Progress Report

Canada's First National Climate Change Business Plan

SEPTEMBER 2001

National Climate Change Process

ISBN: 1-894686-51-9
This publication is also available at **www.nccp.ca**

Ce document est également offert en français sous le titre :
Rapport d'étape – Premier plan national d'activités du Canada
sur le changement climatique

Progress Report

Canada's First National Climate Change Business Plan

SEPTEMBER 2001

Table of Contents

Preface 2

Section 1
Purpose of This Report 3

Section 2
Canada's National Implementation Strategy on Climate Change and
First National Climate Change Business Plan 3

Section 3
Monitoring and Reporting Progress 4

Section 4
Progress Against Overarching Objectives 4

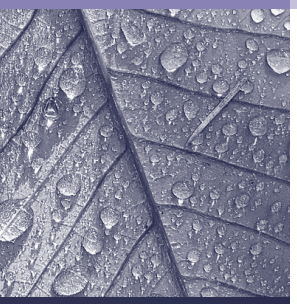
Section 5
Broad Themes
1) Enhancing Awareness and Understanding 6
2) Promoting Technology Development and Innovation 15
3) Governments Leading by Example 25
4) Investing in Knowledge/Building the Foundation 33

Section 6
Encouraging Action to Reduce Emissions
1) Sectoral Actions 46
i) Agriculture 46
ii) Buildings 54
iii) Electricity 60
iv) Forestry 69
v) Industry 73
Minerals and Metals 79
Oil and Gas 81
vi) Municipalities 83
vii) Transportation 87

2) Cross-sectoral Actions 98
i) Enhanced Voluntary Action 98
ii) Baseline Protection Initiative 102
iii) Encourage Trading of GHG Emissions Reductions 103
iv) Clean Development Mechanism and Joint Implementation 104
v) Facilitate Multi-sectoral Partnerships 106

3) Cross-cutting Actions 108
i) Biological Carbon Sequestration (Sinks) 108
ii) CO_2 Capture and Geological Storage 108
iii) Renewable Energy 108

Appendix: Canada's GHG Emissions: Current and Projected
(Emissions Outlook) 110



Preface

This Progress Report on Canada's First National Climate Change Business Plan is part of the annual business planning cycle under Canada's National Implementation Strategy on Climate Change (NIS). Federal, provincial and territorial energy and environment ministers publicly released the NIS and the First National Climate Change Business Plan (FNBP) in October 2000 and made a commitment to report on progress annually.

The national business planning approach developed from the ongoing National Climate Change Process, which was established by federal, provincial and territorial energy and environment ministers in April 1998, in response to the 1997 direction from First Ministers.

This report contains the most recent information available. In some cases, names and/or descriptions may differ slightly from those in the FNBP because new information is available. In addition, programs undertaken since October 2000 or those not included in the FNBP have been included. Québec has produced its own action plan to address climate change. The *Plan d'action québécois sur les changements climatiques 2000-2002* was adopted by the Conseil des ministres du Québec in October 2000. The action plan has been implemented. A summary progress report is appended to this report.

Section 1

Purpose of This Report

This report is an overview of how Canada's federal, provincial and territorial governments have moved forward with actions outlined in the FNBP. The FNBP is the first in a series of annually updated three-year business plans to implement the NIS. Monitoring and reporting of overall progress is an integral part of this activity. This is the first annual progress report and others will be produced for each annual update.

This report describes the development and approaches of the NIS and FNBP and progress made on each of the actions outlined in the FNBP. The section on each theme/sector includes the objectives, a summary of select initiatives that address those objectives, and a table that provides information on the individual actions listed in the FNBP.

A summary of greenhouse gas (GHG) emissions – current and projected – is provided in the Appendix.

Section 2

Canada's National Implementation Strategy on Climate Change and First National Climate Change Business Plan

The NIS and the FNBP represent a coordinated response to climate change that combines reducing national GHG emissions with developing strategies to adapt to a changing environment. The response reflects agreement among federal, provincial and territorial governments to work collectively to act now.

The NIS provides the broad framework under which governments will act. The strategy is based on a phased, risk-management approach that endeavours to limit the effects of climate change while maximizing opportunities for Canada to contribute to global and national solutions. Phase One of the NIS will be in force until an effective international agreement on climate change (i.e., the Kyoto Protocol or a subsequent agreement) is ratified. If Canada ratifies an international agreement, Phase Two would cover the period from ratification until the beginning of the period for which an emission target is set. Phase Three and future phases would focus on Canada's need to make the reductions agreed upon and to respond to situations as they evolve.

Under Phase One, the NIS outlined an annual business planning cycle focusing on strategic priorities. The FNBP, the first business plan of the NIS, benefits from more than a decade of experience on climate change. It incorporates five Phase One themes: enhancing awareness and understanding; promoting technology development and innovation; governments leading by example; investing in knowledge/building the foundation; and encouraging action to reduce emissions.

Section 3

Monitoring and Reporting Progress

Monitoring and reporting progress is a key component of Canada's response to climate change. As a signatory to the United Nations Framework Convention on Climate Change (UNFCCC), Canada is obligated to periodically report its national inventory of anthropogenic GHG emissions and progress in reducing such emissions. In addition, a national report provides an exhaustive update of Canada's status and responses to climate change; at the end of 2001, Canada will be submitting the Third National Report on Climate Change to the UNFCCC.

Energy and environment ministers also committed to monitoring and reporting progress to stakeholders and the general public, when they released the FNBP in October 2000.

The information contained in the current report is largely qualitative since the activities listed in this report have been undertaken within the last year. While information on emissions reductions is not yet available, it is expected that once the actions identified in the business plans are fully under way, future progress reports will include quantitative data.

Section 4

Progress Against Overarching Objectives

The FNBP identified five overarching objectives considered core objectives since they recur within each of the Phase One themes and priority areas. They are:

- reduce GHG emissions;
- understand the impacts of climate change and develop adaptation strategies and actions;
- increase Canadians' understanding of the importance of climate change and encourage individuals and businesses to take action;
- position Canada to make decisions at the right time with the right information; and
- increase opportunities through technology.

Before long-term behavioural, technological and economic progress can be made, the groundwork must be laid. This section concentrates on such groundwork under each objective.

Objective 1

Reduce GHG emissions

A comprehensive set of actions has been undertaken by governments to start to reduce GHG emissions. Most actions build on existing programs that have been reducing emissions for the past decade, such as energy efficiency and alternative energy programs. Key sectors responsible for the majority of emissions have been encouraged to reduce emissions through voluntary efforts and incentives and/or start to shift to less carbon intensive energy options. In addition, governments have been leading by example by reducing their own emissions.

Objective 2

Understand the impacts of climate change and develop adaptation strategies and actions

The focus here is on improving data, broadening observations, developing networks, and enhancing scientific and economic models and methods. Canada is involved in international efforts to develop the science of climate change through the Intergovernmental Panel on Climate Change process. Additional funding was provided to fill critical gaps in the national climate monitoring system and to establish the National Association for Climate Observation. The Canadian Climate Impacts and Adaptation Network was launched to enable better collaboration and information sharing between researchers and stakeholders and to coordinate advice on research needs. A National Impacts and Adaptation group has also been established to develop a national framework for developing adaptation strategies. Such efforts to better understand the impacts of climate change will position Canada to respond more effectively.

Objective 3

Increase Canadians' understanding of the importance of climate change and encourage individuals and businesses to take action

All federal, provincial and territorial governments are taking initiatives to make the public more aware of climate change. A national network of 'Hubs,' or regional climate change centres, are being developed on a pilot basis. This network will become a focal point for sharing and disseminating information. To date, Hubs have been established in Alberta, Nova Scotia, the Northwest Territories, Yukon, Saskatchewan and New Brunswick, with hubs also being developed in Manitoba, Newfoundland and Labrador, and British Columbia. All jurisdictions are also undertaking public awareness initiatives directed at various sectors of the economy.

Objective 4

Position Canada to make decisions at the right time with the right information

Governments have adopted a risk management approach to climate change. Risk management entails applying what we already know about the causes and impacts of climate change, while positioning Canada to make the right decisions as more information becomes available and uncertainties are reduced. Canada has been actively involved in international negotiations at CoP6 and CoP6 bis to develop the rules for the Kyoto Protocol and argue for Canadian positions. An analytic program is under way to inform a possible decision on ratification of the Kyoto Protocol in 2002. The program will evaluate emissions trading as a potential market-based tool to achieve significant emissions reductions, look at the use of targeted policy measures to accompany, or substitute for, emissions trading, explore the issues of allocation and burden sharing of any target, and examine the impact of the Kyoto Protocol on the competitive position of Canadian industries.

Objective 5

Increase opportunities through technology

The development of efficient, clean, cost-effective technologies is an essential component of Canada's climate change response. Governments' efforts with the private sector and academic institutions are focused on advancing scientific, technological and policy research to assess biological carbon sequestration, geological carbon storage and the potential for energy-efficient buildings and appliances. One example of collaboration involving industry, academia, the federal government, Saskatchewan, Alberta, British Columbia and other provinces is the work on CO_2 capture and storage. Six development and demonstration programs are under way and other technology programs are in the planning phases.

Future business plans will develop national reporting requirements to allow more quantitative tracking of progress. In addition, high-level indicators will be developed to help measure progress against core objectives.

Section 5
Broad Themes

1) Enhanced Awareness and Understanding

Although most Canadians express strong concerns about the environment and are generally aware of climate change, their understanding of specific causes, effects and actions individuals can take is limited. Consequently, all federal, provincial and territorial governments are undertaking initiatives to enhance public awareness and understanding of climate change.

Objectives and supporting actions

To build awareness and understanding among Canadians of climate change, including the science, impacts and adaptation and the associated environmental, economic and social issues

To develop support from Canadians for policy changes and actions that will be required as part of the National Implementation Strategy

To encourage and motivate Canadians to take personal and corporate action to reduce GHG emissions, particularly in support of actions in the business plan

The establishment of a national network of Hubs, or regional climate change centres, was recommended by the Public Education and Outreach Issue Table in 1999. To date, Hubs have been established in Alberta, Nova Scotia, the Northwest Territories, Yukon, Saskatchewan and New Brunswick. Newfoundland and Labrador, Manitoba and British Columbia expect to establish Hubs in the near future.

Activity is also under way to:

- develop an inventory and synthesis of existing research on public awareness and understanding of climate change. This activity has been completed and includes baseline research indicators;
- establish a national clearinghouse for sharing and coordinating information on activities and tools related to enhanced awareness and understanding. The design and approach for the clearinghouse is in progress for a Fall 2001 launch; and
- develop a backdrop awareness initiative to link such activities and tools by providing a common look and feel that all stakeholders can use. A toolkit of outreach products, including a climate change presentation, fact sheets, radio spots, and a signature line are in development for introduction in Fall 2001.

A national Hub Pilot Advisory Team, with representatives from the federal, provincial, territorial and municipal governments, business, youth, and educators, has been formed to promote information sharing among Hubs and provide input to national activities related to enhanced awareness and understanding.

In addition to the Hubs, all jurisdictions are undertaking public awareness initiatives in different sectors. These initiatives are listed as sectoral initiatives in this report.

The Province of British Columbia together with partners and support from the Climate Change Action Fund (CCAF) is developing a three-part knowledge network TV series on climate change to be aired in the fall of 2001. The province and its partners also plan to distribute climate change toolkits to schools.

In the last three years, the Public Education and Outreach program of the Climate Change Action Fund partnered with groups across the country to develop 152 projects for a total investment of $51 million from the CCAF and partners. Projects included Web-based tools, public service announcements, audio-visual displays, pamphlets, posters, museum displays, interactive workshops, conferences, classroom materials, print advertisements, newspaper supplements and telephone hotlines. They covered such topics as transportation, energy efficiency, land use, agriculture, science and behavioural change.

Actions Approved and Under Way

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
CCAF Partnered Projects	The CCAF-PEO is a federally funded, locally based outreach and education initiative. The CCAF-PEO will make investments, with levered resources from partners, to support outreach efforts across the country in under the following four streams: communities, youth and education, business and industry and general public.	Canada	An open call for proposals for the Communities stream has been sent out with a deadline for proposals of September 14, 2001. The first negotiated agreements and Requests for Proposals for the 3 other streams are being developed and it is anticipated they will be posted in the fall of 2001.	The first negotiated agreements and Requests for Proposals for the 3 other streams are being developed and it is anticipated they will be posted in the fall of 2001.
Circumpolar Climate Change Summit and Northern Sustainable Technology Exposition	The Summit was attended by 275 delegates from Canada, Alaska, Finland, Russia, and Sweden. Sessions that were open to the general public were held alongside the event. The event received considerable local, regional and national media attention.	Yukon in partnership with Government of Canada, Yukon College, Northern Research Institute, Council of Yukon First Nations. Delivered by The Northern Climate ExChange.	Exposition: Twenty-five exhibitors displayed the latest in northern sustainable technologies and programs in place in the Canadian North to reduce greenhouse gas emissions and improve the understanding of climate change impacts. Proceedings: Proceedings of the Summit will be published in a special edition of The Northern Review, expected to be published in August, 2001. The Northern Review is the only scholarly journal published North of 60 in Canada. The proceedings contain a report from the conference, along with a dozen peer-reviewed articles. As part of the proceedings, we received funding from DFAIT to produce a paper and background document on Northern Climate Change Policy Options. Video Production: Summit presentations were recorded on digital video. An Environment Canada Intern is producing CD's containing the video footage alongside presentation notes for each speaker. In addition, a summary CD will be produced that contains snapshots from the Summit that support the statements in the Whitehorse Declaration on Northern Climate Change.	Summit: The three-day conference was attended by 275 participants, with three concurrent sessions and over 100 presentations. The conference concluded with the release of the Whitehorse Declaration on Northern Climate Change.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Climate Change Fund – Enhancing Awareness and Understanding *(New Action)*	Undertaking various projects that create awareness of the importance of air pollution and climate change and to educate the public that choices are available to reduce emissions.	Ontario in partnership with non-governmental organizations, municipal government agencies and industry. Delivery agents include provincial and municipal government agencies and non-governmental organizations.	Projects range from initial stage to completed.	Work to be completed varies depending on the project from creation of material to completed.
ClimateWise	A community outreach project to understand barriers that inhibit Albertans from taking action and to stimulate behavioural change.	Alberta Delivered by Alberta Clean Air Strategic Alliance (in June 2001 – pilot initiative was handed-off to Climate Change Central and Public Education and Outreach Hub).	Community based public outreach pilot program on climate change and energy efficiency called "ClimateWise; Save Money, Save Energy, Save the Environment" was launched.	CCC will take control of the program. Development of a ClimateWise workshop implementation package.
Consultation and Extension on Agricultural Practices	Workshops will be presented regionally focusing on technical background and agricultural management techniques.	British Columbia	Materials developed internal (gov) workshops only.	NB: All BC government programs are currently under review.
Continue Public Awareness and Education Programs	Inform, educate and build awareness of climate change including the science, impacts and adaptation through energy management workshops, school curricula, the NWT PEO Hub and driver education programs.	Northwest Territories Delivered by the Government of Northwest Territories, Arctic Energy Alliance and NWT Climate Change Centre (PEO Hub).	This information is presently unavailable.	This information is presently unavailable.
Degrees of Variation Climate Change in Nunavut – Poster *(New Action)*	The poster explains what climate change is and what impacts are predicted to occur in Nunavut.	Nunavut Delivered by Natural Resources Canada – Nunavut Geoscience Office.	The english and french versions of the poster are completed. Inuktitut and inuinnaqtun versions are under review.	This information is presently unavailable.
Destination Conservation	Destination Conservation is an education and awareness program is being adopted in all New Brunswick schools. It is offered as part of the Provincial Building Initiative (PBI) and Department of Education's energy performance contract.	New Brunswick	Has been adopted in all New Brunswick schools.	Measurement of progress.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Education and Awareness Hub Network (Pilots)	The establishment of multi-stakeholder climate change public education and outreach Hubs/centres for effective, coordinated and local delivery of EAU activities. The hub pilots provide coordination and a focal point for climate change EAU activities at the local level. They are linked and guided at the national level by the Hub Pilot Advisory Team (HPAT). HPAT activities include: 1 an electronic clearinghouse for sharing information, lessons learned, and best practices among the hub pilots 2. a partners' toolkit of awareness and building materials such as fact sheets, radio PSAs, climate change presentations, signature line, and 3. baseline research and development of indicators.	Canada	To date the Federal Government has signed agreements with the following jurisdictions to set up a hub pilot: Yukon (Climate ExChange) Northwest Territories (Arctic Energy Alliance) Alberta (Climate Change Central) Saskatchewan (University of Regina) New Brunswick (NB Lung Association) Nova Scotia (Clean Nova Scotia) A feasibility study for a hub pilot has been undertaken in Newfoundland. The Hub Pilot Advisory Team (membership includes federal representatives and three multi-stakeholder participants from each hub pilot or interested jurisdiction) met in May 2001 to discuss and advance their work on: - an electronic clearinghouse for sharing information - a partners' toolkit of awareness building materials - baseline research indicators	Each Hub Pilot will be evaluated to measure the success and value of the overall Hub concept. The HPAT is meeting again in November 2001.
Education and Awareness Hub Network (Pilots)	To plan and develop, make operational, maintain and evaluate a Saskatchewan Hub for climate change public education and outreach.	Saskatchewan in partnership with Saskatchewan Energy and Mines, Saskatchewan Instructional Development and Research Unit, and Natural Resources Canada.	The agreement between SIDRU and Climate Change Action Fund was signed in June 2001. The website is under construction. The Hub Advisory Committee has been established. An assessment of baseline information is in progress. Links are being established between the Hub and other provincial agencies.	Establish a baseline that measures the current situation. Complete the Hub profile. Develop a report card to measure progress and success of the pilot Hub. Establish clearinghouse function of the Hub. Develop and deliver workshops, visits, presentations to schools and other priority audiences. Establish mobile display, speakers bureau, presentations, and information packages.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Education and Awareness Hub Network (Pilots)	The primary goal of the Yukon Hub is to assist communities and institutions to better understand the impacts of climate change, and to promote the development of strategies to respond to these changes. This goal will be met through the following objectives: Enhance awareness and understanding of the climate change issue; encourage action by all stakeholder groups; build capacity within communities and institutions to respond to climate change; build partnerships among communities and institutions to improve northern capacity to respond to climate change; provide information through a variety of communication techniques.	Yukon in partnership with Canada. Delivered by the Northern Climate ExChange.	The proposal has been prepared and accepted by the national coordinating office.	A detailed workplan has been developed for the 2001-2003 fiscal years that involves the following tasks: 1. Visioning Session 2. Staffing 3. Communications 4. Community Planning for Climate Change Manual 5. Yukon-Wide Climate Change Network 6. Community Action Projects 7. Public Opinion Polling 8. Community Roundtables 9. Evaluation.
Education and Awareness Hub Network (Pilots)	A climate change hub has been created at Clean Nova Scotia – a non-profit environmental organization – and provided with staff and financial resources to achieve its objectives.	Nova Scotia in partnership with Nova Scotia Power, Environment Canada, Sable Offshore Energy projects, Halifax Regional Municipality, Manufacturers and Exporters Association, Ecology Action Centre. Delivered by Clean Nova Scotia.	Target audience identified; workplan and communications plan produced; contacts with clients established; key projects where hub can add value selected; and work commenced on implementation of workplan.	Pilot will be completed and evaluated. Funding secured for continued operation, depending on the success of the pilot.
Enhanced Government Communications on Climate Change	The Saskatchewan Stakeholders Advisory Committee on Climate Change (SSAC-CC) was created in 1998 after the signing of the Kyoto Protocol. The Government of Saskatchewan advises and seeks advice from this group on Saskatchewan-relevant climate change issues.	Saskatchewan	Have defined 7 priority areas for Saskatchewan; Reports on actions prepared and presented to Ministers of Energy and Mines, and Environment and Resource Management; Initiatives in energy conservation and ethanol production have been approved.	Continue to hold regular meetings of the Saskatchewan Stakeholder's Committee on Climate Change.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Industrial Ecology Conferences	Gathering of industry, government, educational, and youth leaders in a diverse number of sectors to discuss/ share ideas and successes with respect to industrial ecology. Local industry access to international experts; a platform to share information and build capacity and networks.	Alberta in partnership with Industry and educational institutions.	Society was formed. Initial program was developed along with draft sponsorship arrangements. A web site was established. A venue was selected.	Conference will be organized and held. Follow up meetings will be held.
Moving On Sustainable Transportation (MOST)	The MOST Program was launched in September 1999. The program is providing $1 million over three years, to assist non-governmental projects that promise to deliver concrete results in support of Transport Canada's commitment to promote education and awareness on sustainable transportation. As of March 2001, under the MOST program, Transport Canada had committed approximately $800,000 to support 20 sustainable transportation projects. The June 1, 2001 round of the MOST Program was the last submission round in the current phase of the program. Funding decisions for this round are expected to be announced in August or September. Transport Canada is committed to extending the program by two years, subject to Treasury Board approval.	Canada	To date, the MOST program has allocated approximately $800,000 towards 20 initiatives with the objective of encouraging sustainable transportation to diverse target audiences. Projects include: the Forest Engineering Research Institute of Canada's (FERIC) research project to reduce greenhouse gas emissions from forestry hauling operations; the Greenest City's Active and Safe Routes to School program which encourages children to walk and bike to school; the Canadian Automobile Association's (CAA) efforts to inform their members on such issues as climate change and sustainable transportation; and, the Victoria Island for Advanced Technology's project to design a comprehensive sustainable transportation master plan for the Vancouver Island Technology Park. More information on projects funded can be found on the MOST web site at: http://www.tc.gc.ca/EnvAffairs/most/successful_submissions.shtml	Seek Treasury Board approval to extend the MOST Program and add new resources. Implement a targeted marketing campaign.
Public Education and Outreach – Government Public Awareness Materials	Update the BC government's existing public education materials on climate change, and develop new products as needed.	British Columbia. Potential involvement of BC's Public Education and Outreach Hub.	In March 2000, a Partners existing climate change public education materials was conducted to determine gaps in BC-specific information. Recommendations were made about new and revised materials that would be appropriate and useful for the BC Government to develop.	NB: All BC government programs are currently under review. If initiative proceeds, write, print and distribute new and revised materials.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Public Education and Outreach – Knowledge Network Series	Three one-hour episodes will be produced, and aired on Knowledge Network in early October, 2001. In addition, a one-hour video of the series, and accompanying teacher's guide, will be developed for use by high school teachers.	British Columbia in partnership with the Greater Vancouver Regional District; BC Gas; Federal Climate Change Action Fund; BC Lung Association.	Filming complete; scripts under review over summer 2001.	Series to air on Knowledge Network in fall 2001.
Public Education and Outreach – Pilot PEO Hub	The provincial Ministry of Water, Land and Air Protection will facilitate the establishment of a partnership amongst federal, provincial and local governments, industry, and environmental organizations to improve information-sharing and identification of partnership opportunities for the development and delivery of climate change PEO activities across BC.	British Columbia. Provincial Ministry of Water, Land and Air Protection (MWLAP) is facilitating the process to establish a PEO Pilot Hub, until the selection of a hub host.	Initial meeting with stakeholders in June 2000 to explore interest in establishing PEO Hub in BC; survey in December 2000; second meeting with stakeholders in March 2001 to discuss possible structure and mandate of pilot hub.	Selection of NGO ("Hub Host") to administer the pilot hub. NB: All BC government programs are currently under review.
Public Education and Outreach – School Projects	To develop a training and on-going support network for teachers to use climate change as a teaching theme to meet existing learning outcome requirements.	British Columbia Delivered in partnership with Wild BC (Habitat Conservation Trust Fund).	BC Hydro purchase of Pembina Institute kits (to be distributed as part of training program); initial meetings to begin development of training network; regional delivery plans developed by Sept 2001.	Survey teacher needs in various regions to further fine-tune regional delivery plans; develop and deliver training in Jan 2002. NB: All BC government programs are currently under review.
Public Education and Outreach – Support for PEO Partners	Provide technical advise and support to CCAF-funded projects based in BC, including BC Energy Aware Committee, Off Ramp high school transportation program (coordinated by Better Environmentally Sound Transportation) and the Canadian Climate Change Calculator.	British Columbia	This information is presently unavailable.	NB: All BC government programs are currently under review.
School-Based Education and Awareness Initiatives	Student Education and Awareness (Grade 5) – A pilot school-based activity and awareness campaign dealing with climate change.	Alberta	Program is up and running in 8 grade 5 classes in Lethbridge. Creation of a teacher resource package with lesson plans.	Expand project to include more cross-curricular linkages to Social Studies and Health as well as suggestions for use in grades 4 and 6.
School-based Education and Awareness Initiatives	Expand Energy Management and Climate Change information in school curricula.	Northwest Territories	This information is presently unavailable.	This information is presently unavailable.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
School-Based Education and Awareness Initiatives	Preparation and use of curriculum materials in public schools.	Nova Scotia in partnership with Canada. Delivered by scientists and innovators in the schools.	200 manuals printed; six in-service presentation to teachers; manual available on web.	Additional in service to increase use of materials in classroom.
The Manitoba Climate Change Task Force *(New Action)*	Public consultations are being conducted through a series of public meetings where oral submissions can be provided, as well electronic submissions, and written submissions are being accepted. Findings and recommendations will be submitted to the Government of Manitoba in September of 2001.	Manitoba	The Task Force gathered information and conducted public consultations in the spring of 2001. A final report is expected in September of 2001.	This information is presently unavailable.
Various Media Initiatives to Enhance Awareness (Branded Outreach Initiative and National Clearinghouse)	To develop a partners' toolkit of awareness building materials such as fact sheets, radio PSAs, climate change presentations, signature line for use of other stakeholders (e.g. PEO climate change hub pilots).	Canada Members of the PEO Climate Change Hub Pilot Advisory Team (HPAT membership is made up of federal reps, and three multi-stakeholder participants from each hub pilot or interested jurisdiction) make up the working groups for the Clearinghouse and the Partners' Outreach Toolkit. Delivery is by each hub pilot host.	Partners' Outreach Toolkit: The working group have agreed on the initial contents of the toolkit. National Clearinghouse: An organization has been chosen to develop the site. The working group has agreed to the initial key elements that should be available on the site.	Toolkit: the working group has met several times and have agreed on the next steps which include the development of: a) a graphic treatment for the signature line b) 3 fact sheets c) a climate change powerpoint presentation d) radio PSA scripts. National Clearinghouse: The development of the site.
Various Media Initiatives to Enhance Awareness (Internet, television, exhibits, collateral materials, etc.)	Increase awareness and action on climate change through various media: - internet outreach - exhibits - Collateral materials	Canada	An article, "Taking Action on Climate Change" appeared in an Environment Week supplement in *McLean's* and *l'Actualité* in June 2001. Participation in two Canada Information Office exhibits this summer, the Pacific National Exhibit (Vancouver) and Canadian National Exhibit (Toronto). An exhibit plan has been drafted for future exhibits.	

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Workshops and Missions	Industry Canada will lead outgoing and incoming Climate Change workshops and missions. These workshops and missions will showcase Canadian climate change products, services, and technologies to foreign buyers and potential partners.	Canada		

Actions Under Consideration (Policy/Budget Approval Needed)

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Agriculture Initiatives	Support proposals to strengthen the adoption of new technology, to improve education and awareness of livestock producers on Best Management Practices that reduce methane emissions, and to advance the proper storage and handling of farm wastes. Similar initiatives for crop producers to reduce nitrous oxide and CO_2 emissions and sequester CO_2 in soils.	New Brunswick	This information is presently unavailable.	This information is presently unavailable.
Awareness Building	Employees of industrial companies will have access to energy management resources beyond what is currently available from NRCan, in the form of tools such as customized energy management workshops, customized technical support, new technical guidebooks and videos.	Canada Key delivery partners include individual companies and many of the 43 trade associations now involved with CIPEC as well as new associations from the proposed areas of expansion.		
Energy Management Workshops	Develop and deliver energy management workshops.	Northwest Territories	This information is presently unavailable.	This information is presently unavailable.
Nunavut Climate and Energy Coalition – PEO Hub	In order to improve awareness and education about climate change, Natural Resources Canada initiated the Hub Pilot Project. Hubs represent collaborative work by public and private sector in developing and delivering public education programs on climate change and associated energy issues.	Nunavut in partnership with Natural Resources Canada and Nunavut Power Corporation.	Application being completed.	This information is presently unavailable.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Public Education	Increase awareness and action on climate change via national network and regional hubs involving private/ public partnership.	Newfoundland and Labrador	RFP to be issued shortly.	Seek formal government funding approval.

2) Promoting Technology Development and Innovation

A number of initiatives have been started by the federal, provincial and territorial governments to develop and apply efficient, clean and cost effective technologies as one component of Phase One of the First National Business Plan. Support for alliances and partnerships amongst the levels of government, the private sector and academia is a central feature of the strategy.

Objectives and Supporting Actions

To foster collaborative efforts and information exchange among governments and stakeholders to advance new and emerging technologies, taking account of domestic and international opportunities

To foster collaborative federal, provincial, territorial efforts in the area of technology development, a Climate Change Technology Working Group (CCTWG) has been established. Its broad objectives are to identify promising GHG technologies of interest to the various jurisdictions, to find ways to work together to advance the development and to raise the profile and awareness of technology's potential role in achieving GHG emissions reduction. The CCTWG is co-chaired by senior officials from Saskatchewan and Natural Resources Canada.

The CCTWG will also organize workshops for researchers and decision-makers from industry, academia, and governments to exchange information on recent developments and on new initiatives.

To enhance the knowledge infrastructure through new approaches to providing energy and energy end-use services that ensure innovative technologies are available to meet emissions reduction objectives

Government, the private sector and academic institutions are advancing scientific, technological and policy research efforts to assess biological carbon sequestration, geological carbon storage, and energy efficiency improvement potential for buildings and appliances.

An example of a collaborative technology initiative is the work on CO_2 Capture and Storage technologies by the federal government plus Saskatchewan, Alberta, BC and other provinces plus industry and academia. Six technology development and demonstration programs are under way and others are in the planning phases. One project of note is the Weyburn Carbon Dioxide Injection Monitoring Project – Capture and Storage. This monitoring project is a four-year research program to develop a comprehensive understanding of CO_2 injection into oil bearing geological structures. Through detailed research and measurement, an international research team will verify the effectiveness of the use of CO_2 for enhanced oil recovery and as a method of managing greenhouse gas emissions through subsurface storage.

To research, develop and demonstrate new and emerging climate change technologies

A number of ongoing and new initiatives are under way to advance technology development and innovation. Governments have undertaken programs to facilitate a broad range of technology activities that directly and indirectly address the mitigation of climate change in the different regions of the country. For example, the federal, provincial and territorial governments, individually and in partnership, are advancing initiatives to facilitate technological developments in the areas of GHG reduction technologies, biofuels, renewables and conventional energy sources.

Yukon has undertaken a Wind Research and Development Initiative to determine the feasibility of wind energy to displace diesel-generated electricity.

One of the primary tools for implementing federal climate change policy is Technology Early Action Measures (TEAM) program, established in 1998 as part of the federal government's Climate Change Action Fund (CCAF) initiatives. TEAM is a highly coordinated $56 million federal government-led program that has leveraged around $600 million to support investments in cost-effective technology projects that are designed to lead to significant reductions in GHG emissions. TEAM serves a role in providing for cost-effective public-private partnership and through the program's unique approach to incremental financing and extensive networking, TEAM has brought together partners within the industry, in communities and internationally to encourage additional investment and accelerate the development of innovative technology across all sectors of the economy.

The Government of Canada's Program of Energy Research & Development (PERD) has played a strategic role in the research and development of economically and environmentally sustainable energy technologies. This interdepartmental program supports thirty-eight research areas, including environmental solutions to the oil and gas sector, cleaner transportation for the future, energy-efficient buildings and communities, energy-efficient industry, electricity infrastructure, and climate change. In addition, the Government of Manitoba funds innovation and commercialization of GHG mitigation technologies as one component of the Manitoba Climate Change Action Fund.

There are two main technology-related initiatives under the Action Plan 2000: the Climate Change Technology and Innovation Initiative and, the Canadian International Technology Initiative. Both initiatives are comprised of many programs supporting the objectives set out in the FNBP.

For selected climate change technologies requiring further development, the Technology and Innovation Initiative will also support the establishment of networks amongst stakeholders in industry, government and academia. The goal of the network will be to find ways to work together to develop the selected technology, drawing on existing programs.

To enhance the business environment through analysis of the opportunities to advance Canadian technologies and enrich the innovation system

The Technology and Innovation Initiative also aims to support the business environment for technology development. Components include a program of technology "road-mapping". For a particular sector or area of technology, stakeholders will survey the needs of the sector, will assess the technology opportunities to meet those needs and then will develop a plan of action to advance the development of technologies to meet those needs. The road-mapping report from this exercise defines the way forward and the means to develop the selected technology through research, development and demonstration programs and investments.

To provide a forum for broader discussion on a national scale with respect to the needs and opportunities in a technology area, a strategic planning forum will be organized. The goal is to bring together experts and program managers from industry, academia and government to discuss technology development issues and strategies.

To enhance international technology opportunities

Opportunities are emerging for Canadian technology suppliers in markets outside of Canada. The Canadian International Technology Initiative is designed to provide information and support to enhance such opportunities.

Trade facilitation through the Canadian Initiative for International Technology Transfer (CIITT) program will promote assistance for the identification and development of climate change technology projects for demonstration in developing countries.

Other components include additional assistance in foreign posts for marketing Canadian technologies and finding international partners with interests and capabilities of relevance to Canada, analysis of opportunities in selected international markets, showcasing of Canadian technologies abroad as a means to raise awareness abroad about Canadian technology products and capabilities, and also monitoring of technology sales and R&D partnerships and investments abroad.

Actions Approved and Under Way

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Air Emissions Regulations	Protect environment and public health by reducing environmental pollutants and GHGs.	Yukon	This information is presently unavailable.	This information is presently unavailable.
Beehive Burner Tax Shift Pilot	Beehive burner operators receive a rebate of waste permit emission fees when they make a contribution to an "approved project" involving the development of technology to produce value added products from wood residue.	British Columbia	Several companies have indicated an interest in participating in the project. None have yet made a contribution.	This information is presently unavailable.
Canada/Yukon Energy Solutions Centre	The Canada/Yukon Energy Solutions Centre provides technical services and facilitates energy solutions for residential, commercial and government consumers.	Yukon. A joint initiative between the Yukon Development Corporation and Natural Resources Canada.	The Canada/Yukon Energy Solutions Centre officially opened in March 2001. It has secured a three-year funding agreement between the Yukon Development Corporation and Natural Resources Canada, signed a Letter of Cooperation with Natural Resources Canada to work closely on various initiatives, established a steering committee, reached a Memorandum of Understanding with the tourism industry to target efficiencies and solutions to this sector and arranged the transfer and delivery of the Commercial Energy Management Program by the Centre.	In addition to progress already achieved and the delivery of ongoing programs, the Canada/Yukon Energy Solutions Centre will continue to implement new initiatives from its 2001 business plan. Highlights include targeting municipal and First Nation energy efficiency improvements in collaboration with the Association of Yukon Communities, individual municipalities and First Nations as well as the Canadian Federation of Municipalities and Natural Resources Canada.
Climate Change Technology Group	The group will identify technology areas of interest to Canada and promote the development of these technologies. The group will act as a catalyst by bringing together the appropriate groups or networks of people and organizations. The group will also investigate international technology development and evaluate its adaptation for the Canadian circumstance.	Saskatchewan in partnership with governments; research institutions and industry.	The group has been approved with a budget to get started; 'Model' network ready to be written up for evaluation.	Consultant to be taken on to assist with development; understand the modelling requirements; undertake technology review and identify areas of technology interest; develop plans for a workshop.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Climate Change Technology Programs and Projects	Climate Change Technology Programs and Projects Money is funded from a number of government sources Energy Research Institute, Alberta Research Council, Climate Change Central and Alberta Environment.	Alberta in partnership with Climate Change Central (CCC), Alberta Research Council (ARC) and Alberta Environment Research Institute (AERI).	Funding for climate change technology under ARC, CCC, & AERI is over $6 million for projects. Over 20 projects have been initiated by these organizations.	Continue work in the areas of alternative fuels, and renewables.
Conversion Assistance Program	Renewable Energy Technologies - Conversion Assistance Program.	Northwest Territories	This information is presently unavailable.	This information is presently unavailable.
Energy Efficient Pilot and Demonstration Projects	The Energy Efficient Pilot and Demonstration Projects determine the viability and appropriateness of efficiency solutions. It can be effective in commercializing technology and engaging consumers and communities. In 2000, the Energy Efficient Pilot and Demonstration Projects primarily involved the Domestic Hot Water Timer Pilot Project and the Parking Lot Timer Pilot Project.	Yukon. The data gathering and analysis for the Parking Lot Pilot Project is being completed with the assistance of students from the Wood Street Annex in Whitehorse. The Domestic Hot Water Timer Pilot Project and the Parking Lot Timer Pilot Project are initiatives of the Yukon Development Corporation but are delivered by the Canada/Yukon Energy Solutions Centre through an operating agreement.	The Domestic Hot Water Timer Pilot Project tested domestic hot water heater timers in 50 households in 2000 to measure customer acceptance and decrease electrical consumption. The Parking Lot Timer Pilot Project installed temperature-sensitive parking lot timers developed in Canada at seven Whitehorse locations. The devices control the amount of electricity flowing to a vehicle's oil pan and battery blanket.	The Domestic Hot Water Timer Pilot Project will be extended to another 50 households in 2001 and 2002 to establish additional baseline information for the possible application of a territorial wide program. Analysis of the 2000 data will be completed for both projects. The Energy Efficient Pilot and Demonstration Projects will develop new initiatives, which may include the construction of a solar wall, installation of a geothermal closed-loop heat pump and a fridge replacement program.
Ethanol Development Program	The provincial government has provided $300,000 for an Ethanol Development Program that will support the development of commercially viable technologies for producing ethanol, energy and valuable chemical by-products from softwood residue. The Canadian Petroleum Products Institute has also committed $100,000 over 5 years.	British Columbia Ethanol BC is delivered as a special project administered by Forintek Canada Corp.	Ethanol development activities in BC are continuing with promising developments by several companies including: - LIGNOL Innovations - Etho Power - DynaMotive Technologies - Malahat Systems	Continued program outreach by Ethanol BC to maximize the opportunity for BC-based companies and institutions to access available R,D&D funding.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
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.	British Columbia in partnership with Canada.	Hydrogen-ready laboratories available spring 2002. Demonstration projects at RFP stage.	This information is presently unavailable.
Green Venture Capital Program	The program is aimed a raising capital for small businesses that are introducing technologies or services that restore, preserve or enhance the environment. This program helps green businesses raise new financing to start or expand their operations. Web site: www.bcinbusiness.gov.bc.ca	British Columbia	Over the past year has raised $3.4M for investment in 6 small businesses engaged in the green economy.	This information is presently unavailable.
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.	British Columbia	In fiscal 2000/01 approximately $200,000 was allocated to public education and outreach projects and demonstration projects in solar (thermal and photovoltaic) and biomass applications.	Monitoring of demonstration projects and implementation of second year activities. NB: All BC government programs are currently under review.
Saskatchewan Petroleum Research Incentive	The incentive provides 30% of the approved costs of field pilot projects undertaken by industry, and 15% of the approved costs of laboratory research projects.	Saskatchewan in partnership with the Oil and Natural Gas Industry.	Several projects have been approved and are under way; GHG reduction impact has not been determined, as the full impact of the projects cannot be determined at this time.	Continuation of existing Incentive program.
Solarwall® Demonstration Project *(New Action)*	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, a test project will be conducted on a school in Rankin Inlet.	Nunavut in partnership with Natural Resources Canada.	This information is presently unavailable.	Installation and initiation Fall of 2001.
Statistical Monitoring of Climate Change Technologies	The Environment Industry Survey covers the total economy (primary manufacturing, distributive trades, and service industries) and will provide a complete picture of the supply of climate change technologies and related services. The supplementary questionnaire for the Survey of Environmental Protection Expenditures would gather information	Canada		Initial consultations during the design stage will allow interested parties to provide input on questionnaire content. Focus groups will also be formed to test questions related to climate change

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
	from firms and industries where environmental protection spending was likely to constitute a relatively large portion of total expenditures. The survey targets primary industries, manufacturing industries, electric power and gas distribution industries and pipeline transport industries.			technologies prior to conducting each of the surveys. Following the 2002 survey is a comments and recommendations period to improve the questionnaire for the second survey cycle.
Sustainable Development Technology Fund (SDTF)	The SDTF will provide funds to alliances made up of industry, universities and research institutes for projects which involve development or demonstration of innovative, sustainable development technologies, in particular, climate change and air quality solutions.	Canada The SDTF will be administered by a Foundation created by federal legislation which will operated at arm's length from government.	Legislation to establish the Foundation received Royal Assent on 15 June 2001. Work to implement the administration and operation of the Foundation is under way.	It is expected that the legislation will be proclaimed this Fall, together with announcements of the individuals appointed to the Foundation's Board of Directors and the members of the Foundation. The private sector foundation can be continued into the legislated foundation, as per the provisions in the legislation.
Technology Roadmap	Technology "roadmaps" are forward-looking plans to develop selected technologies through additional work on a collaborative basis amongst stakeholders. Development of the plan starts with an assessment of market needs for technology solutions, identification of present capability to meet those needs, and then planning the best approach to develop and demonstrate technologies to better meet the identified needs.	Canada	Interdepartmental Steering Committee has been formed, work to identify areas of technology is now under way.	Implement work plan - select technology areas, build collaborative groups, initiate assessments, analysis, planning.
Technology Showcasing	The CCCS is a multi-media, portable information product, currently available in both CD and web-based formats, that provides a comprehensive database of export-ready Canadian climate change technologies. It currently provides a direct link to over 200 Canadian companies offering climate change technologies, and provides the information in English, French and Spanish.	Canada		On-line monitoring will be used to assess performance of the CCCS including: usage tracking, on-line feedback forms, and random on-line user surveys. CD distribution will be tracked and random user evaluation will be undertaken. Assessment of both the CD and web CCCS is based on a set of criteria.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
The Manitoba Climate Change Action Fund *(New Action)*	The Manitoba Climate Change Action Fund (MCCAF) is a component of the Sustainable Development Innovations Fund. The MCCAF provides funding to support Manitoba projects relating to climate change; these projects can focus on public education and outreach, the scientific understanding of climate change impacts and potential adaptation practices, technological innovation and energy efficiency and alternative energy.	Manitoba	Fourteen MCCAF projects were approved in the 2000/01 fiscal year for a total funding of $235,000.	This information is presently unavailable.
Weyburn Carbon Dioxide Injection Monitoring Project	Study interaction of carbon dioxide with rock, oil and water in reservoir; verify geological storage, environment impact and safety.	Canada and Saskatchewan.	Negotiations ongoing with private sector.	
Wind Research and Development Initiative	The Wind Research and Development Initiative seeks to determine the feasibility of wind energy in the territory to displace diesel-generated electricity by identifying potential locations and addressing the technical challenges of utilizing this renewable resource in harsh climatic conditions. It also compliments the Green Power Initiative Implementation Strategy of the Yukon Development Corporation.	Yukon Financed by the Yukon government through the Yukon Development Corporation (YDC), this initiative is administered by its subsidiary, Yukon Energy, through an operating agreement.	A Vestas 660 KW wind turbine was commissioned on Haeckel Hill near Whitehorse in late 2000 at a cost of $2.05 million and increases the Yukon's wind generation capacity by 440%. Five monitoring stations were installed at various territorial locations in 2000 through the Community Wind Resource Assessment Program and another five sites are planned for 2001.	The analysis of sites monitored in 2000 through the Community Wind Resource Assessment Program must be completed and another five monitoring sites installed. An assessment of the proposals received from the Expression of Interest must be finished and potential development sites identified for alternative energy installations.
Yukon Hydrogen Project	The Yukon Hydrogen Project is a public-private partnership with the Yukon Development Corporation, Yukon Energy and GS Energy Systems Inc. to examine the feasibility of hydrogen production, storage and transportation by using surplus hydroelectricity from the Whitehorse-Aishihik-Faro grid. Although not viable in the short-term, future hydrogen commercialization could provide a renewable energy source to displace fossil fuel generated power and reduce carbon dioxide emissions.	Yukon in partnership with Yukon Energy and GS Energy Systems Inc. Managed by Yukon Development Corporation but is a private public partnership with Yukon Energy and GS Energy Systems Inc.	A feasibility study was completed that examined hydrogen production, storage and transportation as well as various alternatives for power production including fuel cells and converted internal combustion engines. The focus was directed at technologies at or near commercialization while cased studies were examined for comparison and planning purposes. At this time, six demonstration projects are under development.	The study principals are using the information from the feasibility study to develop a conceptual plan for a Yukon based hydrogen project involving partnerships with government, businesses and other interested parties. It would include separate usage scenarios involving small, medium and larger size power applications.

Actions Under Consideration (Policy/Budget Approval Needed)

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Green Economy Development Fund	This information is presently unavailable.	British Columbia	This information is presently unavailable.	NB: All BC government programs are currently under review.
National Biomass Ethanol Development Centre	Proposal to establish a BC-based national centre to research, develop and commercialize biomass-derived ethanol and related products.	British Columbia	This information is presently unavailable.	NB: All BC government programs are currently under review.
Novel Next Generation Technologies	This program will have two components. One will provide funding to university researchers to undertake early stage research. The second will call on provincial and federal government researchers to identify new ideas and approaches and will support some initial investigation of the ideas.	Canada National Science and Engineering Research Council will administer the university research component, on behalf of Natural Resources Canada. OERD will operate the government component.	MOU between NRCan and NSERC has been established. First Call for Proposals planned for early 2002. An RFP for the in-government component is being developed.	Implement NRCan-NSERC MOU, hold first call for proposals. Finalize draft RFP and send out to government research organizations.
Research & Development for Innovative GHG Reduction Technologies	This initiative will provide funding to support the research, development and demonstration of eleven separate climate change technology projects by federal departments and research organizations. The technologies have been selected on the basis of their GHG reduction potential and of the opportunities that could open up for Canadian technology companies to supply or use the technologies. The eleven projects are: 1. Field demonstration of Oxygen-Fired Combustion 2. Advance Power Cycles 3. Microturbines in Distributed Power Systems 4. CO_2 Sequestration in Oil Sand Tailings 5. Cogeneration from Agricultural and Municipal Wastes 6. CO_2 Sequestration in Gas Hydrates 7. Energy Efficiency Improvements in Multi-Phase Flow	Canada	This information is presently unavailable.	Technology projects have been solicited, screened and selected. Creation of partnerships for each project is under way.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
	8. Sustainable Communities 9. Clean Combustion of Flare Gas 10. Power from Landfill Gas using Microturbines 11. Gas from Biosolids for Fuel Cells			
Review of Tax Incentives for Hybrid Vehicles *(New Action)*	The rebate program for alternative fuel vehicles provides purchasers or long-term lessors of qualifying alternative fuel cars with a retail sales tax rebate of up to $1,000. This program currently does not extend to the newly developed electric hybrid cars. As a result, legislation will be introduced to extend the retail sales tax rebate to qualifying electric hybrid cars. A qualifying electric hybrid car would be one that combines an electric traction motor with another power unit, such as a conventional gas or diesel engine. To qualify for the proposed rebate, an electric hybrid car would be required to have: - regenerative braking capability to recover the energy released while slowing down or stopping; and - electric storage systems, such as batteries, ultra-capacitors, or flywheels. It is proposed that qualifying electric hybrid cars delivered after May 9, 2001 be eligible for this rebate.	Ontario Delivered by vendors (Provincial Retail Sales Tax).	Proposed and under review.	Legislation to be introduced.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Technology Market Analysis	Studies of international markets will be undertaken to determine mid- and longer-term technology needs of selected foreign countries. The resulting information will be used to guide R&D investments and to target marketing efforts.	Canada	Nothing has started to date.	Consultation to identify selected foreign markets. Develop RFP for contracting out for studies. Select contractors and commence studies.
Technology Networks	The program will support network managers to create networks of experts They will include experts from industry, academia and government to exchange information and ideas and to promote collaboration in key sectors with high GHG reduction potential, both nationally and internationally. Three networks are being planned in CO_2 Management, Eco-sustainable Communities and Process Integration.	Canada	Although some thinking and planning have been done, no networks have been designed or network managers identified because of availability of funds until now.	Completion of the network design and hiring of network managers.
Technology Strategic Planning Workshop	There will be two workshops for researchers and decision makers from industry, academia and governments to exchange information and views on recent advances in, and applications, of technology and on new initiatives for research and technology development.	Canada	This program does not start until 2002-2003.	Planning for the first workshop has to commence before the end of this fiscal year.
Wind Power Identification and Testing	Assessment includes: completion of a wind resource and load profile monitoring program; deploy low penetration wind energy systems; and complete high penetration wind-diesel pilot project.	Nunavut	Study under review.	This information is presently unavailable.

3) Governments Leading by Example

The importance governments attach to climate change can be measured by the actions that they take to reduce emissions from their own operations. Federal, provincial and territorial governments have all put in place substantive government-wide initiatives to reduce GHG emissions and have reported significantly reduced emissions.

Objectives and supporting actions

To demonstrate leadership by:

- taking actions that reduce GHG emissions in their own operations, including those that go beyond low-cost effective actions;
- incorporating the strategic consideration of climate change impacts on new policies, programs and projects;
- developing comprehensive action plans that qualify for the highest level with the Voluntary Challenge and Registry Inc. (VCR Inc.)/ÉcoGESte; and
- setting an aggressive target for reductions and annual reporting on progress.

Government operations have reduced emissions through an array of initiatives in areas such as: fleet management and alternative fuels, facilities management (e.g., building retrofits), waste management, "green" procurement practices, and telework and commuting practices. For example, the Government of Canada's House in Order Initiative has set a target of 31 percent below 1990 GHG emissions from its operations by 2010. A 19-percent reduction since 1990 has already been achieved owing to downsizing and efficiency efforts. At the provincial level, the Alberta government has reduced its emissions to 19.8 percent below 1990 levels; and British Columbia has set a target of 16-percent reduction from 2000 levels by 2005.

To catalyze demonstration and deployment of new and promising GHG reduction technologies

Governments have identified specific technologies (e.g., electricity from renewable energy sources, such as solar and wind) and are focusing on helping them develop more quickly through collaborative applied research, development and demonstration.

To develop and share expertise within and among governments by communicating the successes of government action and encouraging other sectors to take similar action

The VCR Inc. provides a venue for governments to record their actions and publicly report them. Web site access to this information and annual awards increase awareness of government initiatives and of the results that can be achieved. Most federal, provincial, territorial governments have registered with VCR Inc. Alberta and Canada have achieved Gold Level reporting status, while British Columbia has achieved Silver Level status.

To extend awareness and expertise throughout government organizations

Climate change is a cross-cutting issue that requires the involvement of many government departments. While most jurisdictions have initiated discussions to address climate change, more could be done to extend this initial awareness throughout all government organizations. For example, in the Hybrid Vehicle Pilot Program the Manitoba Department of Conservation purchased two hybrid-electric passenger vehicles to test the driving and maintenance performance and fuel efficiency of such vehicles under Manitoba conditions. In addition, in the Manitoba Conservation Vehicle Replacement Program, the Department of Conservation is committed to replacing all vehicles that are due for replacement with the most fuel-efficient vehicles that can still adequately do the job required.

Actions Approved and Under Way

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Alberta VCR Action Plan	Renew the Government of Alberta's commitment to a VCR Action Plan and establish post-2000 GHG reduction target for government. Operations: - pilot "best in class" leasing standards and retire oldest, least efficient vehicles - conduct waste audit to assess extent of government recycling - government building retrofit Educate government staff on climate change to stimulate personal action to reduce GHG emissions at work, on the road and at home.	Alberta	GHG emissions from Alberta government buildings 19.8% below 1990 levels as of 1999/2000. Expansion of staff "inreach" program to other government departments. Alberta Environment has developed a new vehicle policy.	Develop and implement a new VCR Action Plan and set a new target. Achieve "Champion in Action" reporting status.
Alternative Fuels Initiative	Demonstration of cost effectiveness and efficiency of alternative fuels such as natural gas as a vehicle fuel.	Saskatchewan	To date, approximately 130 SaskEnergy vehicles operate on natural gas; 125 of those are bi-fuel vehicles able to operate on either natural gas or gasoline; 5 of those are dedicated natural gas operation.	Continuation of program as such.
Climate Change Fund – Government Leading by Example *(New Action)*	The Government of Ontario has undertaken projects that show its leadership role in reducing GHG emissions such as becoming a member of the Voluntary Challenge Registry and the creation of a Government run carpool website.	Ontario	Projects are on-going.	Posting the carpool website, continue reducing GHG emissions from government operations.
Climate Change Strategy and First Business Plan *(New Action)*	To develop a fair, cost-effective and comprehensive GHG emissions control and impact adaptation strategy.	Nunavut in partnership with Canada and NTI.	An inter-agency committee was established January 2001 to lead in the development of this Strategy. Representatives on the committee are from federal/territorial government agencies and the private sector. Public consultations were completed from January to May 2001.	Complete and submit to Cabinet Fall 2001.
Continue with Energy Management Programs	Provide technical advice and assistance to energy consumers in all sectors to reduce their energy consumption.	Northwest Territories	This information is presently unavailable.	This information is presently unavailable.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Encourage use of Natural Gas in Nova Scotia	Work with the private sector to increase access to natural gas in Nova Scotia.	Nova Scotia	Use of gas by Nova Scotia Power.	Regulatory process for review of applications for natural gas distribution franchises currently under way.
Energy Accounting Program	Enhanced monitoring technology of energy consumption and its integration into regular government functions will be pursued. This program forms the basis of government related air emissions monitoring.	New Brunswick	Electricity data is compiled; petroleum fuels data system is being developed.	Monitor contracts and energy consumption.
Energy Improvements in Funded Buildings (School modernization)	Ensure school modernization/retrofits achieve high level of energy efficiency.	Alberta	Funding for both years has been announced. Design and construction are in progress.	Construction completion and examination of results.
Energy Management in Funded Buildings	This initiative resulted in the development of a Greenprint for Energy Conservation. The Greenprint plan will focus on improving the efficiency of natural gas, electricity, and oil use in buildings, industry, agriculture, and transportation.	Saskatchewan Greenprint's Interdepartmental Working Committee consists of representatives from: SaskEnergy; SaskPower; Saskatchewan Research Council; Finance; Crown Investments Corporation; Health; Economic and Cooperative Development; Education; Agriculture and Food; Municipal Affairs and Housing; Saskatchewan Property Management Corporation; Environment and Resource Management; Executive Council.	Appointment of Peter Prebble, Legislative Secretary to the Minister of Energy and Mines, to the coordination of the development of the Greenprint; consultation meeting with the Saskatchewan Stakeholders Advisory Committee on Climate Change.	Build on the current planning work of the Crowns and departments; consider the views and recommendations of all stakeholders such as the Saskatchewan Stakeholders Advisory Committee, Regina's Green Ribbon Committee, and Energy Management Task Forces of Regina and Saskatoon.
GHG Inventory and Planning	The House in Order initiative is the federal government's strategy for reducing GHG emissions within its own operations by 31% over 1990 to 2010.	Canada		

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Green Buildings British Columbia – New Buildings Program	The New Buildings Program is facilitating a series of Pilot Projects that will inform the development of a policy governing new provincially-funded buildings. These pilot projects are helping to identify issues, opportunities and barriers to government sustainability development. These pilot projects are required to meet some aggressive performance standards for less than or equal to the cost of a conventional facility, and will strive to create successful examples of green facilities that can be used to demonstrate the feasibility of such projects elsewhere in the province.	British Columbia Delivered by BC Buildings Corporation.	Four pilot projects have completed the design phase and will yield energy savings ranging from 40% to 50% relative to the MNECB. The projects include 3 schools and one post secondary institution.	The program is in the process of securing two new health care facilities to serve as pilots.
Green Buildings British Columbia – Retrofit Program	Experience in other jurisdictions shows that the assistance of a third party can act as a catalyst for energy retrofits, especially for publicly-funded buildings. In the context of these findings, the Program has been established to help educational and health care organizations procure retrofit services from the private sector by offering a variety of services at no charge.	British Columbia Delivered by BC Buildings Corporation.	Program Infrastructure is largely in place. $6.2 million worth of projects either complete or under way generating annual savings of $895,000. $50+ million in projects are in the pipeline and are expected to generate annual savings of $4.9 million.	Marketing of the Program to target audiences to encourage retrofit activity.
Greening Government – British Columbia VCR Action Plan	The province is implementing an action plan to reduce GHG emissions and other environmental impacts from government operations. The plan was submitted to the Voluntary Challenge Registry and received a Silver Reporter standing.	British Columbia	Fleets: 40% of the lease orders for the 2001 government fleet were for alternative fuel vehicles or "greener" vehicles. Working on: - buildings energy efficiency measures/retrofits - renewable energy in parks - park visitor educational programs regarding the renewable energy systems and climate - green power procurement - employee commuting programs	NB: All BC government programs are currently under review.
Mayo – Dawson City Transmission Line	A 223 kilometre transmission line will be constructed between the communities of Mayo and Dawson City and Mayo. The project will displace primary diesel-	Yukon Yukon Energy will manage the	The contract for the Mayo-Dawson City transmission line was awarded in February and	The construction of the Mayo-Dawson City transmission line needs to be

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
	generated power in Dawson City with surplus, hydroelectricity from the Mayo dam.	construction of the transmission line though its parent company, the Yukon Development Corporation, provided financial assistance to reduce the up-front capital costs.	construction will start in the summer of 2001. A displaced emission prospectus was completed and marketed in late spring to several domestic companies.	completed and activated.
Natural Gas Conversion Assistance Program	Inuvik Natural Gas Conversion Assistance Program.	Northwest Territories	This information is presently unavailable.	This information is presently unavailable.
Office of Green Building Technologies	BC Buildings Corporation (BCBC over 3,600 buildings in more than 300 communities. BCBC has been given the mandate to establish a Green Building Technology Office (GBTO) to: - strengthen its own green buildings practices; - expand the demand for green buildings among the BCBC's clients; and - increase the capacity of the building industry to deliver green buildings, products and services to the Corporation's clients.	British Columbia Delivered by BC Buildings Corporation.	1) Building Rating System – determined the US Green Buildings Council (USGBC), LEED rating system will be used. 2) Green Building Demonstration Projects- installing photovoltaic panels in one of their buildings. 3) Best Practices Guides, Case Studies, and other Resources – several guides completed.	Development and delivery of information workshops for provincially funded agencies, industry and BCBC staff on the merits of and strategies for delivering high performance (i.e. green) buildings. NB: All BC government programs are currently under review.
Promote On-Site Generation at Government Facilities	As part of its strategy for the electricity sector, Government of Canada Action Plan 2000 for Climate Change announced a series of measures to promote the use of electricity from emerging renewable energy sources. To implement this, it expanded the scope of the REDI for Federal Facilities to include on-site electricity generation using emerging renewable energy systems, such as solar photovoltaics and wind.	Canada	N/A	
Promote Teleworking for Provincial Civil Servants	The scheduled performance of work during regular working hours by an employee from a location other than the regular office setting (usually the employee's home) that is agreeable to the employer and employee.	Prince Edward Island	This information is presently unavailable.	This information is presently unavailable.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Provincial Buildings Energy Use Reduction Program	Reduce energy consumption through the replacement and/or upgrading of building infrastructure. Infrastructure being replaced / upgraded includes, but is not limited to: lighting, HVAC systems, building control systems, upgrades to the building envelope (insulation and infiltration).	Saskatchewan in partnership with SaskPower Energy Solutions. Delivered by Saskatchewan Property Management Corporation.	The project is on schedule.	Maintain the course to project completion; develop a formal tenant awareness program.
Provincial Buildings Initiative	New Brunswick launched this successful energy management program in 1995 and will continue to expand its scope to Crown Corporations and to vehicles and equipment procurement. It's primary tools is performance contracting. The program will be promoted to municipalities and other organizations.	New Brunswick	In implementation.	Enhanced monitoring of progress.
Reduce Idling in Government Vehicles	An information campaign to encourage thinking about how we use our vehicles at work and at home, and, in particular, focusing on engine idling and its effects.	Yukon	Fact sheets developed and distributed over the winter / spring of 2000 / 2001.	Analyse silent witness information to determine idling reduction and related cost savings and emission reduction. Solicit feedback from employees.
Ride Sharing through Prince Edward Island Enerpool	The provincial government sponsors ride-sharing vans for weekday transportation to Charlottetown from Souris and Summerside.	Prince Edward Island The Government of Prince Edward Island is the sponsor but the program is completely sustained by the riders.	Vans run at or near full capacity.	This information is presently unavailable.
Saskatchewan Internal GHG Initiative	Establishment of a commitment to purchase 'green' power from SaskPower for several government buildings and vehicles to reduce GHG emissions.	Saskatchewan in partnership with SaskPower Corporation.	This initiative and its budget have recently been approved within Saskatchewan Energy and Mines.	Negotiate and sign a 10-year contract with SaskPower; monitor the performance of the wind farm; monitor amount of electricity purchased by Saskatchewan Energy and Mines, as well as sales to general public.
The Hybrid Vehicle Pilot Program *(New Action)*	Two hybrid gasoline-electric passenger vehicles were purchased in the fall of 2000 by the Department of Conservation in order to determine the driving and maintenance performance and fuel	Manitoba	Nearly one year of data has been collected on the two hybrid vehicles. No problems have occurred to date. Estimated fuel savings	Expand the program to include more hybrid technology within the provincial fleet if the pilot phase is successful.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
	efficiency of such vehicles under Manitoba conditions. Information on hybrid vehicles is available on the Government of Manitoba web site. If the pilot project proves successful, more hybrid vehicles will eventually replace the existing government fleet.		in the order of 25-35% over similar conventional gasoline-operated vehicles.	
The Manitoba Conservation Vehicle Replacement Program *(New Action)*	The Department of Conservation is committed to replacing all vehicles (due for replacement) with the most fuel efficient vehicles that will still adequately do the job required. Downsizing possibilities are also investigated, as well as replacement with alternative fuel vehicles including hybrid electric-gasoline or electric-diesel vehicles.	Manitoba	A number of vehicles (80) have been replaced with the most fuel-efficient vehicles that can still do the job.	Replace Conservation fleet with more efficient vehicles and downsize, when appropriate.
Waste Management Monitoring (for processing of waste sites)	The provincial government has initiated a waste recycling and composting program through source separation that will soon encompass the entire province. This will result in a 65% diversion rate of garbage from landfill or incineration.	Prince Edward Island	This information is presently unavailable.	This information is presently unavailable.
Wind-Powered Electrical Generation Facility	Project includes the erection of eight utility-grade wind turbines with a nominal capacity of 5.2 Megawatts to annually produce approximately 16,600 megawatt-hours of emissions-free electricity.	Prince Edward Island The project proponent is the Prince Edward Island Energy Corporation (PEIEC), a provincial crown corporation. However, the project represents a collaborative effort involving the Province of Prince Edward Island, through the PEIEC; the Government of Canada, as represented by Natural Resources Canada; and Maritime Electric, the purchaser and distributer of the green power. Both governments have agreed to purchase 90% of the output from this facility for government buildings on PEI over the first ten years of operation.	Regulatory and environmental approvals have been obtained. Site work has commenced, including access road construction and foundation siting.	This information is presently unavailable.
Yukon Climate Change Action Plan	Document of Yukon Climate Change Actions.	Yukon in partnership with City of Whitehorse and Northern Climate ExChange.	Compilation of existing Yukon actions, invitation for stakeholder participation, and establishment of sector working groups.	Compilation of potential new actions, draft Action Plan, obtain government approval, produce and release document.

Actions Under Consideration (Policy/Budget Approval Needed)

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Energy Improvements in Funded Buildings (School modernization)	Continue use of the Good Buildings Practice.	Northwest Territories	This information is presently unavailable.	This information is presently unavailable.
Energy Management Plan – Retrofitting Activities	Energy management in Nunavut includes promoting energy management to all stakeholders and, where feasible, retrofit, replace and convert current energy consuming systems with those that are more energy efficient.	Nunavut	Several communities have had energy audits completed at various public and private facilities and retrofits/conversions completed. Also completed are energy management workshops in the communities.	Continue with energy audits and retrofits.
Establish Climate Change Impacts as Part of Government Decisions	Review at cabinet level and by relevant regulatory bodies of GHG impacts of decisions on major projects and/or policies.	Nova Scotia	Under consideration as part of climate change strategy and as part of overall energy strategy now under development.	Cabinet approval.
Green Fleet	Consideration is currently being given to converting part of Newfoundland's vehicle fleet to "green fleet".	Newfoundland and Labrador	Under consideration; subject to approval.	Under consideration; subject to approval.
Northwest Territories VCR Plan Update	Update the GNWT Voluntary Challenge and Registry Plan (VCR).	Northwest Territories	This information is presently unavailable.	This information is presently unavailable.
Nova Scotia Retrofit Government Buildings	Energy audits and retrofits of government funded facilities.	Nova Scotia	Several demonstrations completed; energy audits being completed.	Approval by government and establishment of timing, objective and provision of staff and fiscal resources.
Nova Scotia VCR Initiative	Submit progress report that will meet champion level criterion.	Nova Scotia	This information is presently unavailable.	Assignment of resources; both human and capital.
Optimize Business Practices	Reduction of business-related travel by options such as telecommuting.	Newfoundland and Labrador	Under consideration; subject to approval.	Under consideration; subject to approval.
Residual Heat and District Heating	Development of new and expanded residual heat and district heating systems.	Northwest Territories	This information is presently unavailable.	This information is presently unavailable.

4) Investing in Knowledge/Building the Foundation

This theme focuses on improving data, broadening observations, developing networks, and enhancing scientific and economic models and methods. Investing in knowledge is essential to the risk-management approach. This work supports decision making through increased knowledge of the risks and impacts of climate change, as well as of the consequences and options for action.

The National Climate Change Process identified specific actions, such as:

- focusing resources on science, impacts, adaptation and mitigation;
- developing collaborative work plans for analysis and policy formulation to better inform domestic and international decision making;
- workshops with national and regional stakeholders to inform analyses; and
- building national networks to allow regional responses to unique opportunities.

To model and analyze the national, regional and sectoral economic, environmental and social costs/benefits of climate change actions

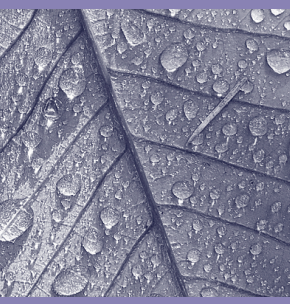
To address this objective, two federal, provincial and territorial working groups have been formed. The Analysis and Modelling Group (AMG) and the Emissions Allocation and Burden Sharing Working Group (EABSWG) focus on one or more of the following priorities: emissions trading, targeting measures, emissions allocation, burden sharing, competitiveness and technology. Both groups are seeking participation by non-government, academic and private sector stakeholders to ensure a thorough review and understanding of their work.

The AMG provides the framework for most of the quantitative analysis to be performed and has made significant progress on its work plan in the following areas:

- *Competitiveness*. The framework for this analysis is complete. The first face-to-face meeting with one industry, the Canadian Petroleum Products Institute, has taken place. Eight meetings with other industries are scheduled by year-end.
- *Cost curves*. The database, capable of ranking the actions identified by the Issue Tables, including unit GHG mitigation costs, is 90 percent complete. Work is proceeding to develop unit costs and measure the penetration of actions.
- *Disaggregation*. Data for each Atlantic province and as many jurisdictions as possible is under way. A study on the economic benefits and impact of GHG mitigation policies has been posted for public tender.
- *Capacity building*. Work is ongoing to prepare an inventory of skills and expertise related to climate change analysis within the academic community in Canada. Other work is ongoing to enhance the modelling capability of essential federal government departments (Natural Resources Canada, Environment, Finance, Transport, and Agriculture and Agri-Food).
- *Long-term implications*. Current monitoring of the long-term outlooks being prepared by other institutions (such as the Energy Modelling Forum).
- *Domestic emissions trading*. To assist the Domestic Emissions Trading Working Group (DETWG) (see under the next objective) in evaluating the implications of emissions trading, the AMG has prepared a list of attributes for the models required. Over the next few months, discussions among public and private sector modelling organizations will enhance analytical capabilities in this field.
- *Emissions allocation and burden sharing*. The AMG has completed analysis of initial allocation assumptions. It will proceed with modelling to assess the macro-economic impacts of more complex allocation systems.

In light of the Bonn agreement, the AMG is preparing to contribute to an integrated assessment of the analytic work being developed by the other National Air Issues Coordinating Committee – Climate Change (NAICC-CC) working groups.

The EABSWG is working on the allocation of a possible emissions reduction target, and how any resulting burden could be shared. The group will soon be analyzing background studies it has commissioned and conducting workshops to discuss the findings.



To facilitate policy options development and assessment to position Canadian governments and stakeholders to make informed domestic and international decisions at the right time

In January 2001, NAICC-CC held two workshops on analytic and policy priorities in January 2001, which were attended by representatives of government, industry, environmental non-governmental organizations and other stakeholder groups. The workshops reinforced the need to make decisions quickly on the following items:

- a work plan for the next 15 months with deliverables that will allow Ministers to focus on key issues such as ratification and use of a major policy instrument;
- a management structure with clearly identified responsibilities and relationships among NAICC-CC and its analytic/policy working groups and project teams; and
- a process for involving stakeholders at the appropriate level and time.

A domestic emissions trading (DET) system is considered as a potential major policy instrument to reduce GHGs in a Kyoto-type scenario (quantitative target for total emissions, subject to international emissions trading). The general objective of the DETWG, established by NAICC-CC with federal, provincial and territorial participation in February 2001, is to develop and analyze options for a DET system.

A range of options is being considered, centred around:

- **Coverage**: the sources of GHGs that could potentially be included in an emissions trading system (including CO_2 from fossil fuel combustion at an upstream point in the distribution chain for fossil fuels, such as refineries); and
- **Allocation**: means of initially distributing permits (various forms of *gratis* allocation, auctioning a portion of permits and recycling the revenues).

In addition to developing and analyzing options, the DETWG expects to provide an analytic discussion of:

- linkages between a DET system and international emissions trading, including possible constraints on a DET system (especially on options for *gratis* permit allocation) arising from international trade rules;
- division of labour between the federal government and the provincial and territorial governments in implementing DET systems; and
- issues and options associated with the transition to a mandatory DET system in the future, including consideration of the period before a decision is taken as to whether to introduce mandatory DET coverage.

As noted in the previous objective, the DETWG will collaborate with the AMG and the EABSWG. The AMG will assist with quantitative analysis of various options for the economy as a whole and for industry sectors, regions and consumers in different income groups. The work of the EABSWG is relevant because options for allocating any future emissions reduction targets could have a bearing on the design and governance of a DET system.

To date, the DETWG has:

- developed a detailed work plan;
- consulted with experts on the development of permit allocation options;
- consulted with stakeholders on the general work plan and on aspects of the transition to DET; and
- initiated work to develop options for coverage and permit allocation, to prepare databases and to review models for use in analyzing DET options.

To inform Canada's international climate change negotiations and reporting obligations and ensure domestic actions account for international developments

Climate change is a long-term, global environmental issue with all nations of the world contributing to GHG emissions to varying degrees. There are also economic issues that Canada must consider, including the impacts of actions to deal with climate change on economic infrastructure and international competitiveness, particularly in relation to major competitors.

In the short term, the work on data development and modelling already undertaken by the AMG and other working groups has proven useful for the CoP6 negotiations on issues such as Kyoto mechanisms and carbon sinks. The recognition of forestry sinks in national inventory will greatly contribute toward Canada's emissions reduction objective.

Over the long term, international negotiations under the UNFCCC are expected to continue addressing the global nature of climate change. Scientific, technical and economic analyses on subjects such as "clean" energy exports (natural gas and electricity) provide the foundation for Canada's negotiating objectives, add to policy capacity and enable policy makers to make appropriate decisions to meet immediate and long-term needs.

To facilitate increased scientific understanding of climate change and its impacts as the basis for developing appropriate mitigation and adaptation options

Continued scientific and socio-economic research is required to define the magnitude, rate and regional distribution of climate change and its impact on Canada. The Science, Impacts and Adaptation (SIA) program provides information on the risks of climate change and advice on options to address these risks.

SIA has two main objectives. The first, under climate system science, is to increase knowledge about the magnitude of climate change, the rate at which it is changing now, the expected change in the future and the way such changes would likely be distributed over Canada's regions. The second objective, under impacts of and adaptation to climate change, is to determine the impact changes will have on the health and safety of Canadians, their environment, their economic well-being and Canada's social fabric.

In the area of climate system science, 79 projects were funded to fill critical gaps in Canada's scientific enterprise to inform our responses to the climate change challenge. Projects include:

- improving knowledge of climate change in the Arctic;
- studies focusing on systematic climate observations, including network design, data development and archiving for climate monitoring;
- climate model improvements;
- better understanding extreme weather and climate events;
- improved understanding of biological sources and sinks; and
- establishing a national facility to provide climate change scenarios for examining impacts and adaptation

The science component supported the participation of some 30 Canadian scientists from universities and government in the work of the Intergovernmental Panel on Climate Change. Panel assessments and special reports provide the scientific and technological foundation used by policy makers and international negotiators.

In the field of impacts and adaptation, 76 research projects across the country reported results that better defined Canadians' vulnerability to climate change in essential sectors such as water resources, agriculture and health. A number of these projects contributed to the development of adaptation strategies. The Canadian Climate Impacts and Adaptation Network was established to facilitate better collaboration and information sharing and to provide coordinated advice on gaps in research.

To provide tangible evidence of the impacts of climate change, a project to develop a national set of climate change indicators was established under the aegis of the Canadian Council of Ministers of the Environment. The indicators will provide visible snapshots of changes in the climate and the environment, as well as responses. Projects cover subjects such as permafrost degradation and infrastructure adaptation, adaptation strategies to reduce health risks from summer heat, sea level rise, and carbon balance of boreal forest ecosystems.

Actions Approved and Under Way

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Aboriginal and Northern Climate Change Program	Working with Aboriginal leaders and organizations, to develop awareness, engagement and capacity building related to climate change, and to coordinate federal programs to respond to Aboriginal proposals in energy efficiency and renewable energy.	Canada		
Adaptation Research	Prairie Adaptation Research Co-operative - Development of strategies and incentives for adapting to climate change on the Prairies.	Alberta and Canada.	32 projects have been funded and many are near completion.	To finalize the governance and operation structure for PARC and continue to fund projects on prairie climate adaptation.
BIOCAP	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.	Alberta, Canada, British Columbia, Saskatchewan, Manitoba, Ontario, Québec, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador, Nunavut, Northwest Territories, Yukon. Delivered by Queen's University.	Strategic Plan and Business Plan have been drafted; arrangements with funding agencies have been negotiated; the research organizing committee has met; preliminary arrangements with Queen's University have been established; articles of incorporation have been prepared and registered; an initial meeting has been held to establish the first networks.	BIOCAP's business plan will be finalized and approved, research networks will be established; some research projects into policy relevant aspects of sequestering carbon in the biosphere will have been funded and others selected.
Climate Change Impacts and Adaptation Research Network (C-CIARN)	The Canadian Climate Impacts and Adaptation Research Network is a collaborative project among researchers and stakeholders to help develop credible information on the vulnerabilities of Canada to climate change, and to identify the most significant impacts and adaptation options, in order to help anticipate and prepare for changes that are expected during the 21st century.	Federal, provincial and territorial governments.	All C-CIARN nodes should be fully operational by the fall of 2001. C-CIARN nodes that were operational or in development as of June, 2001 are: 1) C-CIARN Prairies, at the Prairie Adaptation Research Collaborative at the University of Regina. 2) C-CIARN British Columbia, at the Sustainable Development Research Institute, U.B.C., and the University of Victoria. 3) C-CIARN Atlantic, at Dalhousie University.	1) Contribution agreements are being developed with the universities that have been selected as hosts of C-CIARN node coordinating offices. Agreements are also being developed with the government agencies that have been selected as hosts. These will be completed in September, 2001. These agreements outline the activities that nodes should be involved in to meet the C-CIARN goals.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
			4) C-CIARN North, at the Northern Climate Exchange, Whitehorse with assistance from the Aurora Research Institute, Inuvik, and the Nunavut Research Institute, Iqaluit. 5) C-CIARN Health, at Health Canada, Ottawa. 6) C-CIARN Landscape, at Natural Resources Canada, Ottawa. 7) C-CIARN Coastal Zone, a partnership of the Geological Survey of Canada and Fisheries and Oceans Canada at the Bedford Institute of Oceanography, Dartmouth. 8) C-CIARN Fisheries, Fisheries and Oceans Canada, Ottawa. 9) C-CIARN Forests, Canadian Forest Service, Edmonton.	2) Proposals are being sought to host the remaining coordinating offices – Ontario, Agriculture and Water Resources. The host institutions will be selected and agreements will be in place by the fall of 2001.
Commercial Energy Auditor Service	The Commercial Energy Auditor Service trains and certifies commercial energy auditors based on the Canadian Institute for Energy Training.	Yukon The Commercial Energy Auditor Service is a Yukon Development Corporation initiative but is delivered by the Canada/Yukon Energy Solutions Centre through an operating agreement.	The initial recruitment and training of commercial energy auditors occurred in the spring and summer of 2000. Twelve people received certification.	The next steps for the Commercial Energy Auditor Service are to maintain an adequate pool of certified auditors and to identify and commence the delivery of supplementary training and development of Yukon-based technical resources.
Data Development	Accurate and more detailed data in a number of areas including, for example, - Energy Balance - Energy Intensity - End-use Energy - Forest Inventory - Agriculture; and - Transportation	Canada	Funding under CCAF allocated to further these objectives.	

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Domestic Emissions Trading (DET)	The federal/provincial/territorial domestic emissions trading working group (DETWG) is conducting analyses of a wide range of aspects of DET. The work includes quantitative analysis in collaboration with the AMG.	Canada, Alberta, British Columbia, Saskatchewan, Manitoba, Ontario, Québec, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador, Nunavut, Northwest Territories, Yukon. Consultation with involved stakeholders.	Detailed work plan developed and accepted by DETWG, - preparation of data bases under way, - review of models for use in analyzing DET options under way, - consultation with experts on some aspects, - initial consultation with involved stakeholders.	Completion of work plan.
East-West Electric Transmission Grid Study	Complete a pre-feasibility study to examine the practicality and economic benefit of constructing high voltage transmission linking Canadian markets, within the context of the developing North American electricity marketplace.	Manitoba, Canada, Alberta, British Columbia, Saskatchewan, Ontario, Québec, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador, Nunavut, Northwest Territories, Yukon.	Terms of reference have been drafted.	Conduct study.
Energy and Environment Background Paper	Assessment of energy utilities issues in Nunavut.	Nunavut	Completed in December 2000.	N/A
Establish Climate Change Outreach and Research Centre	Climate change research chair established at Nova Scotia Agricultural College; climate change outreach coordinator to be hired.	Nova Scotia in partnership with Canada. Delivered by Nova Scotia Agricultural College.	Funding secured and chair established.	Staffing.
Expanding Capacity for Economic Analysis	Develop provincial resources for analysis of economic impacts of emissions reduction programs and the design of economic instruments. Provincial analysis would build on the national economic analysis and provide detail on issues specific to Alberta's key economic sectors.	Alberta	The Report: "Alberta's Energy Sector Modeling and Analysis of GHG Reduction Scenarios" has been completed. Established ongoing consultations with academics.	Expand network of experts for economic analysis.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Forestry Projects to Improve Knowledge of Carbon Sinks	A series of permanent sample plots are distributed throughout Nova Scotia as part of the provincial forest inventory system. These plots are sampled on a five-year cycle to generate information that is used to estimate growth and yield, species composition and other forest characteristics.	Nova Scotia	This information is presently unavailable.	This information is presently unavailable.
Forests – Carbon Management Accounting Framework	Develop general accounting principles to fulfill commitment requirements.	British Columbia	N/A	Need agreement on accounting principles. NB: All BC government programs are currently under review.
Forests – Soil Carbon Estimation	Conduct a data search of available ground plots in BC which can provide chronosequenced measurements on soil carbon.	British Columbia	This information is presently unavailable.	Approve funds. Review plot data, revisit defined plot sites, compile plot re-measurements, analyse results. NB: All BC government programs are currently under review.
Greater Vancouver Regional District / Provincial GHG and Air Pollutant Reduction Analyses	Identify GHG and CAC emission reduction measures for the Lower Faser Valley airshed, and provide a detailed assessment of the cost-effectiveness and implementation challenges of the most promising measures.	British Columbia in partnership with Environment Canada, Fraser Valley Regional District. Delivered by Government of British Columbia and Greater Vancouver Regional District.	Phase 1 report, which is focussed on sources in the GVRD, was completed in the Fall of 2000, and was reviewed by stakeholders and public representatives of the Lower Fraser Valley Air Quality Advisory Committee at a November, 2000 workshop. The Phase 2 draft report, which extends the assessment to the Fraser Valley Regional District and provides more intensive analysis of the most promising measures, was received in June 2001.	The draft final report will be reviewed stakeholders and the public in a fall 2001 consultation program.
Greenhouse Gas Emission Forecast for Nunavut 1996-2013 *(New Action)*	The forecast provides an initial under-standing of the current and projected GHG emissions in Nunavut and identify economic sectors for which further information is required.	Nunavut	Completed in November 1999.	N/A

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Alternative Fuels Legislative Committee *(New Action)*	Over the next year an all-party committee will be studying and making recommendations on innovative alternatives to burning fossil fuels. The committee will hold consultations with experts and the public. A final report on Details around written submissions and other consultation methods will be made public once the committee is officially in place.	Ontario Consultations with experts and the public.	Establishment of the committee membership.	Consultations with experts and the public. Final report to the Government of Ontario by May 2002.
Climate Change Fund – Knowledge/ Building the Foundation *(New Action)*	- Develop and assess new policy and program options for future action. - Review scientific information on the impact of climate change on Ontario. - Improve scientific information on the removal and natural storage of atmospheric GHGs in Ontario. - Examine necessary monitoring, assessment of impacts and adaptation to climate change.	Ontario	Projects range from initial stages to completed.	Work to be complete varies depending on project from creation of material to completed.
Monitoring and Reporting Regulations *(New Action)*	As part of its comprehensive strategy to address air quality issues, the ministry has a regulation that will require large industrial facilities to monitor and publicly report emissions of 358 air pollutants as of May 1, 2001. This list of substances, in addition to many key air pollutants, includes a full suite of greenhouse gas emissions, making Ontario the first jurisdiction in Canada to require such comprehensive reporting. Electricity generators have been required to report on 28 substances since May 1, 2000. The Ministry has worked closely with stakeholders and has allowed adequate time for industry to put data collection systems in place to meet the requirements of the regulation and have further integrated with the Federal National Pollutant Release Inventory (NPRI).	Ontario Industry and non-governmental organizations have participated in consultations.	Ontario has required its electricity sector to report on 28 substances since May 1, 2000. This regulation has been expanded to include a total of 358 air pollutants, and now covers other large industrial facilities.	A range of other industrial, commercial and municipal facilities in Ontario will have to track and publicly report on the same 358 substances beginning January 1, 2002.
Impacts & Adaptation Program	The program has four main components: 1) An enhanced impacts & adaptation research program 2) Canadian Climate Impacts and Adaptation Research Network (C-CIARN) 3) Research capacity building 4) Framework for adaptation policy development.	Canada. Network partners include: most provinces and territories. The Impacts and Adaptation Working Group has representatives from all provinces and territories and Canada.	76 I&A research projects were funded (from CCAF); some resulting in development of local adaptation strategies; The C-CIARN node initiation workshops were completed and 3 regional nodes started operation. See federal documents for more detail.	

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Impacts and Adaptation Research Programs	Establish a networking facility for climate change research on impacts and adaptation.	Nova Scotia in partnership with Canada. Delivered by Dalhousie University, School of Environmental Studies.	Impacts and adaptation node established and coordinator hired. First steering committee meeting scheduled for Sept. 2001.	This information is presently unavailable.
Inclusion of Adaptation in the Management Framework	Working through the NAICC-CC, this process will establish a national framework for developing and assessing adaptation strategies.	Canada	NAICC established a working group in May 2001, with all provinces and territories represented	A workshop will be held in October 2001 a draft framework outline will be developed Fall 2001 a final framework document will be produced in 2002.
Inuit Qaujimajangit (Inuit knowledge) on Climate Change in Nunavut *(New Action)*	The observations within the communities are recorded during semi-directed interviews, workshops and radio phone-in programs. The project is phased to include all of Nunavut over a 2-year period.	Nunavut	The first phase, the Baker Lake – Arviat area, was completed March 2001. Phase 2, the Baffin Region, is scheduled for completion by December 2001 and the phase 3, the Kitikmeot Region, completed March 2002.	Phase II, the Baffin Region, is scheduled for completion by December 2001. Phase III, the Kitikmeot Region, is to be completed in March 2002.
Market Mechanisms (Investing in Knowledge - The Foundation)	Three related initiatives are in progress: 1) BC is participating in the design and development of the PERRL initiative; 2) BC continues to be a lead partner in the GERT Pilot, and 3) BC continues to evaluate the role of ecological fiscal reform.	British Columbia. Greenhouse Gas Emission Reduction Trading Pilot (GERT) – Natural Resources Canada, Environment Canada, Nova Scotia, Quebec, Manitoba, Saskatchewan, Alberta, several industry associations, environmental non-governmental organizations. Development of Pilot Emissions Removals, Reductions and Learnings (PERRL) is through NAICC-CC.	PERRL - completion of basic program design GERT - completion of a number of trade/project reviews, discussion papers on several design issues are under way or complete.	NB: All BC government programs are currently under review.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Modelling	Enhancement of energy models and energy data gathering to provide appropriate regional and / or sectoral detail required for policy analysis.	Canada, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador, Nunavut, Northwest Territories, Yukon.	Contract to Canadianize the NEMS model has been signed. MOUs for transfer of funds to other government departments are under way.	MOUs need to be signed with individual departments.
Monitor and Implement Improvements to Low GHG Generating Options	Monitor efficiency of existing low-GHG generating options and implement improvements to reduce the need for fossil fuelled generation.	Newfoundland and Labrador Delivered by Newfoundland and Labrador Hydro.	This information is presently unavailable.	This information is presently unavailable.
National Climate Modelling Capacity	By the end of 2003, hire and support three or four key experts in ocean circulation, biogeochemical cycles, chemistry/ climate interactions and land surface processes.	Canada in partnership with University of Victoria.	Research effort on climate model improvements funded by the CCAF.	Implementation plan currently in preparation.
National Climate Scenarios Facility, with a National Users Board	Provide information at regionally useful scales to jurisdictions across the country as input to climate impact and adaptation studies.	Canada in partnership with Canadian Institute for Climate Studies, University of Victoria.	Modest effort/pilot funded by the CCAF in 2000/01. User Board formed as part of the pilot.	Implementation plan currently in preparation.
National Strategy On Biological GHG Sources, Sinks and the Carbon Cycle Science	Develop and implement a national Strategy for a science effort on biological GHG sources, sinks and the carbon cycle. Components related to key ecosystems in Canadian forests and agriculture will be addressed by 2004, and the carbon cycle component will be addressed by 2005.	Canada in partnership with provincial/ territorial governments, Canadian universities, and BIOCAP Canada.	Refer the the related item under the Climate Science program.	Implementation plan currently in preparation.
Northern Science Node	In order to improve knowledge of climate change impacts and identifying appropriate adaptation measures, Natural Resources Canada initiated the C-CIARN program. This Network will consist of Regional and Sectoral research and stakeholder communities that will act as Nodes for C-CIARN. C-CIARN-North will facilitate the work of existing and future researchers and stakeholders focusing on climate impacts and adaptation issues in Northern Canada.	Nunavut This node is a partnership of the Northern Climate ExChange, Aurora Research Institute, Nunavut Research Institute and the three territorial governments.	Funding is in place and project initiated in fall of 2001.	This information is presently unavailable.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
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 greenhouse gas emissions.	British Columbia Delivered by Oil and Gas Commission.	Two projects were funded in the first year of operation of the Fund. One to explore fugitive emission screening and measurement programs at upstream oil and gas facilities, the other is a multi-year study to research the disposal of waste gas from some natural gas production and the potential for co-production of coalbed methane.	Greenhouse gas emissions will remain as part of the mandate of the Environmental Fund and future Fund monies may be directed to further research.
Science, Impacts and Adaptation – BC Research Node	To encourage and coordinate climate change research in BC.	British Columbia in partnership with Canada. Delivery is by the University of British Columbia and Canadian Institute for Climate Studies.	Coordinator has been hired, research network building is under way and a workshop is planned for the fall of 2001.	Establish a research network and seek/develop partnership funding. NB: All BC government programs are currently under review.
Science, Impacts and Adaptation – Climate Change Indicators	Possible physical and biological indicators of climate change were examined.	British Columbia in partnership with Environment Canada, University of BC, University of Victoria, Royal Roads University, Department of Fisheries and Oceans and others.	Technical background material for 14 indicators has been prepared and is undergoing peer review.	Prepare individual climate change indicator fact sheets for web posting and general release to the public. NB: All BC government programs are currently under review.
Science, Impacts and Adaptation – Fisheries Adaptation Research	Complete a literature review and apply the findings to identify the potential impacts of climate change on the abundance and distribution of BC freshwater fish, and the fishery that depends on healthy fish populations. In turn, to identify potential mitigation measures which could be employed by fisheries managers to address these impacts both proactively and responsively.	British Columbia Delivered by the University of British Columbia – Fisheries Research.	Report completed.	Disseminate information to target audience, and integrate into fisheries management plans and activities. NB: All BC government programs are currently under review.
Studies/ Monitoring for GHG Reductions	There are numerous opportunities to improve the state of knowledge of GHG emissions in the minerals and metals sector, and of opportunities to improve GHG performance. The identification stage will draw on expert knowledge inside and outside Canada, through	Canada	Official launch and start of program, June 2001; met with Advisory committee in July 2001; hired MMS Climate Change coordinator.	Advisory Committee to prioritize/schedule details of program prepare/solicit proposals for concepts approved by Advisory Committee.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
	structured workshops and commissioned studies. Analyses will be commissioned from appropriate experts in the public and private sector, drawing fully on existing bodies of work, and leveraging climate change funds by cooperating with other organizations where possible.			
Understanding Emissions Intensity of Alberta Energy Production within a Global Context	Develop improved understanding of full fuel cycle emissions associated with Alberta oil and gas production - within the context of full-cycle emissions associated with Alberta's oil and gas competitors.	Alberta in partnership with the Canadian Association of Petroleum Producers.	The report: "Alberta Electrical Generation System's Average Greenhouse Gas Emission Intensity". Has been completed.	Work with provincial stakeholders to develop long-term emission standards associated with the electricity generation sector.

Actions Under Consideration (Policy/Budget Approval Needed)

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Climate Science Program	The Climate Science program in AP 2000 addresses two measures that the First National Business Plan under the National Implementation Strategy has identified as requiring urgent priority attention: Climate Monitoring – to fill critical gaps in our national network, particularly in the North, and; Sinks – to enhance understanding of the potential of forests and agricultural soils to store carbon.	Canada in partnership with Canadian universities and provincial and territorial agencies.	To engage the broader community in a more coordinated effort on climate observations, EC is leading the development of a National Association on Systematic Observations of the Climate; to this end, a meeting involving federal/provincial and territorial interests was held in January 2001. To develop a national science strategy for GHG sources and sinks a national meeting involving federal and provincial agencies, universities and the private sector was held in January 2001.	Implementation Plans are currently in preparation.
Forest Carbon Credits and Trading	Conduct selective policy analyses, aimed at development of appropriate legislation to deal equitably and efficiently with the emerging potential for economic carbon trading in BC	British Columbia	This information is presently unavailable.	1) Review new developments in legal frameworks for carbon forest management trading. 2) Analyze BC forest tenure system with respect to potential

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
				carbon trading, and develop policy recommendations for BC appropriate carbon trading legislation framework. NB: All BC government programs are currently under review.
Improve GHG Inventories	Require more detailed reporting of GHG emissions by emitters.	Canada		Budget needs to be approved.
Improved GHG Inventories (Investing in Knowledge – The Foundation)	Large industrial emitters will be asked to provide detailed greenhouse gas emissions data along with criteria emissions data that they already provide annually.	British Columbia in partnership with Georgia Basin Ecosystem Initiative and Environment Canada.	A draft questionnaire has been sent to industry for comments. In addition, a contract looking at the inventory data gaps and possible needs if a domestic emissions trading program is instituted has been completed.	Finalize the questionnaire, send it to permit holders and compile the results. NB: All BC government programs are currently under review.
The Manitoba Energy Map *(New Action)*	The Manitoba Energy Map is a study of renewable energy sources in the province of Manitoba. Solar and wind, along with biomass potential will all be quantified and mapped for Manitoba.	Manitoba	Preliminary technical work has been done for the map.	This information is presently unavailable.
Pilot Emission Removals, Reductions and Learnings (PERRL) Initiative	PERRL is a federal-provincial/territorial government initiative to purchase incremental GHG emission reductions in strategic areas. The federal government has indicated its interest in participating in the pilot in partnership with the provinces/territories.	Canada, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Quebec, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland, Yukon, Northwest Territories, Nunavut.	A detailed program design has been prepared through an NAICC-CC working group, following a national series of consultative sessions with industry and other stakeholders.	The proposal is currently under review by NAICC-CC.
Solid Waste Management Initiatives	Conduct studies and explore options for replacing existing sites and incinerators that are harmful to the environment.	Newfoundland and Labrador	Implementing	Implement

Section 6

Encouraging Action to Reduce Emissions

1) Sectoral Actions

The following seven sectors represent the key sectors of the Canadian economy in terms of Canada's GHG emissions. These sectors have made significant progress in reducing energy intensity, increasing energy efficiency and productivity, and exploring new opportunities for reducing GHGs while at the same time delivering important environmental benefits.

However, continued effort on the part of governments, industry and consumers is required to achieve significant cost-effective emissions reductions and to meet Canada's international commitments. These actions will lay the groundwork for long-term behavioural, technological and economic change.

i) Agriculture

Canada's agricultural sector comprises approximately 250,000 farms, 98 percent of which are family owned. Unlike emissions from other sectors, most of the GHG emissions from the agricultural sector are from non-energy sources (vehicle emissions, including tractors, are included in the transportation sector; value-added processing is included in the industry sector). Emissions from agriculture, accounting for about 10 percent of Canada's anthropogenic GHG emissions, are primarily nitrous oxide associated with the use of fertilizer and animal manure, and methane associated with cattle and livestock manure, in addition to carbon dioxide associated with energy use. Between 1990 and 2010 emissions in the sector – driven largely by the demands of a growing world population – are projected to rise 20 percent from about 60 to 72 megatonnes (Mt).

Many of the proposed actions to reduce emissions in the agricultural sector are also good environmental and economic practices and are already being promoted for ancillary benefits such as soil and water quality and lower input costs.

Objectives and supporting actions

To advance the development and demonstration of new and emerging agricultural technologies to reduce and monitor GHG emissions

Programs to inform the farming community and change behaviour are being developed in most jurisdictions. Outreach initiatives will increase awareness and understanding, while demonstration initiatives will promote the adoption of new technologies and practices. Governments ensure that policies already in place facilitate, not hinder, the research necessary to develop innovative cost-effective technologies for agriculture.

The Government of Alberta has designed information programs to provide technical advice on best nutrient and livestock management practices to mitigate methane and nitrous oxides.

The Government of Canada has introduced the Agricultural Environmental Stewardship Initiative. This initiative is a three-year (2000–2003) program that addresses the regional impacts of agricultural practices on water, soil and air quality, as well as on biodiversity and GHG emissions. It promotes education and awareness, technology transfer and stewardship tools including environmental clubs, environmental management systems and land use planning.

To increase research capacity and coordination to position the agriculture sector to respond to climate change

Current and proposed actions seek to develop new technologies and practices affecting a wide range of 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 major carbon sink that could lead to substantive reductions in GHG emissions. Building on 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 used for 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.

To identify best practices that support climate change mitigation and adaptation, and other economic and environmental objectives

The Government of Alberta, in partnership with the Alberta Environmentally Sustainable Agriculture Council (AESA) is conducting an education and awareness program for food producers on management practices that not only reduce emissions but can also save money in the future. AESA is also developing a communications strategy for the sector.

To position producers to seize the opportunities from the potential inclusion of agricultural soils as a sink in the Kyoto Protocol

Agricultural soils have significant potential to store carbon and are expected to function as a net sink for atmospheric carbon by 2010, as a result of decreases in summer fallow, increases in no-till farming, increased use of fertilizer, and the conversion of some annual croplands to permanent crop production. With agricultural soil sinks now recognized under the Kyoto Protocol, more aggressive programs and actions will be undertaken to provide opportunities for producers. 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.

Soil conservation projects in Saskatchewan and the Prairie Farm Rehabilitation Administration's shelterbelt program seek to adjust agricultural practices to reduce the loss and enhance the productivity of valuable top soil while optimizing nutrient use. Building soil organic matter (carbon sequestration) and reducing soil erosion and nutrient losses are the main focuses.

Actions Approved and Under Way

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Agricultural Burning Awareness Program	This program is intended to raise awareness about the health and safety risks from crop residue burning and to help farmers find practical alternatives to the burning of crop residues. We are confident that this practice will decrease as farmers become more aware of the impacts, as livestock numbers increase across the province, as equipment able to handle heavy residues becomes more widely distributed, and as industrial markets for surplus straw are developed.	Saskatchewan in partnership with Regina Health District, City of Regina.	Increased awareness by farmers and by the public; expansion of the program province-wide in 2001; improved monitoring of complaints; improved capacity during serious smoke events to identify source fields' no regulatory response to date (considered premature).	Expansion of awareness program province-wide.
Agricultural Soil Carbon Sequestration Potential in British Columbia	This project combines both soil, climate and actual land use information to assess the true extent of the ability of farmers to sequester carbon. The areas where soil is both degraded and can be managed for increased organic matter, while in production, will be inventoried. Most of the data for the analysis will be compiled from existing databases.	British Columbia	None	NB: All BC government programs are currently under review.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Agriculture Environmental Stewardship Initiative	AESI is a three-year (2000-2003) $10 million program provided for by the Canadian Adaptation and Rural Development (CARD) fund. Address regional impacts of agricultural practices on water, soil, air quality, biodiversity and GHG emissions through education and awareness.	Canada Delivered by Agriculture and Agri-Food Canada – Canadian Adaptation and Rural Development.	Climate chair established at Nova Scotia Agricultural College. Councils currently requesting proposals.	
Alberta GHG Program for Agriculture	Alberta Government Teams interface with industry to address climate change issues for agriculture.	Alberta	Support provided by AAFRD Greenhouse Gas Team on all of the actions in this business plan. Please refer to achievement section in each template.	Continue support to ensure actions are carried out within funding limits.
Best Management Practices	The Agriculture and Environment Resource Conservation (AERC) program consists of a comprehensive effort that includes providing both technical and financial assistance for soil conservation, hedgerow planting, manure storage, etc.	Prince Edward Island	This information is presently unavailable.	This information is presently unavailable.
Climate Change Funding Initiative for Agriculture	CCFI is a $4 million, four year initiative which helps to improve the scientific understanding of the agricultural sector's contribution to greenhouse gas 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.	Canada Delivered by Agriculture and Agri-Food Canada – Canadian Agri-Food Research Council.		
Climate Change Skills and Knowledge Initiative	This $464,000, four year (1999-2003) initiative is delivered by the Soil Conservation Council of Canada via its "Taking Charge" program.	Canada Delivered by the Soil Conservation Council of Canada.		
Climate Change Fund – Encouraging Action in Agriculture *(New Action)*	Various projects undertaken by the Ontario Ministry of Agriculture, Food and Rural Affairs provided education programs for the agricultural sector to encourage GHG emission reduction.	Ontario Delivery agents include the provincial government and non-governmental organizations.	Projects are or nearing completion.	Work to be project completed varies from project to from creation of material to completed.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Conservation Cover Program	The conservation Cover program (CCP) is a four year initiative of the Saskatchewan government to contribute to the converting of crop land to perennial cover.	Saskatchewan	Increased awareness by farmers and public; expansion of the program; improved monitoring of complaints; improved capacity to identify source fields during burning events. No regulatory response to date.	Province-wide expansion of the program in 2001.
Covering New Ground *(New Action)*	Program which disseminates information on sustainable environmental management with a component that relates to climate change impacts and their mitigation or adaptation by agricultural producers and commodity organizations.	Manitoba in partnership with more than 70 local delivery groups including commodity organizations and producer groups.	This information is presently unavailable.	This information is presently unavailable.
Education and Awareness Program for Food Producers	Raise awareness and understanding of how adopting GHG reducing management practices now can save money in the future.	Alberta in partnership with Alberta Environmentally Sustainable Agriculture Council (AESA).	Organized an agriculture industry greenhouse gas forum. Issued six (6) new greenhouse gas "things you should know" information bulletins. Completed a new Workbook on Greenhouse Gas Mitigation for Agricultural Managers. Completed a series of 20 presentations.	Conduct regional extension Workshop. Update initiatives as information becomes available.
Improved Crop and Livestock Genetics	Improved crop and livestock genetics to increase efficiency in production.	Saskatchewan in partnership with Agriculture and Agri-Food Canada; University of Saskatchewan.	This information is presently unavailable.	This information is presently unavailable.
Land-Use Inventory of Forest and Agricultural Plots	Measure and establish parameters and baseline data of soil quality, including total organic carbon, to position for sequestration.	Prince Edward Island	This information is presently unavailable.	This information is presently unavailable.
Livestock Environmental Initiative	This on year, $1.3 million initiative under the CARD program builds on the success of the 1998-1999 Hog Environmental Management Strategy (HEMS). This funding initiative has been extended to include all livestock sectors and its comprised of two components: $1 million for research and the development, assessment and transfer of technology to the livestock industry; and $300,000 for the development of a national environmental certification system for the hog industry.	Canada Delivered by the Canadian Pork Council.		

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Livestock Management Practices	An information program to provide technical advice for animal digestion requirements to reduce methane and nitrous oxide emissions.	Prince Edward Island	This information is presently unavailable.	This information is presently unavailable.
Market Incentive Program	The purpose of the Market Incentive Program (MIP) is to provide incentives to electricity retailers to purchase or produce electricity based on ERES from new or expanded generating capacity, or to promote the sales of electricity based on ERES to their residential and small business customers under 'green' power programs. One of the objective of the program is to increase the long-term competitiveness of ERES by providing short term market opportunities that will increase. The Market Incentive Program will leverage support from other stakeholders in favour of ERES, including provincial government and electricity retailers initiatives.	Canada in partnership with other levels of governments, electric utilities and independent retailers, electric power consumers, and renewable energy associations.	The market incentive program proposes to provide financial incentive to electricity retailers to stimulate the production of emerging renewable electricity sources (ERES) and their sales in residential and small-business markets. NRCan is presently drafting a Request for Letters of Interest for ERES from electricity retailers to solicit the level of interest in submitting proposals, as well as the type and scope of projects for which funding may be requested.	NRCan is developing the elements of the Request for Letters of Interest. The next step is to obtain approval from the senior management committee. Once this the approval is finalized we will solicit proposals from electricity retailers.
Public Outreach – Countryside Canada	Countryside Canada recognizes and thanks farmers and ranchers for their exemplary private land stewardship initiatives. These examples of outstanding land stewardship will also be used to promote better conservation practices throughout the agricultural community. The program follows a four-step approach as it strives to meet its goals and objectives: - establishment of a benchmark of the current level of knowledge and the conservation practices carried out by landowners in the agricultural sector, - recognition of exemplary private land stewardship practices, - communication and promotion of these best practices, - evaluation, after three years, to determine the success of Countryside Canada.	Canada in partnership with Wildlife Habitat Canada (WHC) and Canadian Federation of Agriculture.	After a successful launch of the program at the Canadian Federation of Agriculture's Annual General Meeting, in early 2000, the Countryside Canada program hit full stride. The first building block of the program was obtained through an Environics Survey of the attitudes and behaviour of farmers, ranchers and rural landowners across Canada towards land stewardship, released in September 2000. This survey, which covered the country as a whole targetting almost 1500 rural landowners from six commodity groups, was the most comprehensive of its kind ever undertaken in Canada. It should therefore be considered a benchmark study of rural landowners on the topic of land use and land stewardship.	First and foremost on the list of priorities will be the need to spread the word about this year's recipients and about the best practices they have helped to develop. We will also be working at the grassroots level to generate more nominations. Since farmers and ranchers generally prefer to receive information from local organizations, it will be important for CSC to work towards the establishment of a regional ambassadors network to help spread information about the program and seek out potential nominees. Since one of the objectives of the program is to secure public recognition for the accomplishments

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
				of award recipients, CSC will also attempt to increase its visibility. Although the announcement of the first year's recipients received a fair amount of profile, there is still much work needed to secure more profile for the program at the national level. As was the case for the first year of the program, an important venue will be sought for the award ceremony. Furthermore, the program is seeking a high profile Official Patron to help raise awareness about stewardship in Canada. Securing significant profile for the program is also critical in that it will be a key component of the ongoing effort to partner with long term program sponsors.
Pulse and Legume Crop Diversification	Pulse and legume crop diversification assists in achieving sustainability as these crops fix nitrogen from the air. This reduces the need for nitrogen fertilizers.	Saskatchewan in partnership with Crop Development Centre at University of Saskatchewan; Agriculture and Agri-Food Canada; Saskatchewan Pulse Growers.	Acreage expansion of pulse and legume crop production.	Continue ongoing studies and applied research, etc.
Research Capacity – Agriculture	Grants council.	Canada		
Shelterbelts	Provide and promote innovative weed control technologies to prairie farmers for use in shelterbelts to ensure the successful establishment, improved growth rate and maximized CO_2 sequestration in shelterbelts.	Canada in partnership with provincial and municipal governments, conservation districts, non-governmental organizations, and other groups involved in prairie tree planting.	Program Development.	- Official Announcement and launch of program - Hiring - Equipment and material purchases Results - 3 program coordinators hired (1 in each of MB,SK,AB) - Purchase of plastic mulch and applicators

Actions Under Consideration (Policy/Budget Approval Needed)

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Agriculture Research Model Farms	A series of 'Model Farms' will be developed to represent the most important farming systems from the various regions of Canada. These simulation models will consider the emissions of CO_2, N_2O, and CH_4 from all facets of the farming systems over the long term, allowing us to measure the net overall contribution to global warming. By evaluating various mitigation scenarios, it will be possible to identify the best ways of reducing emissions, and calculate the reductions possible with adoption of these techniques. The 'Model Farms' will also provide a technique for integrating scientific understanding and transferring it to policy-makers, producers, educators, and other clients. Much of the effort will be devoted to measuring actual emissions and using those data to refine the 'Model Farms' and ensure that they are reliable.	Canada. Possible partners include: scientists in universities and other government agencies; farm groups, regional and national soil conservation groups; and policy decision-makers.	N/A	
Livestock Management	Livestock industry greenhouse gas management best practices initiative: The aim is to integrate ghg best practices into current efforts to promote best practices. Feeding strategies to reduce the nitrogen content of manure and the use of higher quality feed to reduce waste methane from ruminant digestion will also be encouraged, though this area requires more assessment of feed sources and rations. Another aim is to increase carbon sequestration by pasture grasses and to reduce livestock methane emissions by increasing the nutritional quality of pasture grasses.	Canada in partnership with industry.	N/A	Launch program.
Nutrient Management	Currently preparing for consideration by Treasury Board	Canada		

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Nutrient Management Practices	This is an information program designed to provide technical advice for best management practices in applying nitrate fertilizers.	Prince Edward Island	This information is presently unavailable.	This information is presently unavailable.
Soil Management	The aim of this initiative is to work with existing soil conservation organizations to develop, promote and implement BMPs. It would build on work being currently under way through the Soil Conservation Council of Canada. The initiative would develop and extend a network of demonstration farms in each major agro-ecosystem for soil conservation organizations to use as education centres to promote best practices. The initiative would also lay the groundwork for a national registry of BMP practitioners to facilitate communications and serve as a basis for establishing credits once the Kyoto Protocol recognizes soil sinks. The initiative would encourage reduced ghg emissions by promoting the adoption of low tillage and other soil management practices, encouraging residue management rather than burning and conversion of marginal land to forages or agro-forestry.	Canada	N/A	Begin implementation.
Support Research and Extension for Alberta Producers	Ensure policies facilitate not hinder research and extension that will give producers the tools they need to implement innovative cost effective technologies for agriculture.	Alberta	N/A	Soil Management/ Nutrient Use/ Livestock Management: provide an emission calculator for farms. survey conflicting policy analysis.

ii) Buildings

Buildings account for just over 10 percent of Canadian GHG emissions. The buildings sector represents an opportunity to further improve energy intensity by using more efficient equipment, improving new construction practices and retro-fitting existing buildings.

Although an increasing inventory of floor space is putting upward pressure on overall GHG emissions from buildings, existing programs are working to reduce emission levels by making energy use more efficient. The FNBP builds on these existing programs and adds new elements to reduce barriers. There is an increased emphasis on leveraging resources through partnering between different levels of government and between government and the private sector.

Objectives and supporting actions

To promote good consumer choices through education and awareness and use existing expertise in different areas of construction, design and maintenance of commercial, residential and institutional building stock

Consumers need to be provided with specific information at the time of purchase when they are buying buildings or equipment for buildings. The federal government's EnerGuide for Houses Program provides home evaluations from independent energy efficiency experts to homeowners on how to improve the energy performance of their homes. Of 12,132 homes evaluated in 2000–2001, more than 50 percent implemented some of the recommendations. In the Yukon, 1,386 households have received home evaluations through the House Calls Energy Efficiency Program.

To improve best practices in development of equipment for existing and new commercial, residential and institutional building stock

Canada is continuing to increase energy efficiency standards and to expand the regulations to cover more equipment and appliances. Some incentives are provided to industry and purchasers to support conversion to best practices. For instance, the Government of Canada provides incentives that fund 25 percent of the cost of adopting new technologies for space and water heating, and for cooling, through the Renewable Energy Deployment Initiative.

To improve energy efficiency for existing and new commercial, residential and institutional building stock

The emphasis here has been on facilitation and providing some incentives to encourage owners and managers of buildings to commit to energy efficiency practices. There has been increased use of energy performance contracting for retrofitting commercial buildings, especially within government-owned and -operated buildings. There has been some voluntary acceptance of new building codes, more work can be undertaken to upgrade codes and increase their adoption.

In British Columbia, the Green Buildings Retrofit 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. The Government of Manitoba is continuing a program of energy efficiency retrofits and sponsors municipal energy efficiency programs, in partnership with Manitoba municipalities.

Actions Approved and Under Way

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Commercial Buildings Incentive Program	Use energy simulation modelling and incentives to encourage use of optimal investment in energy efficiency in new buildings and retrofits.	Nova Scotia in partnership with Canada. Canada	Last seven schools built by government qualify for CBIP; workshop held in current fiscal on energy simulation model software.	Additional use of CBIP by private sector; increase in awareness of design tools and their use.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Commercial Energy Management Program	The program assists businesses and municipalities reduce energy by conducting energy audits and providing financial incentives for equipment and lighting upgrades. It also provides advice to encourage energy performance contracting.	Yukon. The Commercial Energy Management Program is an important complement to the Renewable Power Sales Incentive Program. A Memorandum of Understanding was signed with the Tourism Industry Association of Yukon, Yukon Zone of British Columbia and Yukon Hotel Association, Hotel Association of Canada, Tourism Yukon, Natural Resources Canada and the Yukon Development Corporation to target energy solutions for this sector through these programs. Delivered by the Canada/Yukon Energy Solutions Centre, a subsidiary of the Yukon Development Corporation.	The program criteria was expanded and extended to municipal customers in the spring of 2000. Since that time, the number of audits has increased from 8 to 33 while applications rose from 11 to 49.	Efforts are under way to increase the program's uptake and effectiveness by including a loan component to encourage businesses and municipalities to implement more energy efficiency measures.
Energy Conservation Program	Provide funding assistance to carry out energy saving renovations.	Northwest Territories	This information is presently unavailable.	This information is presently unavailable.
Energy Efficiency Standards for Equipment and Appliances	Review of BC energy efficiency standards for new appliances and equipment and updating as required.	British Columbia	Review of status of current BC standards vis-à-vis other provinces and the federal government.	Additional research and consultation. NB: All BC government programs are currently under review.
Energy Efficiency Standards for New Schools	New standards and Guidelines have been created for the building of new schools and modernization of existing ones.	Alberta	Funding for both years has been announced and design and construction are under way.	Construction completion and examination of results.
Energy Efficient Housing	Education and awareness on energy efficient new housing and retrofit.	Nova Scotia	Enerhouse Housing and Energy Conference attended by 200 people in January 2001; more than 1000 residential audits completed in Halifax Regional Municipality continued demand for publications and videos significant update to web site; continued funding of R-2000 Home program with annual Showcase of R-2000 Homes attended by 12,000 people in spring 2001.	Continue to build sponsors and support; increase awareness of services such as website.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Energy Efficient Housing Initiative	Existing housing EnerGuide for Houses (EGH) program offers home owners a professional assessment of the energy performance of their houses, an EGH label and rating, and a personalized report outlining recommended improvements. The EEHI will permit wide penetration of EGH within the target market of all existing low-rise housing across Canada and provide support through national marketing and Quality Assurance. New Housing Significant influence on code improvements. Under the EEHI, NRCan will expand delivery (with public and private sector stakeholders) of its training and certification for home builders based on the voluntary R-2000 Standard for new home construction.	Canada. A number of provincial governments were consulted in developing this measure. Manitoba Hydro has expressed formal interest in using the R-2000 Standard and EGH rating system as part of its new initiatives. In Alberta, Climate Change Central is interested in supporting and promoting EGH. The Agence de l'efficacité énergétique (Québec), Yukon Housing Corporation and Yukon Energy Solutions Centre wish to continue to collaborate on the delivery of R-2000 and EGH in their jurisdictions. Other provinces and territories have expressed interest and are open to consultations on participating in facets of the EEHI.	New Housing: - Contribution agreements ranging from $15K to $70K for delivery of R-2000 are in place in all provinces and with HRA & CHBA. - All active builders trained 1999 survey of CHBA member builders found: 35 percent have taken R-2000 training 30 percent became licensed R-2000 builders. Only 15 percent registered R-2000 houses in last three years. - QA process is ready for testing across Canada. - Database updated and will be linked to new Website in Sept. 2001 - Houses built to R2000 = 273 (0.182 percent). - Improved overall energy efficiency of new houses shows conventional new houses currently rate 70 to 74 points, up from 70-73 points last year. - Permanent changes in housing construction practices to make houses more energy efficient improved as R-2000 trained builders report that their non-R-2000 houses always or frequently have these features: 70 percent high 50 percent HRVs 65 percent high efficiency furnaces. Existing Houses: - Home evaluations, 12,132 in 2000-01 - Quality assurance audit of houses evaluated revealed that 52 percent of homeowners implemented some of the recommendations, and 24 percent planned to do so. 75 percent of those who implemented retrofits did half of the recommended improvements. - Average annual energy savings of 17.8 percent estimated for houses that undertook some retrofit activities.	The main activities of the program are: Providing training and technical assistance to delivery agents, builders and renovators in the form of training and certification of EGH service providers and R-2000 builders and professionals. EGH evaluators must complete the required training offered by a delivery agents and assess four houses in order to be certified. Similarly, builders must complete the required training and construct one R-2000 home in order to be certified. EGH delivery agents must compete for entry to the program, prior to training. Professionals are certified through attendance at technical workshops. Guidelines on ventilation and housing types and vintages will be developed to assist renovators. Conducting marketing and advertising activities, including a significantly greater number of national marketing campaigns and forming more business alliances with the retrofit industry than is provided for in current plans. Collecting statistics to track the performance of Canada's low rising housing stock, as per Part 9 of the National Building Code. Data will be collected in two databases to be used by program managers, EGH delivery agents and R-2000 professionals to track the market for their services, activities and technologies. A five-step Quality Assurance program is a key source of statistics and information, as are the results of home energy audits and R-2000 certifications.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Energy Ratings System (for Industry)	The program will target commonly used "off the shelf" industrial equipment such as: motors, pumps, transformers, compressors, boilers, and lighting products. This equipment typically operates on very long duty cycles and consequently small percentage increases in efficiency can generate significant savings. The building blocks of programs such as this one include appropriate energy-use test standards and procedures that are generally accepted by industry users and equipment suppliers, effective descriptors of energy use, an effective presentation format or platform, a commonly accepted means of verifying that products perform as claimed, and a commitment by users and suppliers that the program provides value, is worthy of promoting and is ultimately sustainable.	Canada	N/A - new program	The first year of the program will concentrate on identifying key products and technologies, and the emissions and energy savings that could be targeted by effective information programs. Prototype information dissemination tools will be developed and tested (eg. databases, rating systems, case studies) and information dissemination channels identified. The program will then be marketed to the decision-makers who procure and/or specify energy using equipment, in all industrial sectors.
Heating and Lighting Energy Efficiency Retrofits of Government Buildings *(New Action)*	Program of Energy Efficiency Retrofits for Manitoba Government Buildings.	Manitoba	This information is presently unavailable.	This information is presently unavailable.
House Calls Energy Efficiency Program	The House Calls Program promotes energy efficiency and information about climate change to residential consumers.	Yukon Natural Resources Canada provided a financial contribution of $178,000. The Yukon Electrical Company Ltd. and Yukon Energy have been active participants while the program has been delivered by the Yukon Conservation Society.	The House Calls Energy Efficiency Program was launched in September 2000 with eight trained local technicians from various Yukon communities. At this time, 1,386 households have participated and in several communities, initial targets have been fully met or exceeded. Once completed, approximately 15 to 20% of the Yukon's residential housing stock will have benefited from the program. It is currently estimated to have produced 12.3 terrajoules of annual energy savings.	The House Calls Energy Efficiency Program will be completed by the fall along with a full analysis of the energy savings and amount of reduced diesel-generated electricity. Once completed, the number of displaced tonnes of carbon dioxide can be verified.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
New Energy Targets for New Buildings	New buildings built to the Model National Energy Code for Buildings (MNECB) and attempt to meet the Commercial Building Incentive Program (CBIP). New building energy requirements: Government Services adopted requirements for design of new buildings to fully investigate energy option. Within existing budgets and projects and supported by Power Sales Incentive Program.	Yukon	This information is presently unavailable.	This information is presently unavailable.
New Home Workshops and Home Energy Savers Workshop *(New Action)*	Public presentations provided at various urban and rural centres. The New Home Workshops provide information on how to plan an energy efficient home and describes R-2000 homes. The Home Energy Savers Workshops provide information on how to make energy efficiency improvements to existing homes.	Manitoba	17 workshops were conducted in the period 2000-2001.	This information is presently unavailable.
New Training and Certification Programs for Trades	Increase operating efficiency of oil burning appliances. Energy management plans for commercial buildings facilitating energy efficiency investments.	Yukon	This information is presently unavailable.	This information is presently unavailable.
The Manitoba R-2000 Home Program *(New Action)*	A joint effort between the Government of Canada, the Province of Manitoba, Manitoba Hydro and Centra Gas, with day-to-day administration provided by Manitoba Conservation. The R-2000 Program recognizes the concept of the house functioning as a system. Individual home plans are analyzed and upgrade building options are considered in order to stay within an energy budget for space heating, hot water and ventilation. The energy budget is based on the volume of space in the dwelling.	Manitoba	This information is presently unavailable.	This information is presently unavailable.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Climate Change Fund – Encouraging Action in Buildings *(New Action)*	- Provide the public with information on ways they can reduce GHG emissions. - Initiate a pilot project that will examine the renovation industry's ability to reduce GHG emissions on a voluntary basis. - Provide economic incentives for home renovations to reduce GHG emissions.	Ontario Delivery agents include provincial and municipal government agencies and non-governmental organizations.	Projects range from initial stages to nearing completion.	Work to be complete varies from project to project from creation of material completion.

Actions Under Consideration (Policy/Budget Approval Needed)

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Adopt Energy Efficiency Building Codes	Model National Energy Codes for buildings and houses are being evaluated to ensure adoption will actually lead to improvements in building energy efficiencies (as compared to GNWT Better Building practices) and be able to be implemented by northern contractors and building trades.	Northwest Territories	This measure is listed in the draft NWT Greenhouse Gas Strategy.	National Codes need to be reviewed to determine if they will be functional under northern conditions.
Commercial/ Institutional Buildings Retrofit Initiative	The CIBR will offer further penetration into the commercial/institutional sector by augmenting the three existing Energy Innovators elements as follows: 1) Incentives 2) Facilitation Services 3) Securitization Fund	Canada		
Consumer Information on Energy Efficiency Opportunities	Establish an information service to provide Albertans with information on energy efficient home practices.	Alberta	On hold due to actions taken by energy retailers to provide information services to their customers.	Identify gaps related to consumer information on climate change. information.
Energy Efficient Lighting in Small Commercial Sector	Working with lighting product suppliers and lighting contractors to increase availability of energy efficient lighting options and promotion to target audiences in commercial and institutional sectors.	Nova Scotia	This information is presently unavailable.	New funding must be identified.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Green Buildings Partnership	The Green Building Partnership will include representation from provincial capital planners, provincially funded agencies, the building industry, educators, federal and local governments and environmental interests.	British Columbia Delivered by BC Buildings Corporation.	This information is presently unavailable.	NB: All BC government programs are currently under review.
New Energy Targets for New Buildings	Encourage construction of new buildings to national energy code standards through information and potential regulatory change.	Nova Scotia in partnership with Canada.	This information is presently unavailable.	Work with code officials to increase awareness of the code and its application in the buildings sector.

iii) Electricity

Primary sources of energy available for electricity generation differ in various regions of the country; provincial electricity systems have evolved around the resources available. Accordingly, the opportunities for GHG reductions vary by region, and range from (1) replacing coal, oil and gas-fired plants at the end of their economic lives with new, higher efficiency, combined cycle or cogeneration gas plants, or with generation capacity using renewable and/or low-emitting energy sources, to (2) carbon dioxide capture and storage. Although nuclear energy's contribution to the climate change challenge is recognized, no new generating stations are being considered, at this time, by the Canadian electric utilities. However, the Government of Canada continues to support the development of nuclear energy technologies as part of Canada's future energy mix and as an important element in the production of emissions-free electricity.

The greatest potential for emissions reductions appears to reside in the electricity generation sector, which accounted for 16 percent of direct emissions in 1997 and is projected to increase to 22 percent by 2010. Between 40 and 60 percent of the reductions could potentially be achieved by carbon dioxide capture and storage and increased reliance on non- or low-GHG source electricity. Thus, electricity generators play an integral role in Canada's climate change strategy: as energy consumers and as developers of low-GHG-emitting sources of supply, they are important participants in any potential domestic or international emissions trading schemes.

Objectives and supporting actions

To integrate climate change considerations into short- and long-term business decisions regarding capital investments, operations and processes through changes in tax treatment, GHG emissions equivalence performance standards, sectoral covenants, and participation in voluntary programs (e.g., VCR Inc. and ÉcoGESte)

Discussions on electricity sector covenants to encourage reductions in GHG emissions are currently under way between the Canadian Electricity Association (CEA) and federal, provincial and territorial governments. Several utilities are pursuing offset programs; for example, British Columbia Hydro has committed over $2 million for the purchase of GHG offsets over the 2000–2001 timeframe and 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.

To promote low-GHG-emitting energy sources through recognition of regional differences and advancement of the use of renewable

energy (including hydro), cogeneration, innovative approaches to reducing emissions from electricity generation, elimination of regulatory barriers, and research, development and demonstration of emerging low-GHG emission technologies, and advancement of green power marketing

Utilities have adopted procurement policies to expand the level of renewable or low-GHG-emitting generation capacity available within their base load supplies. Federal, provincial and territorial governments are providing opportunities and incentives for the development of green power and its purchase by government agencies; for example, the Government of Canada has made a commitment to purchase 20 percent of its electricity requirements from non- or low-GHG-emitting electricity sources.

To incent improved energy-use and energy-management practices of local distribution companies, recognizing regional differences (e.g., demand-side management programs, performance-based regulation)

To facilitate efficient energy-use behaviour of electricity consumers and the increased choice of alternative low-emitting electrical energy sources

Utilities continue to promote various programs such as auditing energy use for customers, promoting secondary energy purchases from hydroelectricity-generating stations, and promoting public awareness and outreach. In its VCR Inc. submission, the Canadian Electricity Association (CEA) announced planned reductions in GHG emissions from operations of approximately 3 Mt as a result of mitigative actions.

Actions Approved and Under Way

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Accelerated Standards Action Program	These initiatives build on the current EnerGuide Labelling program and performance standards that are prescribed under the Energy Efficiency Regulations. The minimum standards are estimated to have accounted for over 10 Mt of annual aggregate emissions reductions in the year 2000. According to a study commissioned by the Regulatory Affairs Division of Privy Council Office in 1999, several elements of NRCan's process and analysis in implementing these regulations demonstrated "best practice" and an "ongoing commitment to basing regulatory action on sound evidence."	Canada. Potential program partners include industry associations and individual manufacturers, utilities, provincial and municipal governments both in promotional efforts and regulatory interventions.	Regulation: - 100% of import documents processed on time - 75% of Section 5 reports processed on time with continuing difficulties with motor and lamp reports due to diverse and conflicting model classifications used by importers. - 100% of compliance incidents handled on time - 8 standards published, 8 standards approved by technical committee awaiting publication, Energuide: - Process initiated for label for gas fireplaces with consultations in February and March. Communication strategy identified and publication produced for domestic hot water heaters. - Directory print run increased by 25% to 25,000 and additional	The first order of business for the program is the introduction and promotion of the high performance Energy Star endorsement program. Media events, promotional and explanatory communications will be executed to validate the high performance claims of participating partners. An important target audience for these activities is the procurement community. Appropriate opportunities to pilot incentives to assist the purchase and sale of Energy Star products will be identified and pilots executed. Various measures will be deployed to accelerate retirement of

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
			channels of distribution engaged through other OEE divisions. - Approximately 10,000 brochures distributed through HRAI. - Surveys conducted to support marketing strategy to encourage contractors to use promotional material. - Surveys conducted to support marketing strategy to encourage contractors and to determine barriers to use of the toolbox. Decision pending on continued promotion of tool box.	less efficient equipment, most involving collaborations with local utilities and community organizations who will act as program agents.
BC Hydro "Energy Futures Program"	Actively researching emerging wind, biomass and micro hydro technologies.	British Columbia Delivered by BC Hydro.	Established 5 wind speed monitoring towers at promising wind energy locations. Completed a wind energy resources map of B.C. Planning to site 10 additional wind monitors Preliminary study under way on Vancouver Island to explore potential sources of green energy to serve the Island.	Continuing research.
BC Hydro Offset Program	In 2001 BC Hydro has pledged to offset 50% of the increase in GHG emissions from 2 new gas-fired generating facilities.	British Columbia Delivered by BC Hydro.	BC Hydro is purchasing up to 33,400 tonnes of GHG emissions reductions over 14 years from capturing methane gas from the Port Mann Landfill in Surrey, B.C. and blending it for use as a fuel for a nearby wallboard plant. They are creating wetlands in the drawdown zone at Upper Arrow Reservoir, in order to sequester carbon.	In early 2001, BC Hydro issued a formal request for proposals to contract 5.5 million tonnes of GHG offsets in order to identify quality projects in order to meet the objectives. This is ongoing.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Climate Change Fund – Encouraging Action in the Electricity Sector *(New Action)*	- Creation of an on-line energy efficiency centre to provide information on how to improve energy efficiency. - Provide information on renewable energy choices through education.	Ontario Delivery agents include provincial and non-governmental organizations.	Projects are nearing completion.	Delivery of projects.
Consumer Information	The federal government and several provinces are undertaking initiatives to support disclosure to consumers by electricity retailers of their generation sources and associated environmental attributes. This disclosure will help consumers make informed decisions about their electricity consumption. Ultimately, from an agreed upon framework approach to be developed within the next three years, provinces and utilities could implement individual consumer information initiatives consistent with their market structure, generation mix, and fuel options.	Canada Natural Resources Canada will seek to combine the efforts and contributions of potential partners (e.g. Canadian Electricity Association (CEA), Ontario Ministry of Energy, Science and Technology, and Alberta Resources Department) on specific initiatives including analysis of data requirements and consumer information approaches, and workshops.	Background work was initiated.	Develop of a consultation strategy; and Conduct research to increase understanding of the consumer information approaches.
Consumer Information on Generation Mix	Encourage disclosure of the generation mix/environmental attributes to electricity consumers.	Alberta	Study completed on the emission intensity of provincial electricity generation.	Priorities to be set by the province for the electricity sector.
Distributed Generation	Remove Interconnection Barriers: Build on EPCOR's net-metering pilot by examining barriers associated with distributed generation from variety of sources, possibly including flare gas generation, residential / commercial developments and agricultural initiatives (renewable, biogas).	Alberta in partnership with the private sector.	Commissioned a study on Alberta barriers and opportunities related to distributed generation. Initiated a process to investigate technical and policy barriers related to distributed generation. Climate Change Central has established a program related to alternative power generation. An area of focus will be distributed generation.	Completion of scoping study. Prioritization of impediments to distributed. generation Undertake pilot initiatives to overcome barriers.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Efficient Energy Use	Facilitate efficient energy use/behaviour of customers. Energy audit program designed to identify energy inefficiencies to customers and to provide advice on measures available to improve energy efficiency.	Newfoundland and Labrador	This information is presently unavailable.	This information is presently unavailable.
GHG Monitoring and Reporting Pilot	Begin industry reporting of greenhouse gas emissions.	Alberta	Updated the Industrial Monitoring Directive. Commissioned a study to outline methodology related to the reporting of air emissions – including GHGs.	Complete background study. Consult with industry Issue directive to industry. Begin reporting of greenhouse gas emissions.
Government Purchases of Electricity from Renewable Resources	The federal government will displace its purchases of carbon-intensive sources of electricity with emerging renewable sources of electricity. The target under this measure is to purchase 400,000 megawatt hours of electricity annually. The electricity must be generated from a source or the new portion of an expanded generating facility commissioned after April 1, 2001. Greenhouse gas emission reductions must be accounted for and reported to the Government of Canada.	Canada. Participation of provincial and territorial governments, municipalities and large electricity consumers will be encouraged.	In the February 2000 budget, the Government of Canada announced a pilot initiative to make $15 million available over ten years to support the development of emerging renewable electricity in Saskatchewan and Prince Edward Island. Natural Resources Canada has signed agreements for the Saskatchewan and Prince Edward Island pilots and power should begin to be generated on behalf of the federal government in those two provinces by the end of 2001. The Management Committee has contacted provinces and territories seeking their participation in the initiative.	Agreements for the purchase of emerging renewable sources of electricity will be negotiated with electric utilities and Requests for Proposals will be issued in deregulated electricity markets. The federal government will encourage purchases by provinces and territories, municipalities and larger enterprises.
Green Power Pilot Projects	Purchase of green power for federal facilities in Saskatchewan and Prince Edward Island. 10 year purchase from 2001.	Canada	This information is presently unavailable.	This information is presently unavailable.
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 small hydro and woodwaste (biomass).	British Columbia Delivered by BC Hydro.	Purchased 2700 GWh of electricity from IPPs in2000 and made plans for more. Three remote BC communities have received cleaner power generating replacements for their old diesel generators so far in the last 2 years. Have reached an	Continuing to purchase from IPPs and upgrade diesel generators.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
			agreement with Miller Creek Power Limited to purchase output from a 25 megawatt run-of-the-river hydro plant the company will construct by 2003. Three remote BC communities have received cleaner power generating replacements for their old diesel generators so far in the last 2 years.	
Green Power Procurement and Renewables	Promote and participate in development of renewable energy sources.	Newfoundland and Labrador – Joint Public/Private partnership.	This information is presently unavailable.	This information is presently unavailable.
Renewable Energy Deployment Incentive (REDI) for Industry	Activities under the Renewable Energy Deployment Initiative (REDI) for Industry program will be similar in nature to those currently undertaken under the Renewable Energy Deployment Initiative (REDI) program, customized for the industrial sector. The major strategic element of the REDI for Industry program is market development supported by financial incentives. Market development activities include development and implementation of market strategies to address market barriers in specific energy-consuming industries where promising markets exist for renewable energy systems – solar air heating, solar hot water, biomass and ground-source heat pumps.	Canada	Started staffing process for commerce officer to lead REDI initiatives in the industrial sector. Initiated some background work and analysis.	- Provide marketing activities, including advertising, to promote awareness and participation; - Stimulate and foster project development that will promote further investments in renewable energy systems; - Assist and promote the deployment of renewable energy by providing a financial incentive to offset the incremental cost of the purchase and installation of these system. - Provide training and technical assistance to building professionals including architects and engineers.
Renewable Power Sales Incentive Program	The Renewable Power Sales Incentive Program displaces fossil fuel heating sources by selling discounted, surplus hydroelectricity to commercial, industrial and government customers.	Yukon Administered and delivered by the Canada/Yukon Energy Solutions Centre, a subsidiary of the Yukon Development	Three projects are currently under way while approximately twelve private and public sector projects are in various states of technical assessment. The hotel sector has been specifically targetted	The goals for Renewable Power Sales Incentive Program is to target all new and existing major building projects. This also involves ensuring there is sufficient local capacity for technical

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
		Corporation, in partnership with Yukon Energy. The Yukon Electrical Company Ltd. is also a participant.	through a Memorandum of Understanding reached with Natural Resources Canada, Tourism Industry Association of Yukon, British Columbia and Yukon Hotel Association, Tourism Yukon and the Yukon Development Corporation.	assessments and installation of duel heating systems to meet program demand.
SaskPower Climate Change Action Plan	SaskPower submits annual Climate Change Action Plan Progress Reports to the Voluntary Challenge Registry (VCR). The progress reports detail various initiatives undertaken in association with SaskPower's multi-faceted approach to the reduction of GHG emissions. This includes, but is not limited to, involvement with Actions by Canadians program, offset purchases, investment in renewable energy, and overall energy efficiency gains.	Saskatchewan in partnership with the Voluntary Challenge Registry. Delivered by SaskPower Corporation.	Relative to last year's emissions, SaskPower reduced its emissions by 1.7%. Emissions forecasts indicate that in 2001, SaskPower emissions will see a further decrease.	Since 1995, Saskpower has been preparing and submitting to the VCR the Climate Change Action Plan Progress Reports. SaskPower intends to continue this tradition.
Sector Agreement/ Covenants (Electricity Sector)	The initiative will assess the impact and feasibility of a "sector agreement/ covenants" approach to address GHG emissions from Canada's electricity sector. It will determine the design elements required for the successful implementation of a covenant-based emissions reduction strategy. Working in cooperation with the provinces, the Canadian Electricity Association and its member companies, the objective will be to develop and negotiate a sector agreement and individual covenants between governments and electric utilities/generators as appropriate.	Canada, British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, Québec, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador, Nunavut, Northwest Territories, Yukon.	The initiative was begun in 2001/02.	During the balance of the initiative's planned duration, until the end of 2002/03, activities will include the following: 1) completion of background research and analysis to determine the impact and feasibility of the sector agreement/covenants approach; 2) development of a draft framework agreement; 3) development of a model covenant; 4) the negotiation of a suite of covenants between governments and entities within the electricity sector as appropriate.
Small Hydro Policy	In 2000, provincial water rentals were restructured to provide a lower rate for small hydroelectric generation.	British Columbia	N/A	N/A

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Standards for Connection of Distributed Generation	This program will support the development of a Canadian guideline for the interconnection of small distributed power sources (micropower) through a consensus building process. An Advisory Committee will be created with stakeholders such as Electro Federation Canada, the Canadian Standards Association, Canadian Electrical Code Part 1 Committee and the Standards Council of Canada. This program advisory committee will be responsible for overseeing the activities of a National Technical Committee and approving the communication plans.	Canada. Partners include standards development organizations, micropower equipment manufacturers, regulatory authorities, utilities, and system installers.	The Management Committee developed a plan to implement this initiative.	Hold Advisory and Technical Committee meetings to build a national consensus on interconnection requirements and develop technical and supporting documents. Promote this initiative through workshops, information sessions and web-based communications. Liaise with key provincial and territorial authorities to develop strategic links with key committees and departments (regulation and legislation).

Actions Under Consideration (Policy/Budget Approval Needed)

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Cogeneration	Newfoundland and Labrador Hydro is considering a joint cogeneration project with a customer to use bark along with heavy oil for energy generation. This would displace oil at a thermal generating station with a net reduction in GHG.	Newfoundland and Labrador Delivered by Newfoundland and Labrador Hydro Corporation.	Pending approval.	Pending approval.
Consumer Information	Hydro is investigating the use of Demand Side Management (DSM) in rural, isolated areas to moderate electricity use by customers. Since electricity is generated at diesel plants in these areas, DSM would reduce GHG emissions.	Newfoundland and Labrador Delivered by Newfoundland and Labrador Hydro Corporation.	Pending approval.	Pending approval.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Develop Non-GHG Technologies	Newfoundland and Labrador Hydro will be soliciting proposals to develop up to 5MW of wind generation in the province. The electricity would be fed into the provincial grid and would be available as early as 2002.	Newfoundland and Labrador in partnership with private companies. Delivered by Newfoundland and Labrador Hydro Corporation.	Pending approval.	Pending approval.
Distributed Generation	Reduce barriers to co-generation.	Nova Scotia	Under study as part of Nova Scotia Energy Strategy.	Completion of strategy and implementation.
Electricity Transmission and Trade Barriers	As the electricity market moves towards an increasingly integrated North American market, it is important to understand the potential implications of electricity restructuring and transmission issues for climate change. With the rapid pace of change in electricity markets and technology developments, there are undoubtedly different scenarios for North American electricity transmission over the next decade. This 3-year initiative focusses on developing, assessing and evaluating options, through scenario analysis and workshops.	Canada A steering committee co-chaired by representatives of the Federal and Provincial Reliability Working Group and the Canadian Electricity Association will direct this initiative.	Analysis and consultation on regional transmission scenarios to 2010 is an important first step before proceeding with Manitoba's proposed study on barriers to the construction of interprovincial transmission lines.	The steering committee will ensure the completion of transmission scenarios, that interactive stakeholder evaluation workshops are held, a thorough assessment and evaluation of options to address institutional and regulatory barriers to electricity and transmission is made, and a report of the findings is produced.
EnerGuide for Houses Program (Voluntary)	Comprehensive home energy and environmental assessments used to raise consumer awareness and facilitate consumer choice in housing. The proposed program builds up the success of a previous program of the Conservation Corps Newfoundland and Labrador.	Newfoundland and Labrador. Partners for the pilot phase are: Canada and municipal and corporate sponsors. Sponsors/partners for the next phase to be determined. Delivered by Conservation Corpos Newfoundland and Labrador, in partnership with Heatfield International.	The 20-month pilot phase was successfully completed in June 2001. During this phase, 500 homes were assessed with the EnerGuide model; 1300 homes received Home Green Up assessments. Considered to be the largest climate change action project in Atlantic Canada.	A business plan was submitted to the Government of Newfoundland and Labrador (Department of Environment and the Department of Mines & Energy). The Conservation Corps Newfoundland and Labrador is waiting for approval for the second phase of the project.
Green Energy and Renewables	Work with utility to establish green power purchase program and increase access for green energy.	Nova Scotia Delivered by Nova Scotia Power Inc.	Utility announcement of the construction of two, 600 kw wind turbines; call for expression of interest in up to 50 megawatts of green power net metering available for small generators.	Successful construction of generation based on proposal call launch of green power purchase program once generation assured.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Green Energy and Renewables	Hydro will promote and participate in the development of renewable energy sources. Approximately 75% of Hydro's current generation is from hydroelectric facilities. Projects under consideration include the Granite Canal and Island Pond developments as well as future projects on the Churchill River and improvements to facilities in Central Newfoundland.	Newfoundland and Labrador Delivered by Newfoundland and Labrador Hydro Corporation.	Granite Canal ongoing; other projects pending approval.	Granite Canal ongoing; other projects pending approval.
Lakeview Conversion *(New Action)*	A draft regulation was posted on the Ontario Environmental Bill of Rights Registry for comments. This proposed regulation would convert the Lakeview power generating station from coal-fired to natural gas by April 2005.	Ontario in partnership with Ontario Power Generation, which owns Lakeview.	The government is currently accessing comments on the draft regulation received from the Environmental Bill of Rights registry.	Approval of proposed regulation and the conversion of Lakeview.
Non-Utility Generation Development	Restructuring of the regulatory regime to allow and encourage non-utility generation.	New Brunswick	Regulatory restructuring process commenced.	Further regulatory restructuring.
Nuclear Power *(New Action)*	Ontario Power Generation (OPG) has submitted a application to the Canadian Nuclear Safety Commission (CNSC) to return to service of the Pickering 'A' nuclear generating facility.	Ontario Delivered by Ontario Power Generation.	Following public hearings, a proposed return to power was announced by the regulator, for operation of four reactors.	Receive final approval from the regulator.

iv) Forestry (Sinks)

Canada's forests cover 45 percent of the country's land base and support a wide range of industrial, commercial, cultural and recreational uses, all of which will be affected by climate change.

Many of the initiatives considered in forestry are directly linked to the agriculture sector (planting on abandoned farm land or on hedgerows and shelterbelts on cultivated land to mitigate soil erosion by wind and to sequester carbon).

Coordination between landowners and governments, and increased research and capacity development is key to taking advantage of opportunities in these areas. (Emissions reductions related to forest industry operations such as pulp and paper and lumber are addressed in the industry section.)

Objectives and supporting actions

To position Canada to seize opportunities through the use of the sink provisions in the Kyoto Protocol

Parties to the Kyoto Protocol recently agreed in Bonn that carbon sequestration resulting from land use, land-use change and forestry activities can be applied to the first commitment period. Carbon sequestered in newly created forests through afforestation and reforestation will be credited. As well, carbon sequestered by Canada's existing managed forests provides an important opportunity

(up to an agreed maximum limit of 44 Mt of CO_2 per year) for increasing our target (Assigned Amount). Canada will need to earn these credits through investments in new forests, managing forest carbon, and measuring the carbon.

To increase the understanding of the potential role of afforestation for carbon sequestration to allow more informed decisions on implementation of large-scale afforestation efforts

The Government of Canada is analyzing the potential of afforestation for carbon sequestration. Efforts are focussing on evaluating the feasibility of a large-scale afforestation program in Canada. To help assess the design features, verify methodologies and improve information on the potential of a large-scale program, afforestation pilots/trials will be identified across the range of suitable lands in Canada. The primary target group for the afforestation pilots is, however, private landowners with productive and available agricultural land.

To promote awareness and understanding of the potential role of reforestation and forest management for carbon sequestration

A forest-based carbon offset agreement (the SaskPower Carbon Offset Agreement) has been submitted to the Greenhouse Gas Emission Reduction Trading (GERT) pilot for review. The review will be completed in the fall 2001. The agreement has two components: one involves planting 5 million seedlings on about 3,300 hectares of land between 1999 and 2002; the second component is to establish approximately 225,000 hectares of forest carbon reserves in 1999–2000 by removing areas of provincial forest from harvesting. These actions are intended to generate carbon credits through reforestation and protection from harvesting.

Under New Brunswick's Afforestation and Reforestation Initiative, the province expects to plant 500 hectares of abandoned, privately owned farmland per year. With respect to Crown land, this reforestation initiative will see about 10,000 hectares planted each year.

To increase the understanding of causes and locations of deforestation, develop reporting capacity and mitigation measures

The Government of Canada has initiated work on the design of a system to measure deforestation across the country. Such a system would eventually provide the deforestation measurements that Canada would need to report for the Kyoto Protocol.

To increase research capacity and measurement infrastructure to improve the understanding of the potential role of forest sinks under the Kyoto Protocol and the capability to report on sink activities

The Government of Canada has also initiated work on the development of a forest carbon accounting system that would help contribute to reporting on forest sinks for the Protocol.

Actions Approved and Under Way

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Afforestation	The FAACS initiative is a new three-year (2001/02 to 2003/04) national feasibility assessment that focuses on assessing, planning, designing and evaluating the feasibility of a large-scale national afforestation program in Canada. As a means to assess the design, mechanics and feasibility of a large-scale program, afforestation pilots/trials will be identified across the range of suitable lands in Canada. However, the primary target group for the afforestation pilots is private landowners with "marginal" agriculture land.	Canada		

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Analysis of Forest Carbon Stock Changes in British Columbia		Ministry of Sustainable Resource Management, Ministry of Forests, Canadian Forest Service and Tree Farm Licensees.	We have done a preliminary analysis at the forest management unit level using provincial information on the extent of the carbon sink in our forests. Biomass C stocks in BC's total forest will be a sink of 25.3Mt C/yr. in the first commitment period.	Prepare formal report. Summarise for individual management units. Review dead organic matter dynamics against field data. Conduct some scenario analysis. Improved data needed for afforestation, reforestation, and deforestation, non timber harvest land base age class information, dead organic matter data.
Climate Change Fund – Encouraging Action in Forestry *(New Action)*	Seeds and cones of the red pine (represents "best bet" in afforestation) were collected and are currently being stored. These seeds will be planted at a later date, to be determined.	Ontario	Seeds have been collected and are currently being stored for future use.	Planting of seeds.
New Forestry Regulation and Requirements to Increase Level of Silviculture	Based on the volume of primary forest products acquired, clients are assessed an obligation to provide for silviculture. Clients then report on their activities and provide detailed site information on actual work undertaken.	Nova Scotia	This information is presently unavailable.	This information is presently unavailable.
Planting Hedgerows and Shelterbelts	Financial and technical assistance to mitigate soil erosion by wind and to sequester carbon.	Prince Edward Island	This information is presently unavailable.	This information is presently unavailable.
SaskPower – SERM Carbon Offset Agreement	The agreement will result in emission reduction credits and environmental benefits by protecting existing carbon reserves and restocking an area classified as "Not Sufficiently Restocked".	Saskatchewan Delivered by SaskPower Corporation.	The project is being reviewed by the Greenhouse Gas Emission Reduction (GERT) Pilot.	Address the final GERT Information Request required to complete the review process.

Actions Under Consideration (Policy/Budget Approval Needed)

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Afforestation and Reforestation Initiative	Under an afforestation component of its private land siviculture program, New Brunswick expects to plant 500 ha. of abandoned privately-owned farmland per year. Crown lands having less than 60% regeneration stocking after harvesting will be planted. This Crown land reforestation initiative will see about 10,000 ha planted each year.	New Brunswick	This information is presently unavailable.	This information is presently unavailable.
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.	Alberta	Established communication with Department of Agriculture, Food and Rural Development Staff and Forestry Industry.	Engage more department staff and forest industry.
Forests Afforestation Pilots	Afforestation pilots are still under consideration. Awaiting further guidance from Federal Government.	British Columbia	This information is presently unavailable.	This information is presently unavailable.

v) Industry

Trade in goods and services comprises about 75 percent of Canada's GDP. Exports have increased 8.3 percent per year since 1990 and by about 20 percent in the past year alone. An outward-oriented economy like Canada's must be sensitive to the demands of the market and to the actions of its competitors, from both developed and lesser-developed countries. This is particularly true for resource-based goods.

Resource-based goods comprise about 40 percent of Canada's exports and contribute substantially to the wealth and employment of Canadians. However, these goods require significant energy to produce. Industry currently accounts for approximately 33 percent of Canada's GHG emissions. Although emissions intensity has decreased in almost all sectors, emissions from the manufacturing sector have remained flat since 1990 while the sector grew by 32 percent. In contrast, despite their improvements, emissions associated with upstream oil and gas development and transmission have grown substantially, fuelled in large part by a significant increase in natural gas production.

An overarching objective for the industrial sector is to maintain or enhance Canada's competitive position and its attractiveness as a location for investment. As a trading nation, much of Canada's wealth is built on the production and export of resources and energy-intensive goods. Industry faces increasing competitive pressures and thus seeks parity with competitors and unfettered access to traditional and developing markets and market mechanisms.

The objectives and supporting actions developed for the FNBP aim to enhance existing voluntary efforts by industry and to encourage innovation and market-based solutions. They focus primarily on harvesting near-term, win-win opportunities, while setting the stage for long-term actions.

The following describes the broad objectives for the industrial sector and progress to date. However, progress in the minerals and metals and the oil and gas sectors is described individually.

Objectives and supporting actions

To raise awareness about climate change and identify cost-effective opportunities to enhance company competitiveness and GHG reduction performance

Alberta has recently completed amendments to its ozone-depleting substances regulation to control releases of hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and hydrochlorofluorocarbons (HCFCs).

To encourage investments in more energy-efficient/non- or low-GHG emitting technologies and processes, and while recognizing regional differences, eliminate regulatory barriers and promote the use of cogeneration, fuel switching and alternative fuels

Prince Edward Island continues to operate a district heating system in Charlottetown and is considering possible expansion to further reduce GHG emissions by displacing fuel oil consumption with biomass and improvements to the thermal efficiency of space and domestic water heating systems.

To promote further voluntary GHG emission reduction programs through a framework that encourages industry participation in setting goals, recognizes efforts publicly, and facilitates the availability of capital for efficiency investments that reduce GHG emissions

British Columbia has taken steps to encourage industrial demonstration projects that facilitate cost-effective energy efficiency investments to reduce GHG emissions, improve air and water quality, and mitigate other environmental impacts from industrial activities in the province.

In addressing these preceding objectives, the Government of Canada has made use of the Canadian Industry Program for Energy Conservation (CIPEC), 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 more than 3,000 companies and

90 percent of secondary industrial energy demand. Industry members of CIPEC include the following sectors: aluminum, brewery, cement, chemical, dairy, electrical and electronics, fertilizer, food processing, general manufacturing, lime, mining, oil sands, petroleum products, pulp and paper, rubber, soft drink, steel, textile, transportation manufacturing and wood products. Industries participating in CIPEC recorded an average annual energy-efficiency improvement of 1.26 percent for the period 1990 to 1998, representing the amount of energy necessary to heat 38 percent of all Canadian houses in 1998, while at the same time stabilizing energy-related emissions of CO_2. This exceeds CIPEC's goal of 1 percent annual improvement in energy intensity between 1990 and 2010.

Actions Approved and Under Way

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Agricultural Food Processing Practices	Manage energy usage and invest in energy efficiency improvements. For agricultural food processors in Alberta to provide significant savings in energy costs and reduce GHG emissions.	Alberta	Complete energy audits on 34 companies representing 46 processing facilities. Action plans are in the developmental phase with VCR registration to follow.	Continue the program to its conclusion.
Carbon Management Programs and Projects	Carbon Management is the storage of carbon dioxide in geological or ocean formations. Alberta has available CO_2 sources and geological reservoirs to undertake the following: 1) The capture of CO_2 in a pure stream from industrial processes such as oil sands upgrading, oil refining, power generation and petrochemical production; 2) The use of this CO_2 to increase production from oil and coalbed methane reservoirs; and 3) The storage of CO_2 into deep geological formations such as depleted oil and gas reservoirs, coal beds and saline aquifers.	Alberta	Completion of the Canadian Energy Research Institute (CERI) geological sequestration study. CCC, AERI and ARC are continuing to fund research and development projects in CO_2 capture and storage.	To gain approval for overall program.
Control of HFCs and PFCs	Amendments to Alberta ozone-depleting substances regulation to control releases of HFCs, PFCs and HCFCs.	Alberta	Completed. The Alberta Ozone-Depleting Substances and Halocarbons Regulation (Alberta Regulation 181/2000) came into effect on September 1, 2000.	Measure completed.
Emissions Benchmarking	In conjunction with the 43 trade associations participating in CIPEC, NRCan will use benchmarking consultants to work with companies to record data on businesses as a whole including profitability, investment, financial management,	Canada Key delivery partners include many of the 43 trade associations now		

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
	productivity and innovation with special emphasis placed on energy efficiency and greenhouse gas performance. A confidential report will be provided to individual companies which will allow them to rate their relative productivity and energy-efficiency performance against other companies in their sector.	involved with CIPEC as well as new associations from the proposed areas of expansion. Where there are opportunities for synergy, projects will be undertaken with provinces and utilities.		
Energy Efficiency Act *(New Action)*	The Ontario Energy Efficiency Act, proclaimed in June, 1988, was the first piece of legislation in Canada to deal with the efficiency of energy-using products. It continues to provide standards for appliances and products sold or leased in Ontario. New standards (set in 2000 and before) continue to generate emissions reductions as new equipment is purchased.	Ontario manufacturers of the products covered in the regulation participated in the standards development process and agreed to the efficiency levels and compliance date.	Reduced carbon dioxide emissions by an estimated half million tonnes in 1999. This number is expected to rise to 1.6 million tonnes annually by 2020. In the 12 years since the Act was introduced, the accumulated energy savings would be enough to power the cities of London and Windsor for one year.	Continued monitoring of existing regulations and the introduction of new regulations that reduce GHG emissions.
Energy Efficiency Audits	Financial assistance and guidance will be given to companies to conduct on-site industrial audits to identify energy efficiency opportunities and the associated costs and savings (energy and GHG emissions). The audits represent a new Industrial Energy Innovator service.	Canada Partnerships could include many of the 43 trade associations now involved with CIPEC, new associations from the proposed areas of expansion. Where appropriate, projects will be undertaken with provinces and utilities, Industrial Research Assistance Program (IRAP) of the National Research Council of Canada, non-profit organizations (e.g.- Ontario Centre for Environmental Technology Advancement), and energy management firms.		

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Energy Efficiency Regulations	New Brunswick will expand the list of equipment regulated for minimum energy efficiency performance in harmonization with other jurisdictions.	New Brunswick	The proclamation of the Energy Efficiency Act in 1992, and the Energy Efficiency Regulation in 1995. Presently regulating 23 different products for minimum energy performance.	Amend our Energy Efficiency Regulation to harmonize with other jurisdictions' more up-to-date regulations.
Expansion of the Canadian Industry Program for Energy Conservation (CIPEC)	CIPEC is a longstanding, highly-successful voluntary program built on a partnership between industry and the federal government. Expansion of CIPEC will entail inviting participation from the upstream oil and gas, forestry, construction and electrical utilities sectors.	Canada. Key delivery partners include many of the 43 trade associations now involved with CIPEC as well as new associations from the proposed areas of expansion. Where there are opportunities for synergy, projects will be undertaken with provinces/territories and utilities.		
Improved Tracking and Reporting of Energy Efficiency and Emissions Trends	This program involves enhancing and extending the industrial portion of the National Energy Use Database by better aligning the existing survey instruments administered by Statistics Canada and by increasing the scope and timeliness of their results. It will involve rebuilding Statistics Canada's current industrial energy database to expand its coverage from 10 to 50 sectors, expanding the current ICE survey so that more companies, representing more industrial sectors, are surveyed about their energy consumption, and expanding and maintaining output indicator data.	Canada	Draft Memorandum of Understanding between Statistics Canada and NRCan completed.	Memorandum of Understanding to be signed between NRCan and Statistics Canada, by September 2001.
Industrial Buildings Incentive Program	IBIP will offer an incentive to companies building new industrial facilities to offset additional design costs inherent in the initial attempts at energy efficient designs. The program design will be similar to that of the Commercial Building Incentive Program (CBIP). The designs will be assessed against a reference generated from the Model National Energy Code for Buildings (MNECB).	Canada	- 59 contribution agreements covering 59 buildings worth more than $2.5 million. - Buildings are designed on average 35 percent better than code (range is from 26 to 65 percent). - 18 training workshops and 2 charrettes held resulting in 1000 trained professionals.	- Providing training and technical assistance to building professionals on meeting efficiency levels for industrial buildings that exceed the levels required by the MNECB.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
			- Training CD completed and Beta version distributed. - EE 4 users requiring assistance dropped to 85%. - There were 220 downloads compared to three year average of 175 per year. - 4 new versions of EE 4 were released. - Surveys being designed to collect baseline data (i.e., energy/m^2) for existing and new buildings.	- Develop communication material and guidelines that will promote the design process developed to meet efficiency levels. - Assist and promote the design of energy-efficient buildings by providing a contribution to offset the incremental cost of designing to high efficiency levels.
Industry Energy Efficiency Audits and Incentives	Financial incentives for public education and outreach, benchmarking and demonstration projects.	British Columbia	In 2000/01, approximately $250,000 was spent on public education and outreach, benchmarking and demonstration projects.	Monitor demonstration projects and implement year 2 activities. NB: All BC government programs are currently under review.
Industry-wide Covenants/ Agreements	The Industry Covenants Initiative will provide a consultative policy development forum to discuss the usefulness of the covenants approach to greenhouse gas emissions reduction in the Canadian context. It will seek to identify the key design elements required for the successful implementation of a covenant-based emission reduction policy. The bulk of the work under this Initiative will be in the form of: i) policy analysis to support decision-making on the covenants approach, and ii) consultations with industry and other stakeholders.	Canada	N/A (The Industry Covenants Initiative did not begin until 2001-04-01.)	The work to be undertaken under the Industry Covenants Initiative is as follows: - background research and analysis; - public consultation and focus group sessions; and - as warranted, the development and testing of one or more generic model covenants.
Operation & Expansion of Charlottetown District Heating	The Charlottetown district heating system was developed by the PEI Energy Corporation, a provincial crown corporation, and sold to a private company, Trigen Canada Ltd. Since buying the assets, Trigen has expanded the system to supply heat and domestic hot water requirements to several residences and businesses within the city core.	Prince Edward Island Delivered by Trigen-PEI	This information is presently unavailable.	This information is presently unavailable.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Support for Co-generation and District Energy Systems	Many energy intensive industries generate excess heat that could be utilized to generate electric power for internal use, for sale to existing grids or to support district heating initiatives. In partnership with the provinces, utilities and municipalities, work will be undertaken to define the potential savings and identify barriers to making better use of heat.	Canada		
Support for Engaging Small and Medium-Sized Enterprises (SMEs)	Engage small and medium enterprises to take action on climate change in Alberta.	Alberta in partnership with Pembina Institute and Climate Change Central.	A "How-to" guide, called the Cool Business Guide was developed. Nine presentations were given to 460 people in Ontario and Alberta.	A "How-to" guide, called the Cool Business Guide was developed. Nine presentations were given to 460 people in Ontario and Alberta.
Support Research and Extension for Alberta Processors	Ensure policies facilitate research and extension that will give processors the tools they need to implement cost effective technologies to reduce GHG emissions.	Alberta	Completed energy audits on 34 companies representing 46 processing facilities. Action plans are in the developmental phase with VCR registration to follow.	Continue the program to its conclusion.

Actions Under Consideration (Policy/Budget Approval Needed)

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Alberta Policy Analysis for Processors	Expands policy analysis to aid research and extension on GHG mitigation in the value-added processing sector (similar initiative for Producers in Agriculture section).	Alberta Delivered by Alberta Food Processors Association, Alberta Environmentally Sustainable Agriculture Council.	N/A	Develop polices that will aid research and extension on greenhouse gas mitigation in the food processing sector.
Develop Basic Information	Strengthen baseline information.	Newfoundland and Labrador	This information is presently unavailable.	This information is presently unavailable.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Increase Methane Capture and Utilization	Three of the four largest agri-food facilities in the province are now capturing and utilizing methane to displace heavy oil. The remaining plant is flaring the gas.	Prince Edward Island Delivered by private businesses and government.	Three of the four largest agri-food processing plants have installed methane capture and utilization equipment.	Install utilization capacity at the remaining facility.
Integration of Climate Change in Environmental Assessments	Ensure integration of climate change considerations during the environmental assessment process for all new projects.	Northwest Territories	This information is presently unavailable.	This information is presently unavailable.
Stewardship Incentive Program	Recognize producers / processors for both food and environmental stewardship benefits to society including greenhouse gas mitigation.	Alberta	Project transferred to Agricultural Summit 2000 Action Team.	N/A
Support for Research	Support for research, development and demonstration of low emissions and productivity-enhancing technologies.	Newfoundland and Labrador in partnership with Canada.	This information is presently unavailable.	This information is presently unavailable.

Minerals and Metals

The mineral and metals sector's output of base and precious metals, primary iron and steel, aluminum, magnesium, secondary metal products, lime, cement and concrete provides raw materials to every economic sector in Canada and supplies important export markets. The sector's 1,900 facilities contribute approximately $27 billion, or 4.3 percent, to Canada's total GDP. Total direct GHG emissions represent about one third of all industrial GHG emissions and 9 percent of Canada's total. To remain cost competitive in the global marketplace, the sector has continually invested in new technologies to enhance its energy efficiency as well as its overall environmental performance.

Objectives and supporting actions

To build on the track record and positive future commitments by the sector. With relatively modest actions the sector can continue to make important strides at reducing GHG emissions.

To encourage indirect approaches to reducing GHG emissions (e.g., by increased recycling of steel, aluminum and magnesium, and by increased use of concrete in roads)

Improved recycling technologies and practices are being used to reduce the energy demands and emissions associated with production of steel, aluminum and magnesium.

Actions Approved and Under Way

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Concrete for Roads	Canada has relatively few concrete roads. Quebec has the highest proportion, with about 4% of provincial highways built of concrete. In other provinces concrete roads are even less common, although there are some highlights: the new toll highway 427 around Toronto is built entirely of concrete, because the private sector proponents favoured concrete's superior lifecycle costs; and the replacement sections of highway 417 in Ontario will be built of concrete because the province requested bids based on total costs to build and maintain the highway over its specified life.	Canada	Official launch and start of program, June 2001; met with Advisory committee in July 2001; hired MMS Climate Change coordinator.	Advisory Committee to prioritize/schedule details of program prepare/solicit proposals for concepts approved by Advisory Committee.
Enhanced Recycling (Minerals and Metals)	Canada has a good record of recycling minerals and metals. About half of Canada's steel production is derived from recycled material, such as recycled automobiles, construction steel and steel beverage containers. The world-wide average is 35%. Much of Canada's recycled steel is processed in electric arc furnace (EAF) steel operations, principally in Ontario, Quebec and Saskatchewan. About 30% of Canada's primary aluminum is derived from recycled material, including construction materials (e.g., extruded window frames) and aluminum beverage cans. Copper, zinc and other metals are also recycled, as is concrete from demolition projects (typically, it is used as road fill or as aggregate in new concrete work).	Canada	Official launch and start of program, June 2001 met with Advisory committee in July 2001 hired MMS Climate Change coordinator.	Advisory Committee to prioritize/schedule details of program prepare/solicit proposals for concepts approved by Advisory Committee.
Supplementary Cementing Materials	Canada has a good record of using SCMs. Much of the technology and knowledge was generated over the past several decades by researchers at CANMET, Natural Resources Canada. Current use of fly ash in Canada is about 500,000 tpy, with a similar usage of ground blast furnace slag. Canada produces about 4 million tonnes of fly ash per year, and also has significant additional production of slag. Not all this material is suitable for use as SCMs – some fly ash, for example, contains excess unburned carbon, which would be detrimental in concrete – but significant additional quantities could be used to replace cement.	Canada	Official launch and start of program, June 2001; met with Advisory committee in July 2001; hired MMS Climate Change coordinator.	Advisory Committee to prioritize/schedule details of program prepare/solicit proposals for concepts approved by Advisory Committee.

Oil and Gas

Canada's upstream oil and gas sector accounts for 23 percent of industrial GHG emissions arising from activities such as production, transmission, processing and distribution. Increased sector productive capacity has contributed to reduced global emissions by displacing energy sources in the United States with greater emissions intensities. However, forecasts for increases in production mean that, without further action in this sector, total upstream oil and gas GHG emissions in Canada will continue to rise, despite a decline in average emissions intensity as companies improve production technology.

Objectives and supporting actions

To broaden government-private sector collaboration in research, demonstration and commercialization of carbon dioxide (capture and storage) management

Pilot projects are under way in Alberta and Saskatchewan to demonstrate the capture of carbon dioxide (CO_2) from large stationary sources and storage in geological formations to prevent CO_2 emissions from releasing into the atmosphere. CO_2 capture and geological storage is a potentially valuable instrument in reducing GHG emissions that result from the production of fossil fuels. The Weyburn CO_2 Monitoring Project, sponsored by the International Energy Agency, is in its formative stage and will help to assess the extent to which GHGs (that is, CO_2), can be stored in subterranean formations, the relationship between oil recovery and CO_2 storage, and the potential for additional, low-cost CO_2 storage through extended or modified field operations. This project is a large and complex undertaking.

Through this four-year, $35-million project, Canada is taking a lead role in CO_2 geological storage, bringing together 18 separate research providers from Canada, the United States and Europe. The technology and knowledge resulting from this project will help determine the viability of geologic sequestration as an option for GHG emissions reductions globally. To date, seven industry members have already joined the project with more expressing interest.

Alberta's Clean Air Strategic Alliance board of directors has approved a multi-stakeholder working group to review flaring practices in Alberta and recommend a venting management framework to improve flaring management and reduce volumes of solution gas vented into the atmosphere.

Through continuous technological and operational improvements, to continue to reduce emissions intensity and exceed competitors' emissions intensity benchmark

The Government of Canada has proposed several adjustments to improve the capital cost allowance system to encourage investment in energy-efficient equipment covering manufacturing, electrical and processing equipment.

British Columbia's Oil and Gas Commission Environmental Fund is being used to explore the feasibility of eliminating emissions (sulphur dioxide and GHGs) from flaring and fugitive emissions through the development of best management practices and of new technologies.

To broaden voluntary reductions and offsets through codes of best practice and participation in government-private sector programs

The upstream oil and natural gas sector constitutes one of the cornerstones of the VCR Inc. Companies from this sector were founding members of this company-level voluntary initiative and have reported a number of win/win accomplishments in energy efficiency improvement and emissions reductions.

Actions Approved and Under Way

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Reduce Flaring and Venting in the Oil and Gas Sector	The Clean Air Strategic Alliance (CASA) board of directors has approved a multi-stakeholder working group to assess the performance and make recommendations regarding the Alberta solution gas flaring management framework and to develop recommendations to address a broader range of flaring and gas venting issues in Alberta.	Alberta Delivered by the Clean Air Strategic Alliance (CASA).	Identified initial recommendations for a venting management framework. Identified priority topics for review of EUB Flaring Guide.	Completion of CASA Flaring/Venting Project Team plans.

Actions Under Consideration (Policy/Budget Approval Needed)

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
CO_2 Capture & Storage Initiative	The CO_2-Capture-and-Storage Initiative is to involve a number of individual measures.	Canada with possible provincial/ territorial participation.	Started staffing process for CO_2 C&S unit at NRCan. Started some background work and analysis.	Complete staffing of the CO_2 capture and storage unit. Complete background analysis. Design and implement incentive program.
GHG Guidelines for Planning and Approval Processes	Consult with stakeholders to develop appropriate GHG mitigation guidelines for provincial planning and assessment processes, including the BC Environmental Assessment Process and pollution prevention planning.	British Columbia	The Ministry of Water, Land and Air Protection completed draft GHG mitigation guidelines for the Environmental Assessment Process in 2000. These still need to be formally reviewed by stakeholders and formally adopted by Government. These guidelines contain voluntary measures only.	NB: All BC government programs are currently under review. If initiative proceeds, next steps are focused stakeholder consultations on viable options for GHG mitigation guidelines.

vi) Municipalities

Municipalities and communities have direct control over approximately 7 percent of Canada's GHG emissions (mainly methane from landfills) through their operations and indirect influence over half of Canadian emissions through their roles in the community at large. Canada has more than 5,000 municipal governments that can influence emissions reductions through land-use, transportation and community energy planning, building codes, building retrofits and water conservation, as well as improved waste diversion from landfills and incinerators. Municipalities and communities are important partners in addressing climate change: they can create opportunities for GHG reductions and at the same time deliver local environmental, social and economic benefits (e.g., clean air, job creation).

Objectives and supporting actions

To build the capacity for municipal governments and communities to address climate change and undertake both mitigation and adaptation responses

There has been a substantial increase in the number of municipalities and communities engaged in climate change through the Federation of Canadian Municipalities (FCM) – approximately 80 municipal governments belong to FCM's Partners for Climate Protection and participation is increasing monthly. Partners for Climate Protection helps Canadian municipalities prepare and implement local climate action plans. This partnership goes beyond Canada as Canadian municipalities belong to a large international network of local governments taking steps to address climate change.

Through the Ontario Climate Change Fund, information is disseminated to encourage Ontario municipalities to reduce GHG emissions. While capacity has increased in urban areas, more effort is required in rural and northern areas. The issue of developing appropriate adaptation responses also needs to be more fully addressed.

To reduce GHG emissions from municipal operations

Although there has been good progress on reducing emissions in municipal operations, many areas can still reap benefits. The Green Municipal Enabling Fund and the Green Municipal Investment Fund provide support for a variety of municipal infrastructure improvements that benefit the environment. The FCM manages these endowment funds in partnership with the Government of Canada.

To engage municipal governments and communities in the strategy of enhancing awareness and understanding as well as encouraging them to take action

Municipalities are becoming more fully engaged by playing a key role in raising awareness and understanding. Municipalities are important partners in the education and outreach activities of the Hub pilot projects in British Columbia, Alberta, Saskatchewan and Nova Scotia. The link between actions of municipal governments and the community at large needs to be more fully developed to influence GHG emissions. For example, British Columbia and other regional or local governments are supporting the development of proposals to use landfill gas. In 2000–2001, British Columbia supported 32 community-based demonstration projects that address climate change.

Actions Approved and Under Way

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Climate Change Fund – Encouraging Action in Municipalities *(New Action)*	The Government of Ontario is providing municipalities with information on how to reducing GHG emissions including curbing urban sprawl through land use planning.	Ontario Delivery agents include provincial and municipal government agencies.	Projects range from initial stages to completed.	Work to be complete varies from project to project from creation of material to completed.
Expansion of Natural Gas Utilities to Alberta Metis Settlements	Support the further development of natural gas infrastructure in the three Metis settlements that until now were without gas utility service.	Alberta	Construction of the Kikino and Buffalo Lake Metis Settlements was completed in the spring of 2000.	Completion of natural gas services to the rest of the Metis community.
Greening Communities Initiative	The main activity of the Greening Communities Initiative (GCI) is the delivery of a program which provides matched funding to local government and community partnerships for the development and implementation of projects that link strategies for GHG reductions and improvements in social and economic conditions.	British Columbia Project partners include Government of Canada, Federation of Canadian Municipalities, Union of British Columbia Municipalities, eleven local governments from across BC, two regional districts, two First Nations Bands, seven, community groups, eight post-secondary institutions/ capacity-building organizations.	In year 1 (2000/01), GCI provided funds to 32 community sustainability projects that addressed climate change issues. Projects include: - community energy plans - renewable energy plans - sustainability frameworks - land use planning - local outreach projects, conferences and workshops.	Formal and informal partnerships are being developed to support sustainability programs through the GCI and other complimentary programs at the local, provincial and federal levels.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Infrastructure Investment and Funding (GMEF/GMIF, etc.)	Green Municipal Enabling Fund (GMEF)- Five-year, $25 million fund that provides grants to support feasibility studies to increase municipal expertise and knowledge of leading-edge environmental technologies. Grants cover up to 50% of eligible costs. Green Municipal Investment Fund (GMIF) – $100 million revolving fund to provide loans to municipalities to finance the implementation of environmental infrastructure projects. Interest can be used to provide grants for a small number of highly innovative pilot projects.	Canada. Municipal governments financially support GMF projects and studies, while private-sector partners are involved in many of the approved projects and studies. In the fiscal year 2000-2001 the Funds leveraged $4,852,602 in additional municipal and private-sector funding. Federation of Canadian Municipalities (FCM) is ultimately responsible for managing the funds, however, the Government of Canada will represent one-third of the Funds' Peer Review Committee members, which will evaluate project proposals and one-third of the Funds' Council members, which will recommend proposals for approval by the FCM Board.	In 2000-2001 FY the total funding committed under both GMEF and GMIF was $2,597,729. This consisted of $1,567,729 in GMEF funding granted for feasibility studies and $1,030,000 in GMIF funding granted or loaned for project implementation $377,500 as pilot project grants and $652,500 as loans.	What work needs to be done on this measure / program? In 2001-2002 increased emphasis will be placed on promoting technological innovation in the water, energy, waste and transportation sectors.
Landfill Gas Management and Strategies	The BC government will update its landfill requirements, particularly the provisions related to landfill gas. The ministry will also provide technical assistance to local governments for the development of project proposals that can attract buyers of emission offsets.	British Columbia Environment Canada is providing support in the form of a technical paper on regulatory and market options.	Stakeholder workshop in March 2001 to identify options for updating the landfill criteria.	NB: All BC government programs are currently under review.
Landfill Methane Utilization	Clover Bar Landfill is recovered and used to produce electricity at EPCOR's nearby generating station.	Alberta Delivered by EPCOR/ City of Edmonton.	This information is presently unavailable.	Ongoing.
NRCan/ Federation of Canadian Municipalities (FCM) Municipal Building Retrofit Program	To assist the Federation of Canadian Municipalities to work with municipalities to remove identified barriers to comprehensive building retrofits, providing a linkage to the OEE Energy Innovator Program and other sector-specific programming.	Canada in partnership with the Federation of Canadian Municipalities. Delivered by Federation of Canadian Municipalities.		

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Work with Union of Nova Scotia Municipalities to Increase Participation in Climate Change	Support efforts of Nova Scotia members of Partners for Climate Protection (PCP) initiative of the Federation of Canadian Municipalities.	Nova Scotia	Staff assigned to Halifax Regional Municipality committees dealing with energy issues.	Expand range of staff participation with PCP partners.

Actions Under Consideration (Policy/Budget Approval Needed)

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Building Awareness with Municipalities	Awareness sessions with respect to municipal actions that could be conducted through an existing Training Partnership.	Newfoundland and Labrador	Approval to be given shortly.	Gain approval.
Capacity Building for Alberta Municipalities	Work with Alberta's municipal associations, municipalities, key provincial departments and the Federation of Canadian Municipalities to engage Alberta municipal leaders in developing municipalities capacities to reduce GHG emissions.	Alberta	Proposal being prepared for Ministerial consideration.	Seek Minister approval of strategy. Develop options for the design, organizing and staging of municipal climate change workshops within Alberta.
Energy Audits for Municipal Buildings	Develop the capacity to assist Alberta municipalities in reducing GHG emissions associated with their operations.	Alberta	N/A	Next step involves getting approval to proceed with the current or yet-to-be-developed municipal greenhouse gas reduction strategy proposal.
Residual / Waste Heat Systems	Organizations responsible for community planning, transportation and building services need to work together to develop and implement community energy plans. Where economically feasible, an important component of these plans will be residual heat recovery systems.	Nunavut and Nunavut Power Corporation.	Several communities have district heating systems installed.	Continue identifying suitable communities and install where feasible.
Statement of Provincial Interest	With municipal input, develop a statement of provincial interest to address urban design and transportation issues.	Nova Scotia	This information is presently unavailable.	Approval of Nova Scotia climate change strategy.

vii) Transportation

Transportation is a large and diverse sector accounting for approximately 25 percent of Canada's GHG emissions. The overall approach to GHG emissions resulting from transportation requires close policy coordination among federal, provincial and territorial governments and includes promoting behavioural changes, infrastructure modernization and adaptation, municipal-urban initiatives for efficient and integrated transport systems, and technology development (e.g., fuel-efficient vehicles, non- or low-carbon fuel systems). Cooperation between Canada and the United States is also required given the integrated North American vehicle production market and the goal of achieving harmonized new fuel efficiency standards by 2010.

Objectives and supporting actions

To encourage behavioural change through increased public awareness, promotion of changes in driving behaviour, reduced use of cars in urban areas, and the deployment of voluntary commercial best practices

Programs to raise public awareness and change behaviour are under way in a number of jurisdictions. Alberta is developing a Driver Education/Outreach and Awareness Program to address all aspects of vehicle ownership and operation related to energy efficiency. This campaign specifically targets the passenger, freight and off-road sectors. With support from the Government of Canada, British Columbia is using Clean Air Day as an opportunity to raise awareness and understanding of the contribution of transportation to climate change, as well as of the co-benefits of reducing emissions (improving local air quality and human health). Other public awareness programs that target the transportation sector can be found under Enhancing Awareness and Understanding (see Section 5, Broad Themes) in this report.

To increase use of more efficient and integrated transport systems to reduce congestion, improve traffic flow, encourage the efficient movement of goods and increase the use of public transit

Governments are looking at how transportation systems as a whole can be improved in partnership with municipalities and others. The Green Ribbon Committee Transportation Subcommittee in Saskatchewan is working with representatives of Crown corporations, developers, environmental groups and consultants to study transportation options to reduce GHG emissions in the City of Regina. The Government of Canada is testing and measuring the impacts of strategies to reduce GHG emissions from urban transportation under its Urban Transportation Strategies and Technologies Program that targets municipalities and transportation and land-use planning authorities across the country.

To promote increased fuel efficiency and use of less carbon-intensive fuels through improved vehicle technologies, fuel quality, and support for the production and distribution of alternative fuels

Considerable emphasis has been placed on developing new technologies and fuels. British Columbia is currently studying the economic viability of changing from diesel fuel to natural gas on one of its ferries. This would reduce emissions and fuel costs and extend the lifespan of engines. Blending ethanol with gasoline is a less carbon-intensive option, and Manitoba is encouraging the production of ethanol by offering tax relief for the use of ethanol produced and consumed in Manitoba. Developing new technologies is a key focus of many governments. The Government of Canada, as part of the Canada Transportation Fuel Cell Alliance, seeks to demonstrate and evaluate viable fuelling systems and develop the necessary framework for fuel-cell vehicles in Canada in partnership with provincial governments, municipalities, utilities and the private sector.

To improve the understanding of how climate change could affect Canada's transportation systems, particularly in the North and coastal regions, and on marine, and shipping on the Great Lakes and St. Lawrence

An effective transportation system is key to Canadian businesses and commerce. Research projects across the country are studying the effect of climate change on transportation systems. Activities under the Enhancing Awareness and Understanding theme facilitate the sharing and coordination of information while raising public awareness and understanding of climate change.

Actions Approved and Under Way

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Alternate Fuels	Determine the most effective manner in which alternative these fuels can play an increasingly positive environmental and economic role in Alberta.	Alberta	Ethanol study completed. Initiated a biodiesel study which is expected to be completed by 2002.	Conclusion of the biodiesel study. Depending on the results of the study – phase 2 of this project could involve a demonstration project using biodiesel in a fleet vehicle application.
Canadian Transportation Fuel Cell Alliance	The program has two main activities: two or more different fuelling system demonstrations for each of light duty fuel cell vehicles and medium duty/ heavy duty fuel cell vehicles (transit buses)across Canada, and the associated analyses of the systems; and the development of codes and standards, training and certification of personnel, and the development and testing of safety equipment and systems.	Canada. Partnerships are currently being finalized and are expected to include four provincial governments, provincial utilities, municipal transit authorities, and many private sector companies.	Working groups composed of interested parties will develop projects in each of these areas for evaluation by an independent evaluation committee that will make recommendations to a NRCan management committee. All projects will be cost shared by the interested parties.	A working meeting will be held in Winnipeg on Sept. 6 and 7, 2001 at which time the Committees and Working Groups will meet to develop their work plans and operating procedures, and, in the case of the Working Groups begin to develop specific projects.
Consultation on Options to Reduce GHG from Light Trucks and Passenger Vehicles	Development of a discussion paper on options to reduce GHG emissions from light duty motor vehicles in BC. Paper developed with consultations from the motor industry, environmental groups and other stakeholders.	British Columbia	Completed.	Completed.
Climate Change Fund – Encouraging Action in the Transportation Sector *(New Action)*	- Provide educational materials to encourage no idling. - Promote and enforce an anti-idling policy. - Promote the "wise use" of vehicles to reduce GHG emissions, retire high-polluting vehicles and encourage a shift towards cleaner transportation.	Ontario Delivery agents include provincial and municipal government agencies and non-governmental organizations.	Projects range from initial stages to completed.	Work to be complete varies from project to project from creation of material to completed.
Cycling Network Program	The Province invests approximately $2 million annually to aid the development of cycling infrastructure in BC communities. Projects eligible for Cycling Network Program grants are 50/50 cost-shared with local governments.	British Columbia in partnership with local governments. Delivered by BC Transportation Financing Authority.	The application list has grown from 39 communities in 1995/96 to 80 communities in 2001/02. Average increase of 244% indicated on those routes where program funds were utilized between 1995/96 and 1998/99.	Program is ongoing.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Drive Clean *(New Action)*	Drive Clean is one of the largest and most comprehensive vehicle emissions inspection and maintenance programs among the nearly 40 such programs in North America. The Drive Clean program area now includes about five million vehicles across much of the smog-prone areas of southern Ontario. Drive Clean is a leader because it is one of the few programs in North America using sophisticated test equipment, testing re-sale vehicles and heavy-duty trucks and buses, while also having an on-road enforcement component.It is also the premier program in Ontario for involving people directly in improving air quality because emissions reductions can only be achieved when polluting vehicles are identified and owners have them repaired or replaced. Well maintained vehicles produce less smog-related pollutants and CO_2.	Ontario Vehicles are tested at an accredited Drive Clean facility (e.g. auto repair centres).	Over 3 million light duty vehicles have been tested to date.	Expansion of the Drive Clean program to other areas of Ontario.
Driver Education / Outreach and Awareness Program (Federal / Provincial)	To cover all aspects of vehicle ownership and operating relating to energy efficiency. It would be directed at passenger, freight and off-road sectors.	Alberta	Secured funding for project. Initiated project design.	Program design needs to be completed. Secure candidates to take the training needed.
Ethanol Blend Tax Relief Program *(New Action)*	In Manitoba, 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, denatured and contain not more than 1% water. The tax relief applies only to gasoline containing alcohol that is produced and consumed in Manitoba.	Manitoba	This information is presently unavailable.	This information is presently unavailable.
Expand Transportation Road Weather Information System (RWIS)	Expanding the current system of Road Weather Information Systems (RWIS) will improve the awareness of current road conditions, leading to more efficient use of the maintenance fleet and a decrease in greenhouse gas emissions.	Prince Edward Island	Two additional RWIS sites have been installed in the fall of 2000, bringing the provincial total up to four sites. The province is participating in the development of a national RWIS strategy, which forecasts an expansion to a total of six RWIS sites on PEI.	Continue to expand the RWIS network.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Fleet Replacement and Maintenance	Promote fleet replacement and maintenance, and other operational issues.	Newfoundland and Labrador Delivered by Natural Resources Canada.	The program is ongoing and further development is expected.	The program is ongoing and further development is expected.

Future Fuels Program	The major component of Action Plan 2000's Future Fuels Program is the renewed National Biomass Ethanol Program (NBEP). The NBEP originated in 1995 as an Agriculture and Agri-food Canada (AAFC) program administered by the Farm Credit Corporation (FCC). In the renewed NBEP, the program has been expanded with an additional $140 million in contingent lending to ethanol manufacturers, sufficient to catalyse financing of from three to six new ethanol plants in three or more provinces. The renewed program can assist both conventional biomass ethanol production from grains, as well as new technologies for biomass ethanol from cellulosic feedstocks. The NBEP mitigates the risk of a change in the tax environment without in any way limiting the government's tax-making ability.
	
	In addition to the line of credit program, the initiative also provides $3 million for activities such as public education on fuel ethanol, analysis of fuel ethanol markets and producer economics, research on a possible renewable fuel standard, and liaison with provinces and industries interested in ethanol plant expansion.
		Canada. Farm Credit Cooperation administered applications and line of credit (LOC) agreements with producers for the previous National Biomass Ethanol Program and it has the necessary experience and regional presence to carry out the administration function.	- Completion of details of the new administrative agreement (MOU) between AAFC and Farm Credit Corporation.
			- Signing of new MOU by Minister of Agriculture and Agrifood Canada with FCC to authorise them to deliver the new program.
			- Development of program plan for year one (by joint Management Committee) covering public outreach, studies and industry and provincial liaison.
				- Program launch in the Summer/Fall of 2001.
				- Regular meetings between the joint Management Committee and FCC to review progress.
				- Annual review of the program (by joint Management Committee) - March each year
				  - New and/or expanded ethanol plants resulting in:
				  - 120 M litres per year by 2003
				  - 5 large plant applications approved by 2006
				- Reduced interprovincial trade barriers and development of a renewable fuel standard resulting with:
				  - Report to CEM, Fall 2001
				  - Report on Renewable Fuel Standard, 2003
				  - Assessment report on barriers to trade, 2004.

Green Corridors	Mitigate GHG emissions by establishing green corridors (alternative refueling infrastucture) along major transportation routes in Alberta.	Alberta in partnership with Canada. Delivered by Climate Change Central.	The Alberta eMission Banff project was announced in June 2001. This project will convert more than 60 vehicles (mainly large passenger vans and shuttle buses) to run on natural gas between Calgary and Banff. This program will utilize existing refueling infrastructure in Calgary and a new refueling station in Banff.	Securing funding and investigate logistics for an on-road heavy duty green corridor between Calgary and Edmonton and determine feasibility of establishing a green corridor between Edmonton and Jasper.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
High-Occupancy Vehicle (HOV) and 'Bus Only' Lanes	To help the Lower Mainland transportation system keep pace with population growth, while improving air quality.	British Columbia in partnership with TransLink and municipal governments. Delivered by Ministry of Transportation, BC Transportation Financing Authority, TransLink and municipal governments.	- HOV facilities on Barnet-Hastings and the Trans-Canada Highway Corridors - HOV lane conversion on Highway 99/17 - Completion of the Port Mann Bridge expansion to include an eastbound HOV lane - Highway 7 Bus only and vanpool lane westbound - Initiated Willingdon buslane project - Various queue-jump facilities for HOV, Bus-only and vanpool	Ongoing development of HOV and Transit Lane facilities.
Improved Transportation Infrastructure	The Green Ribbon Committee Transportation Subcommittee will review current transportation systems within the City of Regina, including traffic management and public transit; review other cities' traffic management systems and traffic policies; review current research on traffic management improvements and other transportation technologies; make recommendations best suited to the City of Regina.	Saskatchewan in partnership with representatives of Crown Corporations; developers; environmental groups; consultants. Delivered by City of Regina - Green Ribbon Committee.	The Transportation Subcommittee has begun review of current traffic systems in Regina and other cities.	Continue the review; ascertain what is applicable and practical for the City of Regina; make option recommendations to the Green Ribbon Committee of Regina City Council.
Increase Awareness of Transportation Options and Encourage Behavioural Change	A centre has been established to encourage transportation efficiency measures in Halifax Regional Municipality.	Nova Scotia in partnership with Canada. Delivered by the Ecology Action Centre.	Successful first Earth Car Free Day in Halifax; productive talks with students' unions on bus pass initiative; secured participation on key municipal committees working on transportation related issues. employer trip reduction pilot.	Continue to build on previous success; secure additional employer participation.
Increased Support for Passenger Rail	The program is funded by the Government of Canada and is national in scope, though over 85% of the activity is in the Quebec-Windsor Corridor. VIA will be investing $401.9M in capital improvements, of which $345M will help address environmental issues. The remainder is going for station upgrades and human waste retention systems. The $345M will be spent in the following manner: - $145M for 139 new passenger cars to expand the capacity of existing trains and to add new frequencies in the Quebec-Windsor Corridor;	Canada in partnership with Via Rail. Delivered by VIA Rail.	- VIA purchased 139 new passenger cars in December 2000. Shipment of the cars from Europe is expected to be completed during the summer of 2001. Modifications to meet Canadian standards will be done before the cars are placed in service. The first trainsets are expected to enter revenue service by the end of 2001.	By 2002/2003 it is expected that all track and signalling work will be completed on the Montreal-Ottawa, Montreal-Toronto and Toronto-Ottawa train lines. VIA expected to increase train frequencies by a minimum of 30% on these routes.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
	- $80M for 21 new locomotives which meet the current EPA standards for emissions (VIA will retire its oldest locomotives which are very fuel and emission inefficient); and - $120M in rail line upgrading with new signalling, additional passing tracks and upgraded rail lines to permit faster trains and better on-time performance through reductions in congestion.		- VIA purchased 21 new high speed locomotives from General Electric in February 2001. The locomotives will all be delivered by the end of 2001. - Track upgrading and signalling installation work is expected to begin between Ottawa and Coteau during 2001. - VIA will be extending its some of its Montreal-Toronto and Ottawa-Toronto trains to Kitchener and Hamilton in 2001. A Toronto-Windsor train will be extended to Oshawa. These trains will be scheduled to operate to/ from Toronto at commuter hours to help address the issues of congestion and smog. As well, VIA and GO Transit will complete an agreement in 2001 by which GO ticket and passholders will be able to travel on VIA trains between stations served by both corporations. This will increase the number of trains available to commuters.	
Infrastructure Canada Program	6 year $2.05B federal investment in municipal infrastructure across Canada. Matching contributions from provinces, territories, municipalities, and the private sector will make total program size over $6B. At least half of this figure – $3B – will go to Green Municipal infrastructure, which is primarily water and wastewater facilities.	Canada	Have announced 319 worth $225 million so far this year. Benefits should be provided in real-time from 2002 on.	
Intelligent Transportation System (ITS)	ITS measures such as: incident management, adaptive signal control systems and traveller information are facilitated through provincial funding.	Alberta in partnership with municipal governments.	Funds continue to be provided to Edmonton and Calgary on an ongoing basis through the provincial allocation of fuel tax revenue based on fuel sales. Edmonton and Calgary have utilized these funds to help carryout ITS advancements.	The Alberta Government plans to continue this tax revenue sharing agreement with Edmonton and Calgary, and both cities will carry out transit enhancements according to their civic ITS plans.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Low Emissions Transit Bus Pilot Project	Under this program, Alberta urban municipalities would have the opportunity to test market innovate, fuel efficiency bus technology.	Alberta in partnership with municipalities.	Completed planning and research for this project.	Secure remaining required funding through federal government program and private sector partners. Begin use and testing of filters on transit buses and measure results.
Motor Vehicle Fuel Efficiency Initiative	Launch negotiations with the automobile industry and the United States to achieve new vehicle fuel efficiency targets by 2010. The objective is to phase in a significant voluntary improvement in fuel efficiency across Canada and the United States, starting in 2004. This will be supported by a consumer education campaign to increase understanding of the importance of purchasing clean and efficient vehicles and of good driving habits and maintenance practices.	Canada	This information is presently unavailable.	This information is presently unavailable.
Public and Industry Outreach on Climate Change and Transportation *(New Action)*	Raise awareness at public events and other venues such as schools.	Manitoba	This information is presently unavailable.	This information is presently unavailable.
Public Education and Outreach – Clean Air Day	The province works with many partners (NGOs, local governments and other agencies) to raise awareness about climate change, its implications for BC and co-benefits of actions (e.g. local air quality & human health). Activities include participation in workplace Commuter Challenge, and other community-based public events (fairs, school activities, media).	British Columbia. Local coordinators have organized Clean Air Day events in communities across the province for the last 10 years. The Ministry of Water, Land and Air Protection coordinates several activities with local partners, as well as develops promotional products for use across the province.	This information is presently unavailable.	This information is presently unavailable.

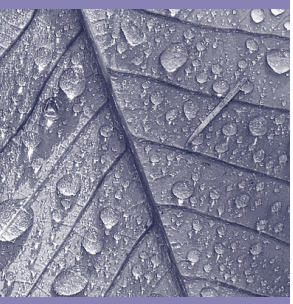
Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Public Education and Outreach – Transportation Awareness Program	The Ministry of Water, Land and Air Protection (MWLAP) will work with public and private sector partners to develop and deliver PEO initiatives addressing transportation and climate change.	British Columbia in partnership with public and private-sector transportation agencies, non-governmental organizations, and local governments.	Initiatives to date include: Clean Air Day Commuter Challenge participation in 8 communities across BC; support for Canadian Commuter Challenge database; extension of the Off Ramp high school trip reduction program; support for national Transportation Demand Management conference (coordinated by Better Environmentally Sound Transportation).	Development of Go Green Strategic plan. NB: All BC government programs are currently under review.
Regional Growth and Transportation Demand Management (TDM) Strategies	Provide support to local and regional governments in the main urban growth areas (Lower Mainland, Okanagan Valley) to help develop regional growth and transportation demand management strategies to reduce vehicle use.	British Columbia in partnership Regional and local governments. TDM: Translink in Greater Vancouver.	Regional Growth Strategies: four have been adopted, covering 60% of the British Columbia population; two are under way, covering14% of the population; three are in the preliminary discussion stage, covering 6 % of the population Regional Growth Policy Guidelines: general work on the policy guidelines program has been done.	Regional Growth Policy Guidelines: develop new policy guidelines. Climate Change Goal for Growth Strategies and Official Community Plans: develop and incorporate goal.
Selected ITS Measures (Encouraging Action – Transportation)	Advanced traffic management systems, advanced traveller information systems, emergency management services and commercial vehicle operations will be applied to congested areas.	British Columbia. Delivered by government of British Columbia and TransLink.	The ITS Strategic Plan's expected completion is Fall 2001.	Implementation and securing funding.
Short-line Railway Advisory Program	The program provides technical, marketing, and legal advice to groups interested in setting up short-line railways.	Saskatchewan in partnership with farm groups, rural communities and area transportation committees.	Short-line railways have increased from 50 km in 1996 to 1825 km in fiscal year 2000.	Providing advice to farm groups seeking to establish a wider federally regulated short-line rail system in partnership with CNR; providing advice and technical assistance to a client group seeking an 85 km short-line (CN Cudworth).
SkyTrain Expansion	Expanding rapid transit in the Lower Mainland.	British Columbia in partnership with TransLink.	Advanced state of construction, including testing and commissioning of Skytrain cars mk11.	Further construction and investigating other links.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Smart Growth – Transportation Initiatives *(New Action)*	Smart Growth is the government's long-term strategy for promoting and managing growth in ways that sustain a strong economy, build strong communities and promote a healthy environment. Smart Growth focuses on managing growth and development to ensure that the planning and building of vital infrastructure - such as roads and highways, public transit, and electricity, water and sewage treatment services - maximizes efficient use of existing infrastructure and is well co-ordinated locally and regionally. Smart Growth is a vision for all communities, large and small. In urban areas, Smart Growth initiatives will deal with the problems of rapid growth – like gridlock- while promoting economic growth and a health environment.	Ontario in partnership with all sectors and the public.	Initial stages.	Continued work on the program.
Transit Enhancement	Calgary and Edmonton have identified transit bus renewal and LRT expansion as investment areas in their respective transportation infrastructure investment plans. Funding for these actions has been secured through the new provincial allocation of fuel tax revenue to Edmonton and Calgary.	Alberta in partnership with municipalities.	Funds continue to be provided to Edmonton and Calgary on an ongoing basis through the provincial allocation of fuel tax revenue based on fuel sales. Edmonton and Calgary have utilized these funds to help carryout extensive advancement in the areas of transit bus renewal and LRT expansion.	The Alberta Government plans to continue this tax revenue sharing agreement with Edmonton and Calgary, and both cities will carry out transit enhancements according to their civic transportation plans.
Transportation – Financial and Legislative Support for Cycling	The Ministry of Transportation has adopted a Cycling Policy which looks to encourage cycling by providing cycling infrastructure on new and upgraded highways. The Province committed $5 million towards the Trans Canada Trail development. Legislation passed in June 2000 exempts motor assisted cycles from vehicle registration, licences, and insurance; supporting regulations are being prepared.	British Columbia (Transport Canada has published regulations regarding motor assisted cycles. British Columbia's regulations will be consistent with these regulations.)	The Ministry of Transportation's cycling policy has been adopted and published in a cycling guide booklet. The Trans Canada Trail is under development and several capital projects are under way or completed (about $1.5 million has been spent so far). The motor assisted cycle legislation has been passed and the supporting regulations are being prepared.	The motor assisted cycle regulations need to be enacted prior to them being permitted on British Columbia highways. Additional TransCanada Trail capital projects will be funded.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Trucking Partnership Program	The program provides an opportunity for companies to improve the efficiency of their hauling operations by allowing loads in excess of legal weight and/or length limits for the provincial highway system. The companies must meet specific operational requirements including the sharing of haul savings with the Department of Highways.	Saskatchewan in partnership with shipping and carrier companies.	Approximately 70 agreements are in place; in fiscal year 2000, 11 new agreements were signed; since April 2001, there have been an additional 6 agreements.	The Department anticipates an additional 6 agreements by the end of fiscal year 2001/02.
Urban Transportation Showcase Program	- This program primarily targets municipalities and transportation and land use planning authorities across Canada. - Through this program, Transport Canada will fund cities to demonstrate strategies to reduce GHG emissions from urban transportation. In the first year of the program, a two-stage national competition will be held to select at least four "showcases" for funding. - Implementation of showcases will begin in year 2 of the program with measurement and evaluation continuing until the program is scheduled to end (March 2006).	Canada	- Consulted with provinces and municipalities. - Established criteria for the showcases. - Minister of Transport launched the program in June 2001. - Guidebook for Stage 1 (Expression of Interest) released with October 31, 2001 deadlines for applications. - Information session have been scheduled in 8 locations across Canada to explain the program; Registration is available via TC website.	In the remainder of the FNBP period (i.e. until 2002/03), the program will: - select portfolio of showcases for funding; - initiate implementation of the showcases; - establish Information Network, moving progressively to more interactive conferences, seminars, showcase tours, etc.
Vehicle Scrappage Pilot Program	Under the program, Calgary citizens would receive an incentive of either a free 1-year transit pass or a $500 credit for a newer used or new car to retire their pre-1981 cars for scrappage. This program will serve as a public awareness tool regarding the environmental impact of older vehicles and determine the potential impact, costs and feasibility of a province-wide vehicle scrappage program.	Alberta in partnership with Climate Change Central, Clean Air Strategic Alliance, City of Calgary, Canadian Petroleum Products Institute.	The major accomplishment has been the commitment and coordination of required funding from program partners. Planning and organizing of this program is now under way and the program is expected to go public in February 2002.	This pilot program will be completed in 2003. It is expected that the target of 600 retired vehicles will be reached.

Actions Under Consideration (Policy/Budget Approval Needed)

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Fleet Maintenance and Management	An efficient management and dispatch system will be created through the utilization of Global Positioning System for Transportation (GPS-T) and Intelligent Transportation System (ITS).	Prince Edward Island	This information is presently unavailable.	The program is still under consideration.
Freight Efficiency & Technology Initiative	The Freight Initiative encompasses three components: i) Signing of Performance Agreements with the freight industry ii) A Technology and Best Practices Demonstration Program iii) An Awareness Program for carriers and shippers. 1) Performance Agreements 2) Demonstrations 3) Training and Awareness	Canada	Performance Agreements: Initial discussions with CTA and ATAC. Demontration Programs: Finalized design of program. Fleet Smart Program: Prepared driver training curriculum for forestry truckers.	Develop the Performance Agreement Framework with the freight industry associations by the year-end 2001, and the various elements of the awareness programs.
Integrated Transit Development and Planning	Integrate transit development and planning into community development and land use planning.	Newfoundland and Labrador	Under consideration; subject to approval.	Under consideration; subject to approval.
Intelligent Transportation System (ITS)	Pending cooperation from the City of Charlottetown and funding from Transportation Canada, a comprehensive plan of synchronized traffic signals will be implemented in this municipality.	Prince Edward Island	The Charlottetown Transportation Study, which is nearing completion (fall of 2001), will identify routes that would benefit most from synchronization of traffic signals. This information will provide direction for next steps.	This information is presently unavailable.
Long-Term Tax Policy for Alternative Fuels	Sales tax rebates for the purchase of new alternative fuel vehicles. Sales tax exemption for kits to convert conventional fuel vehicles to operate on propane. Motor fuel tax concessions for alternative motor fuels such as propane, natural gas and alcohol-based fuels.	British Columbia	Ongoing and more tax concessions may be considered. A general alternative motor fuel tax policy was implemented in 2000.	Considering further tax policy changes that will encourage the use of alternative motor fuels.
Natural Gas Hybrid Ferry (Encouraging Action – Transportation)	Displace diesel fuel with natural gas for the propulsion engines and generators on the vessel.	British Columbia in partnership with the British Columbia Utilities Corporation.	Completed design for dual fuel installation, called for proposal to convert engines, selected preferred proponent, and tested proponents equipment to ensure it would function as indicated.	Undertaking further economic analysis to consider the economic viability of the project. The recent increase in natural gas prices have made the economics of the conversion questionable.



2) Cross-sectoral Actions: Framework and Partnership Actions

Broad actions to address climate change are required by all Canadian sectors. The FNBP is designed to assist in these efforts by building partnerships among the federal, provincial and territorial governments and stakeholders.

In addition to identifying opportunities within specific sectors, federal, provincial and territorial governments have identified strategic opportunities to encourage action across a number of sectors, including communication and cooperation across sectors to stimulate greater recognition of opportunities to invest in cost-effective emissions reductions and offsets.

A number of existing partnerships encourage voluntary emissions reductions, such as the VCR Inc., ÉcoGESte, CIPEC, the GERT pilot and the Pilot Emission Reduction Trading system. Participation in these initiatives has been increasing.

The October 2000 Joint Meeting of Federal, Provincial and Territorial Ministers of Energy and Environment (JMM) directed officials to develop a detailed program design for cost-shared pilot projects that would buy emissions reductions in strategic areas. This pilot project is known as the Pilot Emission Removals, Reductions and Learnings (PERRL) initiative.

To help remove barriers to voluntary action, the Baseline Protection Initiative provides organizations and individuals with the assurance that eligible voluntary actions undertaken now will be credited for future climate change policy initiatives that require emissions reductions.

Under the Kyoto Protocol, three mechanisms – the clean development mechanism (CDM), joint implementation (JI) and international emissions trading – provide opportunities for industrialized countries to achieve domestic reductions and contribute to global reductions in a cost-effective manner. The CDM & JI Office has been established to strengthen Canada's capacity to take maximum advantage of these mechanisms.

Finally, multi-sectoral partnerships currently being developed include the Canadian Greenhouse Gas Verification Centre, Alberta's Climate Change Central and an initiative by railway companies in British Columbia and the State of Washington to expand passenger rail service between Vancouver and Seattle.

i) Enhanced Voluntary Action

Objective and supporting actions

To enhance frameworks encouraging voluntary commitments, action and results

There is considerable scope for enhanced voluntary action to make an important and cost-effective contribution to reducing, sequestering and offsetting Canada's emissions of GHGs.

Canada's voluntary climate change programs encourage mainly large organizations – corporations and governments – to commit to reducing either their energy consumption or their GHG emissions. Recent efforts have focused on getting smaller private sector companies and the general public to take voluntary actions as well.

The following section describes progress made relative to the objectives set out in the FNBP:

To enhance the engagement of the private sector in existing voluntary emissions reduction programs

Increasing numbers of organizations are voluntarily committing to reduce their emissions. For example, the VCR Inc. now has 773 organizations registered. Several of these organizations have strengthened their commitments through the Champions in Action Program, which requires more rigorous reporting of reductions.

To enhance the profile of voluntary emission initiatives

Governments at all levels continue to reduce their own emissions to set an example for the private sector and individuals. For example, municipal governments have been committing to reduction targets through the Partners for Climate Protection program.

To secure further GHG emissions reductions on a voluntary basis

Information and education is being enhanced to encourage smaller organizations and the general public to voluntarily make reductions. For example, the Climate Protection Solutions Web site provides advice on opportunities, highlights success stories, and provides tools and resources for individuals to take their own actions. At the Climate Partners Web site, individuals can calculate their own emissions, receive advice on how to reduce emissions and take advantage of an opportunity to buy offsets.

Actions Approved and Under Way

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Champions in Action within the Voluntary Challenge and Registry	The VCR Inc. Board of Directors has approved the next step in continuously improving the impact of voluntary activities on GHG emissions reductions through the creation of a level of participation and reporting beyond Champion-level reporting, called the Champions in Action (CIA) Initiative. The purpose of this initiative is to improve the impact of VCR Inc. registrant's activities on greenhouse gas (GHG) emission reductions and to provide Canadian organizations and governments with the ability to test the design and implementation of enhanced voluntary approaches that are intended to accelerate early action to reduce GHG emissions. Participating companies, associations, municipalities, governments and other responsible entities would enter into voluntary agreements with performance targets for Canadian entity-wide, 'net' GHG emission reductions, which may include the use of offsets. VCR Inc. would then review, approve, track and report over time, the achievement of these agreements.	VCR Inc.		Following intensive discussion over the summer months with members of a CIA Working Group, the following needs were identified from our overall assessment of the potential for the Initiative: Progress needs to be made in the development of a means to recognize early GHG reduction efforts. Governments, industry, and other organizations need to 'learn by doing' as it relates to the ability to reach voluntary agreements. VCR Inc. needs to define the next step in continuous improvement in coordinating efforts to reduce GHG in a way that links real, measurable and verifiable reductions to voluntary actions. In parallel with the advancement of international and domestic policy, it is important to have active experimentation and learning under way at an accelerated pace in order to ensure that future policy choices are made with the benefit of on-the-ground experience. It is critically important that Canadian organizations, potentially impacted by future international and domestic climate change policy, be advanced in their ability to successfully adapt their processes, activities, and business strategies accordingly.

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Continue to Support the Arctic Energy Alliance	Provide technical advice and assistance to energy consumers in all sectors to reduce their energy consumption.	Northwest Territories	This information is presently unavailable.	This information is presently unavailable.
Encourage Participation under the Voluntary Challenge and Registry Inc.	Encouraging action across sectors.	Northwest Territories	This information is presently unavailable.	This information is presently unavailable.
Climate Change Fund – Enhanced Voluntary Action *(New Action)*	Projects provide economic incentives and information to reduce GHG emissions.	Ontario Delivery agents include provincial and municipal government agencies and non-governmental organizations.	Projects range from initial stages to completed.	Work to be complete varies from project to project from creation of material to completed.
VCR Inc.	VCR Inc. was incorporated in 1997 as a stand-alone, not-for-profit organisation to strengthen the public-private partnership and to give the private sector more ownership of the program. VCR Inc. invites Canadian companies and organisations to develop action plans to limit their net greenhouse gas emissions and to file these, as a well as progress reports and achievements, on its public registry, posted on the Internet.	VCR Inc.	There are over 775 action plans registered with VCR Inc. The organization has promoted more stringent reporting by requesting that its registrants submit an Action Plan within the first six months of registering, and provide regular Progress Reports thereafter. VCR Inc. has also established the Champion Reporting System, introducing the Bronze, Silver and Gold levels of reporting. This is intended to bring more profile, structure and credibility to registered submissions, publicly recognising the depth of commitment and continued improvements in reporting actions to address climate change. To date, of the 775 action plans registered, 79 are Gold, 62 are Silver, and 32 are Bronze. As well, VCR Inc. has launched the Champions in Action (CIA) initiative with some of its private and public-sector partners. The CIA is aimed at moving beyond the present efforts.	

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Workshop on CDM Opportunities within Latin America	A two-day conference bringing together Latin American, Albertan and Canadian companies for CDM business opportunities. The first in a series to promote CDM/JI to Alberta businesses.	Alberta This information is presently unavailable.	70 Canadian and Latin American businesses and government officials were brought together to discuss CDM project opportunities. An MOU was signed between the federal government (DFAIT CDM&JI Office) and the Chilean government to cooperate on CDM projects between the countries.	To prepare a follow-up mission to Latin America for Fall 2001.
Workshops on JI/CDM	To promote the use of JI and CDM to Alberta businesses. Several conferences concentrating on JI/CDM opportunities will be held.	Alberta This information is presently unavailable.	A funding proposal has been submitted to CIDA for funding under the CIDA Climate Change Development Fund for a mission to China in Fall 2001.	Prepare for, and go on the mission to China to discuss CDM activities. Prepare a report from mission. Prepare a follow-up conference in Canada for spring 2002.

Actions Under Consideration (Policy/Budget Approval Needed)

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Support Reduction Initiatives from Enterprises	Support Small and Medium enterprises in GHG reductions.	Newfoundland and Labrador	This information is presently unavailable.	This information is presently unavailable.

ii) Baseline Protection Initiative

Objective and supporting actions

To remove policy barriers to voluntary GHG emissions reductions

On January 12, 2000, federal, provincial and territorial governments officially announced the Baseline Protection Initiative (BPI). Baseline protection is intended to remove disincentives to early emissions reduction. Through the 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 registered in the BPI can adjust their baseline emissions to reflect the early actions they have taken.

To be eligible, actions must have been implemented since January 1, 1990; emissions reduced or avoided must be directly attributable to specific, identifiable actions; and all reductions must be measurable and verifiable.

The program is administered by the Office of Energy Efficiency of Natural Resources Canada and the Bureau d'enregistrement des mesures volontaires sur les changements climatiques (ÉcoGESte), for Quebec. A Management and Coordination Board composed of federal, provincial and territorial government officials oversees the BPI.

Participation in the BPI is open to all Canadian citizens, organizations or other legal entities that emit GHGs in Canada.

As of March 1, 2001, Canadians can register their actions with Canada's Climate Change VCR Inc. at www.vcr-mvr.ca, or with ÉcoGESte at www.menv.gouv.qc.ca/air/changement/ecogeste.htm. There is no deadline for joining the BPI. A company can register at any time and withdraw from it without penalty.

Actions Approved and Under Way

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Baseline Protection Initiative	The BPI will offer entities the opportunity to track actions resulting in emission reductions. Information is registered with Canada's Climate Change Voluntary Challenge and Registry (VCR) Inc. and ÉcoGESte. VCR Inc. is a not-for-profit organization aimed at encouraging voluntary GHG emission reductions across all sectors of the Canadian economy. ÉcoGESte is a Quebec organization reporting to both the Quebec ministry of natural resources and to the ministry of the environment. It has a policy-making capacity and a registry with an aim similar to that of VCR Inc. In the event an emissions-restricting policy is introduced, such emission reductions, if eligible for baseline protection, will be removed from the entity's emissions baseline.	Canada, Alberta, British Columbia, Saskatchewan, Manitoba, Ontario, Québec, New Brunswick, Nova Scotia, Prince Edward Island, Newfoundland and Labrador, Nunavut, Northwest Territories, Yukon. The Office of Energy Efficiency (Natural Resources Canada) and ÉcoGESte are the designated BPI Program Managers; the BPI Management and Coordination Board is composed of 6 provincial members and 3 federal (Natural Resources Canada and Environment Canada) members, and is accountable to the NAICC-CC who reports to Energy and Environment Ministers on the overall BPI operations, activities and performance.		

iii) Encourage Trading of GHG Emissions Reductions

Objective and supporting actions

To encourage and support trading of voluntary GHG emissions reductions

Prior to any decision to use emissions trading as a major policy instrument to achieve reductions, Canada needs a better understanding of how a trading system would work in practice. Voluntary participation in pilot projects on emissions trading can provide important information while achieving actual reductions.

The October 2000 JMM demonstrates the priority attached to this action. It issued a directive to develop a detailed program design for cost-shared pilot projects that would buy emissions reductions in strategic areas, involving a national approach as well as bilateral agreements between individual governments.

A working group established by NAICC-CC in November 2000 has completed the initial proposal for design of the PERRL initiative. This pilot project involves the purchase by governments of real, verifiable emissions reductions in strategic areas, including landfill gas, renewable energy, biological sequestration, and carbon dioxide capture and storage. (Strategic areas also under consideration are energy efficiency, alternative energy projects and avoided emissions.) Participating governments and sellers would voluntarily enter into purchase agreements by the end of March 2004, for delivery of emissions reductions up to the end of December 2007.

The PERRL initiative has three goals:

- to assist and encourage action to achieve incremental GHG emissions reductions in identified strategic areas;
- to demonstrate and develop Canadian expertise in achieving net GHG emissions reductions in identified strategic areas; and
- to inform the analysis and development of future policy responses from the learnings gained.

Its framework and goals are designed to achieve two primary results:

- to engage governments, industry and other stakeholders in exploring issues related to GHG emissions removals and reductions, including the potential for reductions in strategic areas and the quantification, verification and tracking of reductions. (A series of consultative sessions with stakeholders has already been conducted by the PERRL Working Group in May and June 2001); and
- to contribute to ongoing analytical work and policy discussions on emissions trading.

NAICC-CC is currently considering the proposed design for the pilot; provinces and territories have been asked to indicate their intent to participate in PERRL through Memoranda of Understanding. The federal government would provide up to $15 million to the initiative if it goes forward.

The federal government and several provincial governments also support trading of GHG emissions reductions through participation in the GERT pilot and the Pilot Emission Reduction and Trading project. These two multi-stakeholder initiatives provide practical, project-based experience in emissions reduction trading; they also test and evaluate the technical, administrative and legal elements of a trading system.

Actions Approved and Under Way

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Climate Change Fund – Encouraging Trading on GHG Emission Reductions *(New Action)*	The project builds on the past successes of PERT, and ensures knowledge and expertise gained through PERT remains focused, in Ontario, and is expanded to the benefit of the Government of Ontario and industry.	Ontario in partnership with CACI.	Work has begun on the creation of a standard methods manual and a workshop to promote emission trading and the establishment of emission commitments.	Complete standard methods manual and proceed with workshops.

Actions Under Consideration (Policy/Budget Approval Needed)

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Trade Facilitation (Technology Transfer)	The program, called the Canadian Initiative for International Technology Transfer, will focus on the commercial and capacity building aspects of technology demonstration projects. It will support stakeholders to identify and develop projects which can then be funded by other programs such TEAM, CDM/JI.	Canada Experts from across the government will be participating in the review and approval of proposals.	The program design is nearly complete.	First call for proposals will be going out by the end of August. The website and virtual office design are just beginning. Targetting a full scale call for proposals in March 2002.

iv) Clean Development Mechanism and Joint Implementation

Objective and supporting actions

To assist in positioning Canadian companies to compete internationally

The CDM & JI Office, housed within Canada's Department of Foreign Affairs and International Trade, was established to enhance Canada's capacity to take advantage of flexibility mechanisms under the Kyoto Protocol to obtain emissions trading credits. Its activities include: acting as the focal point for review of potential projects, building awareness and enhancing understanding, and identifying opportunities for projects involving CDM and JI. Following the elaboration of international rules and guidelines, the office's focus will need to be on project-specific activities (project approval, matching projects with investors, securing host country approval, etc.) as well on developing domestic guidelines for CDM and JI.

Actions Approved and Under Way

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
CDM & JI Office	The Office will enhance its capacity to provide greater support to Canadian companies as the interest in the market mechanisms such as CDM, JI and project-based emissions trading increases. The Office will continue to act as the national focal point for the CDM, JI and AIJ, liaising with Canadian industry, other government Departments and initiatives, UNFCCC and other international organizations such as the Executive Board of the CDM, monitoring and verification bodies, and CDM and JI Offices of the other countries.	Canada, working with provinces/ territories, private companies, and non-governmental organizations.	Completed a study on financing options for CDM and JI projects; completed three studies on CDM and JI market opportunities; disseminated 6 market studies completed last year; 2 E7 (OPG) AIJ projects approved and submitted to the UNFCCC; conducted outreach programs in 7 central American countries; conducted training sessions for over 70 embassy staff; conducted two baseline studies for potential CDM projects; reviewed AIJ projects; participated in international workshops; organized industry roundtables in the Atlantic provinces; collaborated with CEIA in organization of a CDM workshop; and participated in the Americana trade show to reach out to Canadian and foreign companies.	The first step is to staff up in order to become more proactive and follow up on the numerous opportunities around the world. At the same time, we need to develop criteria to evaluate proposals for funding from our Office and to have a procedure in place to assess and approve the proposals we receive. We are preparing a detailed workplan for the 2001-02 fiscal year and the longer term strategy is being developed.
Support to Posts (Promotion Officers)	A pilot program will be established for five years with three Canadian Technology Promotion Officers (TPOs) being posted abroad in three key regions – Eastern Europe, Asia and Latin America. The TPOs will help develop new niche market opportunities will assist Canadian companies to market climate change technologies and expertise. They will provide early intelligence about new opportunities and will work to build awareness of Canadian capabilities in the targetted markets.	Canada	Budget has been negotiated between DFAIT and NRCan for three TPOs in Warsaw, New Delhi and Mexico and a MOU is being developed. Job descriptions have been drafted for the New Delhi and Warsaw positions.	Finalize the job descriptions for the three positions and run the competitions – late August or early September. Finalize the MOU between NRCan and DFAIT.

v) Facilitate Multi-sectoral Partnerships

Objective and supporting actions

To facilitate multi-sectoral partnerships to promote communication, best practices, cross-sectoral demonstration and pilot projects, and cross-sectoral investment

All jurisdictions are striving to build and maintain effective partnerships and to bring municipalities, businesses, institutions, individuals and non-governmental organizations on board to take action on climate change. Alberta has contributed $7.5 million to establish Climate Change Central, a private-public partnership designed to stimulate and coordinate activities to reduce GHG emissions by individuals, businesses, institutions and governments. The investment is intended to leverage more funding for a variety of projects.

Actions Approved and Under Way

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Establish and Operationalize Climate Change Central	Provide operational funding towards Climate Change Central.	Alberta	Completed. Provincial government has provided $6 million for operating expenses. Climate Change Central is now operational.	Climate Change Central is developing 6 main project areas.
Natural Gas	Natural Gas is being introduced in New Brunswick and will displace oil and coal. It is the intent to pursue natural gas access throughout the entire province through the development of lateral pipelines and the expansion of the distribution systems. New Brunswick will work with colleges and universities to look for research and development opportunities that will foster the penetration of natural gas. New Brunswick will also work with utilities to develop a fuel switching strategy, where feasible.	New Brunswick in partnership with Maritime Northeast Pipeline and Enbridge Gas New Brunswick.	The Maine pipeline has been installed as well as laterals to the cities of Fredericton, Moncton and Saint John. Natural Gas is now flowing in those three centres.	Further develop the markets in order to have this commodity available to more New Brunswickers.
Officials Development Assistance	The Canada Climate Change Development Fund (CCCDF)is an official development assistance program designed specifically to: contribute to the reduction in growth of greenhouse gas emissions in developing countries; contribute to carbon sequestration in sinks in developing countries; help or assist developing countries to reduce their vulnerability and adapt to the adverse effects of climate change; contribute to strengthening the capacity of developing countries to participate in global efforts to combat climate change.	Canada	N/A	N/A

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Solid Waste Management Strategy	Develop regulations and infrastructure for the efficient management of solid waste in Nova Scotia.	Nova Scotia in partnership with municipalities. Delivered by municipalities and the provincial government.	Achieved provincial goal of 50% diversion.	Continuation of program, next goal is to achieve 50% diversion in each region of the province.

Actions Under Consideration (Policy/Budget Approval Needed)

Action Name	General Description	Jurisdictions/ Partners	Progress to Date	Next Steps
Canadian Greenhouse Gas Verification Centre	There are 4 key roles being proposed for the Centre: 1) Serve as a central clearinghouse for collecting, maintaining, updating and sharing the latest documentation and tools required for the measurement and verification of GHG emission reduction projects and technologies; 2) Assist in developing methodologies; 3) Provide technical support services to domestic climate change initiatives and promote consistency in measurement and verification rules, processes and procedures used by domestic initiatives. 4) Facilitate the establishment of trained and accredited verification entities that would perform measurement, monitoring and verification.	Canada	A Design Phase Study was completed in the Spring 2001 to identify needs of potential clients, to conduct an analysis of existing international GHG verification activities and to address the development of the principle roles and activities for an operational framework of the proposed Centre. Hiring of the lead manager for the Verification Centre at EC GHG Division was completed. This person will also deliver on the CGERI outreach and clearinghouse functions of the Pollution Data Branch.	Development of Workplan/Business Plan; Consultations with private sector and provincial agencies; Review of linkages with existing CGERI (Canadian GHG Emissions Reporting Initiative).
Proposed Passenger Rail Service Expansion	Expansion of Amtrak passenger rail service between Vancouver BC and Seattle Washington to twice daily round trip service.	British Columbia BCTFA (BC Transportation Financing Authority), Amtrak, BNSF (Burlington Northern Santa-Fe Rail Corp.).	Negotiations on infrastructure requirements and project funding continue.	Agreement with the Government of Canada to use transportation infrastructure funding to fund non-highway alternatives.

3) Cross-cutting Actions

The FNBP identified a series of activities that are not, by their nature, unique to a particular sector or theme. These cross-cutting actions include biological carbon sequestration, geological carbon dioxide capture and storage, and renewable energy.

i) Biological Carbon Sequestration (Sinks)

Investment in carbon sinks offers considerable potential for Canada to offset its rising GHG emissions. A sink is a process or an activity that removes a GHG from the atmosphere. Carbon dioxide is removed through photosynthesis in plants and stored in forests, croplands, grasslands and wetlands. These biological sinks can be enhanced through improved management practices for forests and farms, such as the use of no-till seeding in agriculture.

Sinks are of strategic value to Canada nationally and internationally. To realize their potential, clear and favourable rules are required internationally, while at the national level, governments must develop a sound scientific underpinning coupled with actions that encourage investments in carbon sinks. Accordingly, Canada's Science Strategy on Biological Greenhouse Gas Sources and Sinks is directed toward achieving an integrated, strategic and long-term objective. The strategy provides tools for the verifiable measurement of carbon-stock changes as well as information on how to enhance carbon storage.

The FNBP concentrates on opportunities offered by the forestry and agriculture sectors both within and outside of Canada. The private sector is investing in the potential of sinks in agricultural soils and in developing workable frameworks to obtain emissions credits. Some provincial governments have also begun to encourage significant investment in sinks as part of their response to climate change (e.g., under the GERT pilot, Saskatchewan has sold forestry offsets to SaskPower).

ii) CO_2 Capture and Geological Storage

This process involves the capture, treatment, transportation and injection of carbon dioxide (CO_2) into a suitable geological medium. CO_2 is first captured from a suitable source, such as an off-gas stream at a petrochemical processing facility or a flue-gas stream from a coal-fired electricity generation facility. The CO_2-bearing gas stream is then treated as required (in terms of purity, pressure and temperature) for transportation and/or geological storage. The CO_2 is then transported to the storage site where it is injected into the geological medium. Where the geological medium is an oil reservoir, injection of CO_2 may have the additional benefit of enhancing oil production; injection of CO_2 into gas reservoirs and coal seams enhances additional methane extraction. With injection into saline aquifers, the CO_2 is only injected for storage purposes.

The use of CO_2 for enhanced oil and gas recovery offers environmental benefits (emissions reductions) and economic benefits (extended production for conventional oil and gas fields). CO_2 capture and geological storage can also eliminate emissions of other pollutants (e.g., particulates and NO_x). However, geological storage is not equally effective or efficient in all situations. It is most applicable to CO_2 produced in large volumes from stationary, single-point sources relatively near to suitable long-term storage sites. It therefore is most suited to CO_2 produced from electricity-generation facilities fired by fossil fuels (such as coal) in areas where large storage sites exist (particularly in Alberta and southern Saskatchewan).

iii) Renewable Energy

Renewable energy is defined as energy derived from renewable sources: wind, water, sun, earth, residues and biomass. It includes two specific features – energy from sources that cannot be depleted and self-generation by cycle. The following types of renewable energy sources are generally considered for generating electricity, heating or air-conditioning: hydroelectricity, wind energy, solar energy, geothermal energy and bioenergy. Liquid biofuels (such as ethanol and biodiesel) are also considered renewable sources since they can be derived from sustainable biomass sources.

The advantage of using renewable energy sources stems from the fact that they arise as part of a renewable carbon cycle and thus result in low carbon emissions. Fuel switching to renewable energy can make a significant contribution toward meeting climate change objectives. Large-scale production of power using wind, water, solar or biomass sources could partially offset fossil fuel–generated electrical power. Large-scale production of liquid fuels using biomass (such as ethanol) could replace some of the fossil fuels used in transportation.

Bioenergy products from agricultural and forestry biomass and waste products are also renewable energy sources. Biofuels include liquid fuels such as ethanol, methanol, biodiesel (vegetable oil methyl esters) and wood pyrolysis oil. Landfill gas can also be included in the 'bio' categories. From the feedstock production stage (forestry and agriculture sectors) to energy use (manufacturing, transportation and energy sectors), the advancing science of bioenergy provides many opportunities for various sectors.

Most of these renewable energy sources yield lower GHG emissions than gasoline and other fossil-based fuels on a life-cycle basis and are therefore an acceptable means of emissions reductions for many sectors. To capture a significant portion of the market, however, hurdles related to costs (relative to fossil fuels), lack of infrastructure and technical challenges must be overcome.

Appendix

Canada's GHG Emissions — Current and Projected (Emissions Outlook)

Total emissions of all GHGs in 1999 were 699 megatonnes (Mt) measured in units of CO_2 equivalent (CO_2 E), 15 percent above the 1990 level of 607 Mt, and 22 percent higher than Canada's Kyoto target of 571 Mt CO_2 equivalent. Although the overall rate of increase since 1990 shows emissions rising, the upward trend is slowing down. In 1995, GHG emissions grew by 2.6 percent while our economy grew by nearly 3.0 percent. In comparison, in 1999 our GHG emissions grew by just 1.4 percent while our economy grew by 4.5 percent. As well, new data on Canada's GHG emissions in 1999 demonstrate progress in reducing emissions in some areas of the economy but also identifies where more work needs to be done.

Factors affecting emission growth in recent years include increases in coal consumption for electricity and steam generation (24 percent emissions growth); growth in fossil fuel production, largely for export (26 percent emissions growth); and increases in Canadian transportation energy consumption (24 percent emissions growth). It is estimated that in 1999 more than 45 Mt of CO_2 equivalent released was attributable to the export of fossil fuels, with natural gas contributing twice the volume contributed by crude oil (30 Mt versus 16 Mt respectively).

The federal government expects that the measures contained in its Action Plan 2000 (an annex to the First National Business Plan) will reduce Canada's GHG emissions by up to 65 Mt, with additional reductions coming from provincial and territorial measures. Without these and further measures, GHG emissions in Canada are projected to be 770 Mt in 2010.

Higher emissions from fossil fuel production account for more than half of the projected increase to 2010. Emissions from transportation and electricity are the next largest contributors.

Further information on Canada's GHG emissions can be found at:
http://www.ec.gc.ca/pdb/ghg/ghg_docs_e.cfm

National
Climate
Change
Process