegetation through precipitation and energy regimes. Northern vegetation is a potentially significant carbon sink. Because of rapid seasonal changes (in some areas, the growing season is less than eight weeks) and Canada's size, satellite technology is the only practical means of monitoring the countrywide development of vegetation, which is of considerable economic importance.	CO_2	Information	Implemented	Natural Resources Canada
Strategic Technical Assistance and Responsive Transfer Fund – Pakistan	This project will support the four programming priorities in Pakistan: energy, social sector, environment, and private sector development.	CO_2	Fiscal Information	Implemented	Natural Resources Canada
Sustainable Development Technology Fund (SDTF)	The SDTF provides funds to alliances made up of industry, universities, and research institutes for projects that involve development or demonstration of innovative, sustainable development technologies, in particular climate change solutions.	CO_2, CH_4, N_2O, HFCs, PFCs, SF_6	Fiscal Technology Development	Implemented	Government of Canada

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Government of Canada (*continued*)					
Sustainability of Arctic Communities under Climate Change	This project looks at a range of indicators of ecosystem and community sustainability in relation to climate change, oil development, and tourism. Environment Canada carries out caribou research for this project and works on the U.S. National Science Foundation project, which involves three Canadian communities.	CO_2	Research	Implemented	Environment Canada
Urban Environmental Management	This project aims to establish effective and sustainable environmental management educational programs and business services at the Asian Institute of Technology. It also provides opportunities for Canadian environmental companies to demonstrate technologies and services.	CO_2	Information	Implemented	Canadian International Development Agency, Canadian University Consortium, Asian Institute of Technology
World Climate Research Programme	Program furthers scientific understanding of the climate system and climate processes. Within the program, Canadian scientists are working on the World Ocean Circulation Experiment and the Joint Global Ocean Flux Study to help improve understanding of ocean processes and to contribute to the development of ocean components of climate models. Canada is also participating in the Global Energy and Water Experiment by studying hydrological processes in the permafrost-saturated and largely snow-covered lands of the Mackenzie River Basin.	CO_2	Research	Implemented	Environment Canada
Alberta					
Clean Air Strategic Alliance Climate Change Project Team Public Education and Outreach Initiative	The project is being conducted in order to understand the barriers that inhibit Albertans from taking actions to reduce GHG emissions, as well as stimulate behavioural change that will result in reduced GHG emissions. The pilot started in the fall 2000 in four Alberta communities. The pilot program was developed and implemented in industry and government workplaces, community associations, and chambers of commerce throughout Canada. This project builds on current and planned national and provincial outreach programs.	CO_2, CH_4, N_2O	Information Other	Implemented	Alberta Environment
Climate Changes	This program is developing educational resources on global climate change. These will be delivered through professional development workshops to science and social studies teachers in the Destination Conservation network and other education networks across Canada.	CO_2	Education	Implemented	Alberta Environment, FEESA, Destination Conservation

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Alberta (*continued*)					
Climate Change Central	A public/private partnership to implement the key recommendations of the Alberta Climate Change Round Table. Climate Change Central is a catalyst for governments, municipalities, businesses, institutions, non-governmental organizations, and individuals to focus on climate change strategy, education and capacity building, and technology. Thirteen business and community leaders bring a broad range of expertise to the board of Climate Change Central, which also includes representatives from the environmental and academic communities, municipalities, and industries involved in climate change.	CO_2, CH_4, N_2O, HFCs, PFCs, SF_6	Policy Other	Implemented	Alberta Environment
Climate Change Technology Strategy	In 1999, the Government of Alberta and stakeholders completed an Alberta Technology Strategy for the Management of Greenhouse Gas Emissions, which has two main objectives: to ensure the effective deployment of technologies; and to capitalize on global opportunities for exporting climate-friendly technology solutions developed and adapted in Alberta. These objectives are to be accomplished by creating an enabling environment within Alberta, ensuring timely availability of required technologies. Climate Change Central is expected to coordinate implementation of the strategy.	CO_2, N_2O, CH_4	Policy Other	Implemented	Alberta Environment
Destination Conservation (DC) School Retrofit Program	Enrols school jurisdictions in a retrofit program. Students, teachers, and other school staff audit their school's energy consumption and develop plans to reduce consumption through retrofits and lifestyle changes. Students monitor the process. There are currently 973 schools participating in the DC program across Canada.	CO_2	Voluntary Education	Implemented	Alberta Environment
Greenhouse Gas Awareness Project	Project encouraging adoption of energy efficiency. Case studies to highlight leading-edge energy-efficient activities.	CO_2	Information	Implemented	Alberta Food Processors Association

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
British Columbia					
Assistant Deputy Ministers' (ADMs) Climate Change Committee	The Committee coordinates B.C. government policy development and program initiatives on climate change. The committee includes ADMs from all provincial agencies affected by climate change or climate change policies.	CO_2	Policy Other	Implemented	Government of British Columbia
Canadian Institute for Climate Studies	The Institute does research and development on seasonal climate-prediction products and works with the private and public sectors to apply state-of-the-art understanding of the climate system. Through its management of the Canadian Climate Research Network, the Institute analyzes ongoing climate change and the development of climate models.	CO_2	Research Information	Implemented	Canadian Climate Research Network
Clean Air Day	The B.C. government has proclaimed the Wednesday of Environment Week in June as Clean Air Day. For the past four years, the focus has been climate change. In June 2000, communities across B.C. participated in Clean Air Day events and commuter challenges to promote alternative transportation.	CO_2	Information Other	Implemented	Ministry of Environment, Lands and Parks
Climate Change Public Education and Outreach Initiative	Initiative is working with federal and local governments, industry, and environmental organizations to establish a partnership that will coordinate and facilitate public education and outreach activities in B.C.	CO_2	Voluntary Information	Implemented	Ministry of Environment, Lands and Parks
Environmental Youth Team Program	Provides financial contributions through its Environmental Youth Team program to various agencies to hire youth to participate in environmental protection and education initiatives, including climate change.	CO_2	Fiscal Information Education	Implemented	Ministry of Environment, Lands and Parks
Fiscal Measures	Budget contains measures that will help to reduce GHG emissions. These include a commitment to review opportunities for a revenue-neutral tax shift that will encourage environmentally sound business practices; a partial sales tax rebate for factory-produced, alternative-fuel vehicles; and a future motor fuel tax exemption for ethanol used in gasoline blends, once a commercial-scale ethanol plant is in operation in the province.	CO_2	Policy Fiscal	Implemented	Government of British Columbia

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
British Columbia (*continued*)					
Green Economy Working Group	A ministerial committee of cabinet that supports B.C. businesses and communities in a transition toward a more sustainable local and global economy. This ministerial committee is overseeing the Green Economy Initiative, which includes the development and implementation of a number of measures that will result in GHG emissions reductions.	CO_2	Policy Other	Implemented	Government of British Columbia
Greenhouse Gas Forum	Comprises representatives of local government, industry, business, labour, environmental groups, and other interests. It advises the Minister of Environment, Lands and Parks and the Minister of Energy and Mines on climate change policy and facilitates the development and implementation of GHG emissions reduction measures.	CO_2	Policy Other	Implemented	Ministry of Environment, Lands and Parks
Greenhouse Gas Mitigation Guidelines under BC's Environmental Assessment Process	Establishing guidelines for GHG mitigation plans for projects reviewed under B.C.'s Environmental Assessment Process. Under the draft guidelines, plans would be submitted and approved as part of the overall project approval.	CO_2	Policy Other	Implemented	Ministry of Environment, Lands and Parks
House in Order Action Plan	Actions under consideration focus on leadership (establish a senior-level champion and secure senior-level commitment; implement an education and awareness program across government; share action plan with local governments); buildings (identify and implement most promising energy efficiency retrofits); electricity (purchase power from new green sources); transportation (reduce emissions related to the government fleet and employee travel); procurement policies (expand the environmental purchasing policy and increase emphasis on low-emission products); waste reduction (expand reduce, reuse, and recycling programs); and monitoring and reporting (establish an annual reporting mechanism).	CO_2	Policy	Planned	Government of British Columbia
Knowledge Network Television Series	Working with Knowledge Network and other partners to produce a climate change television series and a set of half-hour videos.	CO_2	Information Education	Implemented	Ministry of Environment, Lands and Parks

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
British Columbia (*continued*)					
Ozone Depleting Substances Legislation	The Ozone Depleting Substances and Other Halocarbons Regulation establishes stricter controls on ozone-depleting substances and includes controls on halocarbons, most of which are potent GHGs.	HFCs	Regulatory	Implemented	Ministry of Environment, Lands and Parks
School Projects	Working with partners to develop a climate change support network for social studies teachers, using climate change as a teaching theme, identifying curriculum linkages, teacher training opportunities, and existing teaching resources.	CO_2	Education	Implemented	Ministry of Environment, Lands and Parks
Scientific Research and Experimental Development Tax Credit	A 10% tax credit for eligible research and development, including for GHG technology.	CO_2	Fiscal	Implemented	Ministry of Finance and Corporate Relations
Urban Areas – Assessment of Options for Reducing Greenhouse Gases in the Greater Vancouver Region	An assessment of options to reduce air pollutants in the Greater Vancouver region is being conducted by the Greater Vancouver Regional District. The work will include an estimate of GHG reductions, reductions of other air contaminants, estimated costs of reduction, and associated benefits, including improvements in air quality and public health impacts. This work has future extensions to assessments for the Lower Fraser Valley and other urban regions.	CO_2	Information Research	Implemented	Ministry of Environment, Lands and Parks
Northwest Territories					
Development of a Strategy to Control Greenhouse Gas Emissions in the Northwest Territories	The initiative will result in the development of a strategy to control GHG emissions. Specific objectives to be accomplished in the strategy include increasing awareness in the NWT of the issue of global climate change and the need to control GHG emissions; engaging all northerners, including government, non-government, industry, and the general public, to take action to control GHG emissions; and identifying and implementing achievable and practical actions that can be undertaken immediately, as well as longer-term actions that will result in future, sustained reductions in GHG emissions in the NWT.	CO_2	Policy Other	Implemented	Government of Northwest Territories

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Nova Scotia					
Climate Change Action Pack	Develops and distributes curriculum material on climate change to elementary schools in Nova Scotia. Material has been prepared and tested in workshops with teachers. Teacher kits, complete with lesson plans, curriculum linkages, and materials for classroom use by teachers and students.	CO_2	Education Information	Implemented	Nova Scotia Natural Resources, Environment Canada
Climate Change Human Resources Development Initiative	The goal of this initiative is to develop highly qualified personnel in the areas of climate change and GHG management in the agriculture sector. Work will include research into carbon storage in soils and public education and outreach on climate change to the agriculture sector.	CO_2	Policy Other	Implemented	Nova Scotia Department of Agriculture, Nova Scotia Natural Resources, Agriculture and Agri-Food Canada, Nova Scotia Soils Institute
Climate Change Public Education	Increases public awareness and encourages action on climate change. Various climate change education activities have been implemented, including workshops, videos, brochures, and media materials. A feasibility study has been conducted on the creation of a climate change hub to coordinate and act as a catalyst for action.	CO_2	Information Education	Implemented	Clean Nova Scotia Foundation, Atlantic Coastal Action Program Cape Breton, Nova Scotia Natural Resources, Nova Scotia Environment, Environment Canada, Nova Scotia Power Inc.
Climate Change Strategy	A strategy for the province, including a list of suggested early actions. Consultations with stakeholders were held at six locations in Nova Scotia in November 1999. An Interdepartmental Committee of Climate Change was formed to develop a strategy using the results of the consultation process and other appropriate resources.	CO_2, CH_4, N_2O	Policy Other	Implemented	Nova Scotia Natural Resources, Nova Scotia Environment
Nunavut					
Development of a Strategy to Control GHG Emissions in Nunavut	The purpose of this program is to develop a strategy to control GHG emissions in Nunavut. The process would include a broadly based stakeholder consultation approach to obtain input from residents in order to develop options, priorities, and recommendations for government policy and programs, and also for recommendations from institutes of public government, corporations, business, stakeholders, and the public. The strategy increases awareness in Nunavut of the issue of global climate change and the need to control GHG emissions; encourages all northerners (government, non-government, industry, general public) to	CO_2, CH_4, N_2O	Policy Other	Implemented	Government of Nunavut

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Nunavut (*continued*)					
	voluntarily take strong action to control GHG emissions; identifies and implements achievable and practical actions that can be undertaken immediately, as well as longer-term actions that will result in future, sustained reductions in GHG emissions, taking into consideration the economic, environmental, and social costs and benefits; and identifies economic opportunities that may arise from the use of cleaner, more efficient equipment and technology.				
GHG Emission Forecast for Nunavut 1996–2013	This forecast provides an initial understanding of the current and projected GHG emissions in Nunavut and identifies economic sectors for which further information is required.	n.a.	Research Information	Implemented	Government of Nunavut
Inuit Qaujimajangit (Inuit Knowledge) on Climate Change in Nunavut	The observations within Inuit communities are recorded during semi-directed interviews, workshops, and radio phone-ins. The project is phased to include all of Nunavut over a two-year period.	n.a.	Information Research	Implemented	Government of Nunavut
Ontario					
Pollution Prevention Pledge Program and Pollution Prevention Partnerships	Reports on and recognizes achievements in pollution prevention by individuals, companies, organizations, municipalities, or government.	CO_2	Policy Voluntary	Implemented	Ministry of the Environment
Saskatchewan					
Saskatchewan Stakeholder Advisory Committee on Climate Change	This committee provides a forum for discussion of climate change issues by affected businesses, industry, non-governmental organizations, and government agencies.	CO_2	Policy	Implemented	Government of Saskatchewan

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Saskatchewan (*continued*)					
Climate Change Adaptation Research Network	Examines the probable effects of climate change on the Prairies and develops effective adaptation strategies. Discussions are currently under way between the federal government and the Prairie provinces to determine the feasibility of establishing a network of adaptation researchers for the Prairies, which could serve as a model for the establishment of future adaptation research networks in other regions of Canada. The centre for this network would be in Regina at the University of Regina.	CO_2	Research	Implemented	Government of Saskatchewan
Climate Change and Fragmented Prairie Biodiversity: Prediction and Adaptation	A large number of terrestrial and aquatic species on the highly fragmented prairies are at great risk of extirpation through the effects of climate change. The assumption has been that they will move and that others will take their place. This study will provide models of probable adaptation of selected prairie taxa to climate change and will describe and evaluate possible human responses to those changes in biodiversity.	CO_2	Research	Implemented	Government of Saskatchewan
Yukon					
Climate Change Essay Contest	The Canadian Polar Commission is inviting submissions for an annual climate change essay contest. The contest is open to all students, Grades 9–12, enrolled in Yukon secondary schools. Essays must address the effects of climate change on any aspect of the Yukon environment, such as vegetation, lakes and rivers, wildlife, insects, and humans.	n.a.	Education	Implemented	Government of Yukon
Climate Change Resources for Northern Educators	Information was assembled by a coalition of education and environmental organizations from across the north. This compilation of resources is intended to facilitate an increased awareness and understanding of climate change among students and educators in the Canadian pan-north.	n.a.	Education Information	Implemented	Yukon Economic Development
Community Consultation Program	During the summer of 2000, the Northern Climate ExChange carried out a community tour. This work was funded through the Northern Ecosystems Initiative and involved informal meetings and public information sessions in Yukon communities, including Mayo, Dawson,	n.a.	Education Information	Implemented	Yukon Economic Development

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Yukon (*continued*)					
	Watson Lake, Teslin, Faro, Haines Junction, Beaver Creek, and Burwash Landing. A report and poster are being prepared to summarize the findings of the community tour.				
Energy Awareness Month	This education/awareness campaign is held each year in November. The campaign includes speakers, workshops, and articles in various media.	CO_2	Education Information	Implemented	Yukon Economic Development
Greenhouse Gas Inventory for the Yukon	An inventory of GHGs for the Yukon was completed in 1999. The inventory produced data for 1990 (baseline year), 1995, and 1997–98. Included in the inventory are GHG sources and sinks. The final report on the inventory identifies data gaps and future research priorities and recommends an approach for developing a GHG management strategy.	n.a.	Research	Implemented	Government of Yukon
International Tundra Experiment	The International Tundra Experiment (ITEX) site is in the alpine-tundra ecozone of the Wolf Creek Research Basin. It has been designed to study short- and long-term effects of temperature warming on tundra vegetation biodiversity. ITEX sites are being set up and monitored at various locations in the circumpolar north, and all follow roughly the same protocol. Twenty treatment blocks are divided into five plots. Each block contains one greenhouse plot enclosed with plastic sheeting; one predator ex-closure plot enclosed in chicken wire; one with both the greenhouse and ex-closure treatment together; and one control plot with nothing. Sampling and other procedures are done on only half of each plot to keep some of the vegetation intact.	n.a.	Research	Implemented	Government of Yukon
Northern Climate ExChange	The Northern Climate ExChange serves as a northern entry point into the study of climate change in the circumpolar north. It conducts research and education on the impacts of, and adaptations to, climate change in the north; supports the development of resource-efficient technologies and practices that can contribute to mitigating climate change impacts; and facilitates the exchange of scientific, traditional, and local knowledge, technology, and expertise via a circumpolar "trade route."	CO_2	Research Information	Implemented	Government of Yukon

Name of Policy/ Measure	Objective and/or Activity Affected	GHG Affected	Type of Instrument	Status	Implementing Entity or Entities
Yukon (*continued*)					
Wolf Creek Research Basin	This site is used to monitor climate change, water resources, ecosystem health, biodiversity, and aquatic impacts. It is recognized as an "ecosystem laboratory." One focus of research at this site has been on the energy and water balance processes to assess their sensitivity to climate change. Research at this site was initiated in 1992. Work has been funded by the Indian and Northern Affairs Arctic Environmental Strategy Program and supported by the Environment Canada National Hydrology Research Institute.	n.a.	Research	Implemented	Government of Canada