



ESTIMATES

Natural Resources Canada

Performance Report

For the period ending
March 31, 1999

Canada

Improved Reporting to Parliament Pilot Document

The Estimates of the Government of Canada are structured in several parts. Beginning with an overview of total government spending in Part I, the documents become increasingly more specific. Part II outlines spending according to departments, agencies and programs and contains the proposed wording of the conditions governing spending which Parliament will be asked to approve.

The *Report on Plans and Priorities* provides additional detail on each department and its programs primarily in terms of more strategically oriented planning and results information with a focus on outcomes.

The *Departmental Performance Report* provides a focus on results-based accountability by reporting on accomplishments achieved against the performance expectations and results commitments as set out in the spring *Report on Plans and Priorities*.

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Foreword

On April 24, 1997, the House of Commons passed a motion dividing on a pilot basis what was known as the annual *Part III of the Estimates* document for each department or agency into two documents, a *Report on Plans and Priorities* and a *Departmental Performance Report*.

This initiative is intended to fulfil the government's commitments to improve the expenditure management information provided to Parliament. This involves sharpening the focus on results, increasing the transparency of information and modernizing its preparation.

This year, the Fall Performance Package is comprised of 82 Departmental Performance Reports and the government's report *Managing for Results* - Volume 1 and 2.

This *Departmental Performance Report*, covering the period ending March 31, 1999, provides a focus on results-based accountability by reporting on accomplishments achieved against the performance expectations and results commitments as set out in the department's pilot *Report on Plans and Priorities* for 1998-99. The key result commitments for all departments and agencies are also included in Volume 2 of *Managing for Results*.

Results-based management emphasizes specifying expected program results, developing meaningful indicators to demonstrate performance, perfecting the capacity to generate information and reporting on achievements in a balanced manner. Accounting and managing for results involve sustained work across government.

The government continues to refine and develop both managing for and reporting of results. The refinement comes from acquired experience as users make their information needs more precisely known. The performance reports and their use will continue to be monitored to make sure that they respond to Parliament's ongoing and evolving needs.

As part of its ongoing efforts to streamline reporting requirements, the Treasury Board of Canada Secretariat has requested that Agriculture and Agri-Food Canada, Human Resources Development Canada, Indian and Northern Affairs Canada and Canadian Polar Commission, National Defence and Natural Resources Canada explore alternative reporting structures to this year's performance reports. It has, therefore, exempted these departments from having to follow the guidelines for the preparation of this report.

This report is accessible electronically from the Treasury Board Secretariat Internet site: <http://www.tbs-sct.gc.ca/tb/key.html>

Comments or questions can be directed to the TBS Internet site or to:

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Natural Resources Canada

Performance Report

**For the
Period ending
March 31, 1999**

Ralph Goodale
Minister of Natural Resources Canada

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I Minister's Message

I am pleased to present the 1998-99 Performance Report for Natural Resources Canada (NRCan).

As we approach the new millennium, Natural Resources Canada and the natural resources sector face significant challenges. International competition, environmental concerns and the shift to a knowledge-based economy are all issues that demand our attention. The keys to the future are leading-edge technology, cleaner, value-added resource development, cooperation at all levels, and expanding our markets.



Ralph Goodale
Minister of
Natural Resources Canada

A Vision for Canada's Natural Resources Sector

For the next century, Canada must become the world's "smartest" natural resources steward, developer, user and exporter: the most high-tech; the most environmentally friendly; the most socially responsible; the most competitive and productive.

At NRCan, we are dedicated to helping Canadians utilize their precious natural resources effectively and wisely, and to providing the information and support the sector requires. We also know that Canadians are demanding that we integrate economic, social and environmental goals. They deserve no less.

That's why sustainable resource development and advanced research and development are essential to our success at home and abroad.

The globalization of the natural resources sector provides us with opportunities. To take advantage of potential new markets, we have to be innovators and work smarter. A strong commitment to environmental responsibility and ground-breaking science and technology will give us an edge over other contenders.

This was clear during our November 1998 trade and investment mission to Argentina, Peru and Chile. Canadian companies found new business in Latin America and spread the word about Canadian ingenuity, particularly in developing technology to reduce environmental impacts. We opened a new Geomatics Trade Post in the Canadian Embassy in Buenos Aires. Now, world-class Canadian geomatics firms are promoting their technology and services to countries across South America.

At home, our efforts are also paying dividends. For example, an agreement between all levels of government has resulted in the funding of GeoConnections, a project that will build the Canadian geographic lane of the information highway. Soon, computerized geospatial information will help emergency workers pinpoint the location of highways, power lines, schools and municipal boundaries, improve 911 response systems and assist communities in decision making, investment and economic planning.

During this past year, World-unique NRCan technology to monitor forest fires was put into action, providing fire managers and community leaders with the right information to make million-dollar decisions on life-threatening situations. The Fire M3 (monitoring, mapping and modelling) project produces forest fire information from satellite data. NRCan also led the development and implementation of the nickel-cadmium household battery recycling program which involves over 3,400 domestic retailers and all provinces and territories. In addition, NRCan partnered with private sector organizations, the University of Regina, the Saskatchewan Energy and Mines department, and the Saskatchewan Research Council in establishing the Petroleum Technology Research Centre. The Centre will initiate and support research and development projects aimed at enhancing the production and recovery of Canadian petroleum resources.

Climate change remains a top priority for my department. An important part of addressing the climate change challenge to reduce greenhouse gas emissions to 6 percent below 1990 levels by the period 2008-2012 is the development of a national implementation strategy and new programs and initiatives to promote energy efficiency and alternative energy. One key initiative is the Climate Change Action Fund which comprises four components: initiating early action, foundation analysis, public outreach, and science and adaptation. The fund includes the Technology Early Action Measures initiative was established to accelerate the implementation of market-ready technologies that have the potential to reduce greenhouse gas emissions by 54 million tonnes per year.

This report outlines NRCan's progress in 1998-99. I am proud of our achievements. We will continue to build on our innovative services and programs. And we will remain dedicated to the smart, clean and efficient use of our natural resources so that our children and grandchildren will benefit tomorrow from the decisions of today.

II Departmental Overview

NRCan's Mission

Natural Resources Canada provides the knowledge and expertise for the sustainable development and use of Canada's natural resources and the global competitiveness of the resource and related sectors for the well-being of present and future generations.

(Additional information can be found on NRCan's website at <http://www.nrcan.gc.ca>).

A. Introduction

Approaches to Achieving Our Goals

Achieving NRCan's strategic goals is a long term process that will require a range of science and policy approaches and substantial human, capital and technological resources. To focus our efforts, we have adopted a range of short- and long-term objectives that detail the measurable outcomes that we plan to achieve over the next few years. Each of these objectives is aligned with a long-term strategic goal and performance indicators. In a number of instances, NRCan has established measurable, numerical targets. In other cases, a qualitative narrative provides the snapshot of our progress. In this report, both types of targets are provided showing progress made or areas requiring further work.

Sustainable Development

As the Government's sustainable development department for Canada's natural resources, NRCan has a unique role to play in bridging economic, social and environmental issues at the federal level. Canadians rely on natural resources for a high standard of living and quality of life and, at the same time, want to

ensure that these resources are used efficiently and that our natural environment is protected. The Government views the concept of natural resource development as an opportunity while recognizing that it must hold adverse impacts on the environment to a level that safeguards the functions of ecosystems that support life. NRCan's goals are based on the principle of sustainable development which recognizes that Canada will continue to use and develop its natural resources in a way that protects the health of the natural environment and landmass and ensures a legacy for the future. The Department will also continue to conduct scientific research in support of land use and natural resource development and to promote Canadian economic development through the exploitation of the resulting technology.

Good Governance

Canadians are concerned about the quality of the services they receive from their Government. As our society grows and changes, and as we continue to contain the cost of government, increased responsiveness and accountability remain priorities. Jurisdiction, sound policy development,

efficient program delivery, and the need to make the best possible use of limited resources all need to be taken into account. An adaptable workforce and commitment to improved service delivery will continue to be essential to the provision of high-quality government. NRCan recognizes that good governance is the guiding principle for furthering the public good in such areas as protecting public health, safety and security, fiscal responsibility, strengthening the federation, and providing public services that are responsive to the needs of citizens.

Partnerships

The Department contributes to sustainable development and good governance using innovative ways to deliver departmental programs, through partnerships and in collaboration with other federal/provincial/

territorial government departments and with industry and stakeholders. These partnership arrangements have produced good results in cost sharing, cost recovery and the transfer of new technology. They also represent an effective and efficient alternative model for the delivery of science and technology programs that support Canada's progress toward sustainable development. For example, collaboration is essential in developing a knowledge infrastructure that will provide Canadians with the tools to participate in the new knowledge-based economy. By maintaining and, in some areas, enhancing a positive federal presence, NRCan and its partners are able to work together more effectively in achieving objectives in an era of resource constraints. A listing of the Department's co-delivery partners and areas of cooperation is included on the following page.

| Key Co-delivery Partners ¹ | Areas of Cooperation |
|--|--|
| <p><u>Other Government Departments/Agencies</u></p> <ul style="list-style-type: none"> • Agriculture and Agri-Food Canada • Canadian International Development Agency • Department of Finance • Department of Fisheries and Oceans • Department of Foreign Affairs and International Trade • Environment Canada • Health Canada • Human Resources Development Canada • Indian and Northern Affairs Canada • Industry Canada • Justice Canada • National Defence • Revenue Canada <p><u>External</u></p> <ul style="list-style-type: none"> • Aboriginal Organizations • Academia • Industry • Non-government Organizations • Provincial/Territorial/Municipal Governments • United Nations Agencies <p><u>Minister's Portfolio</u></p> <ul style="list-style-type: none"> • Atomic Energy Canada Limited • Atomic Energy Control Board • Canadian Wheat Board² • Cape Breton Development Corporation • National Energy Board • Newfoundland and Nova Scotia Offshore Petroleum boards | <p><u>Goal 1:</u> To enable Canadians to make balanced decisions regarding natural resources.</p> <ul style="list-style-type: none"> • sharing of knowledge • national and international cooperation and consensus building • technology transfer • long-term research • development and implementation of policies, Acts and fiscal, regulatory and voluntary approaches <p><u>Goal 2:</u> To sustain the economic and social benefits derived from natural resources for present and future generations.</p> <ul style="list-style-type: none"> • generating economic and social benefits and investments • developing non-government centres of excellence • expanding access to international markets • increasing Aboriginal and northern community capacity <p><u>Goal 3:</u> To manage the environmental impacts of natural resource development and use.</p> <ul style="list-style-type: none"> • climate change strategies and projects • technologies and stewardship practices • energy efficiency and effectiveness • safeguarding the environment <p><u>Goal 4:</u> To contribute to the safety and security of Canadians.</p> <ul style="list-style-type: none"> • safeguarding Canadians from natural hazards • spatial positioning, mapping and boundary maintenance • safe use of explosives and pyrotechnics • regulatory framework for energy transmission, offshore development and the Canadian uranium and nuclear industry |

1. See page 67 for a list of organizations that have been recognized by NRCan for their efforts.
2. The Canadian Wheat Board is part of the Minister's portfolio but is not a co-delivery partner.

B. Chart of Key Results

This Chart of Key Results consists of goals and objectives representing the basis for the Department's draft Performance Measurement Framework. Programs and initiatives under these goals can be found in Section III, starting on page 8 of this report.

| To provide Canadians with: | As demonstrated by: | Achievements reported in: ¹ |
|---|--|--|
| <p>1) Information to make balanced decisions regarding natural resources.</p> | <ul style="list-style-type: none"> • Easily accessible and integrated knowledge on the state of Canada's landmass and natural resources, and the economic, environmental, and social dimensions of their use. • Greater national and international cooperation and consensus on sustainable development issues, policies, goals and actions. • Fiscal, regulatory and voluntary approaches that encourage the sustainable development of natural resources. | <p>Pages 9-14 in this report</p> <p><i>NRCan Sustainable Development Strategy, 1998</i></p> <p><i>The State of Energy Efficiency in Canada 1998</i></p> <p><i>The State of Canada's Forests, 1997-98</i></p> |
| <p>2) Sustainable economic and social benefits derived from natural resources for present and future generations.</p> | <ul style="list-style-type: none"> • Greater economic opportunities and encouraging investment in innovative and higher value uses of natural resources. • Expanded access to international markets for Canadian resource-based products, knowledge, technologies and services. • Increased capacity of Aboriginal, rural and northern communities to generate sustainable economic activity based on natural resources. | <p>Pages 15-22 in this report</p> |

1. This column represents a selection of Parliamentary reports and documents. Other departmental reports and sources of information are available at www.nrcan.gc.ca

| To provide Canadians with: | As demonstrated by: | Achievements reported in: ¹ |
|--|---|---|
| 3) Strategies to manage the environmental impacts of natural resource development and use. | <ul style="list-style-type: none"> • Canada addressing its international Kyoto commitment to reduce greenhouse gases. • Scientific research, technologies and stewardship practices that reduce environmental impacts, conserve biodiversity, and increase the efficiency of natural resource development and use. • Canada's environment safeguarded from the risks associated with natural resource development and use. | <p>Pages 23-29 in this report</p> <p><i>The State of Energy Efficiency in Canada 1998</i></p> |
| 4) Safety and security in the natural resource sector. | <ul style="list-style-type: none"> • Canadians safeguarded from natural hazards. • A national framework for spatial positioning, mapping and boundary maintenance. • Safe use of explosives and pyrotechnics. • Regulatory frameworks in place for energy transmission, offshore development and Canada's uranium and nuclear industry. | <p>Pages 30-33 in this report</p> |
| 5) A department that is efficiently and effectively managed. | <ul style="list-style-type: none"> • Responsible use of approved resources. • Continuous improvement of NRCan products, services and operations. • Increased use of leading-edge environmental management tools and practices for NRCan operations. • Increased waste reduction from NRCan operations. • Increased efficiency of energy and other resource use in NRCan operations. • Increased use of goods and services that are eco-efficient. | <p>Pages 34-37 in this report</p> <p><i>NRCan Sustainable Development Strategy, 1998</i></p> |

1. This column represents a selection of Parliamentary reports and documents. Other departmental reports and sources of information are available at www.nrcan.gc.ca

III Departmental Performance

Introduction

This section summarizes the Department's achievements by five goals and supporting objectives which are based on the themes of sustainable development and good governance. This new reporting framework reflects a significant change from the Department's previous business lines¹. Starting this year, NRCan will expand and report on one draft performance indicator for each goal (pages 49 to 53) to help readers assess the Department's progress in achieving its goals. In this regard, NRCan will continue to improve its indicators and report progress in subsequent documents. This overall reporting structure also forms the foundation for other reports such as NRCan's Report on Plans and Priorities², Sustainable Development Strategy³, and S&T Management Framework⁴ and the department's internal management practices.

**Goals –
impact statements of what NRCan expects to achieve for Canadians over the long term.**

**Results –
statements of what NRCan expects to achieve for Canadians in the short- and medium- term.**

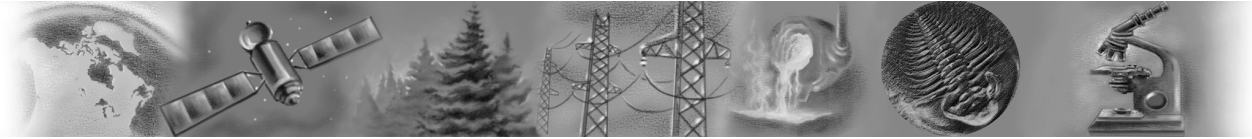
As one of the five pilot departments for this year's Departmental Performance Report, NRCan has opted to present its achievements in the form of an integrated policy-science "storyline". This storyline approach reflects the horizontal management of the Department, presents examples of high-level accomplishments that support its five goals, and integrates information from key reviews and legislative initiatives. Information about achievements not appearing in this report can be found on NRCan's main web site⁵ and other web sites shown on pages 70 and 71.

NRCan's achievements were delivered in collaboration with other federal departments, provincial and territorial governments, industry, academia and key stakeholders. A list of these key co-delivery partners can be found on page five. Throughout this section, associated costs have been incorporated, where available.

**Performance Measurement Framework –
used to help measure NRCan's progress in achieving its goals and objectives.**

1. S&T, knowledge infrastructure, developing federal policy and regulations, promoting Canada's international interests, and corporate management and administration
2. www.nrcan.gc.ca/css/fmb/nrcane.htm
3. www.nrcan.gc.ca/dmo/susdev/eng/contents.html
4. www.nrcan.gc.ca/dmo/spcb/stfm_e.html
5. www.nrcan.gc.ca

Goal 1



To enable Canadians to make balanced decisions regarding natural resources

Operating Environment and Importance

Sustainable development is about balanced decision-making that takes into account the views of all levels of government, non-government organizations, industry, and local communities. The Department's contribution to this very challenging dynamic is its on-going pursuit of knowledge through its world-class scientific research and policy initiatives along with a strong commitment to excellence and information sharing. Our goal is to help Canadians achieve a better understanding of the evolving and complex nature of the economic, environmental and social factors affecting Canada's natural resources development and use and to integrate these in a form which permits balanced decision-making. NRCan is strongly committed to the development and expansion of its science, technology and policy knowledge base, integrating and re-shaping (where deemed appropriate) its information holdings, and giving Canadians a way of accessing these holdings in a user-friendly manner.

As Canada's premier agency in leading-edge natural resources research, advancements in technology are enabling the Department to pursue different delivery mechanisms in getting its information out. NRCan views technology, and in particular, the development and use of the information highway, as an opportunity to pursue public education and outreach programs, and advance the Departmental roles of: shaping Canada's national and international natural resources agenda; generating and transferring knowledge; building consensus; and promoting fiscal, regulatory and voluntary approaches that encourage sustainable development and use.

Goal 1 (continued)

1.1 Easily Accessible and Integrated Knowledge

***Result Sought** – creating easily accessible and integrated knowledge on the state of Canada’s landmass and natural resources, and the economic, environmental, and social dimensions of their use*

The Department has made steady progress in integrating its information holdings under its “Knowledge Initiative” which consists of:

- GeoConnections, a national partnership being implemented (\$60 million over five years, funded in the 1999 Budget), will provide the geographical information for services critical to Canadians, including 911 response, disaster relief, and natural resource management; more than six million geo-referenced points across Canada have now been extracted from NRCan’s National Topographical Data Base to serve as a reliable base for geospatial information;
- *ResSources*, which provides stakeholders with the tools to access, analyse, visualize and manage the Department’s knowledge assets in support of informed decision-making for the natural resources sector (<http://www.nrcan.gc.ca/ressources>); and,
- the Climate Change Information Project which resulted in vastly improved climate change web sites to help Canadians both understand and respond to climate change.



GeoConnections integrates information from many sources to help Canadians make decisions on land use, transportation routes and resource exploration.

(Photo: Vancouver satellite image, courtesy of Pacific Geomatics Ltd., Surrey, B.C.)

While these core projects are at various stages of development, these initiatives will give Canadians access to world-class information on Canada’s landmass and natural resources as well as provide data on economic, social and environmental national priorities (see page 49 for a profile on public awareness of natural resources sector issues and S&T).

In addition, during 1998-99, NRCan developed and refined a wide variety of other systems, web sites, databases, and decision support models including, for example:

- the further development of SoftAccess, a computer-based system providing clients worldwide with easy access to a comprehensive database on minerals and mining statistics; this initiative was awarded the Government in Technology Week Award for enhancing government operations;

Goal 1 (continued)

- the continued development of the Canadian Geoscience Knowledge Network now available in libraries, map databases and virtual classrooms (<http://rgsc.nrcan.gc.ca>);
- the National Energy Use Database which allows Canadians to understand where and how energy is consumed in Canada and to evaluate the effectiveness of Canadian energy efficiency programs;
- the Canadian Spatial Reference System which serves as the national standard for Canadian geospatial information in support of mapping, boundary demarcation, transportation, national defense and public safety;
- the real-time Global Positioning System Correction GPS•C Service which facilitates more precise positioning with the satellite-based GPS, and provides the consistency to develop a national standard in support of safer air, sea and land transportation.
- a Business Climate (Mining) web site providing comprehensive information on all aspects of Canada's attractiveness as a mineral investment target (<http://mmsd1.mms.nrcan.gc.ca/business>); and,
- a satellite-based national forest monitoring system for investigating carbon budget levels from man-made sources in the northern boreal forest.



The Canadian Coast Guard using GPS•C

The Department also published, and provided public access to, a number of major resource-specific reports such as:

- NRCan's first annual report on the *State of Energy Efficiency in Canada 1998* (http://oee.nrcan.gc.ca/seec/exec_summ.htm); the report confirms that energy efficiency improvements have helped Canada limit growth in its carbon dioxide emissions; for example, in addition to saving Canadians about \$4.4 billion per year in energy costs, these improvements reduced carbon dioxide emissions by 4.1 percent; and
- *The State of Canada's Forests, 1997-98* report, (<http://www.nrcan.gc.ca/cfs/proj/ppiab/sof/common/latest.shtml>) which revolves around the theme "the people's forests" provides insightful information about how Canadians are demonstrating their resolve to manage forests for the benefit of all people.

Goal 1 (continued)



NRCan's New Map of Canada showing Nunavut

The Canadian mining industry requires up-to-date data to attract international investors. In this context, NRCan worked with Statistics Canada and through extensive consultations with stakeholders, developed methods to measure the statistical importance of Canada's emerging diamond industry.

1.2 Cooperation and Consensus are Key to Sustainable Development

Result Sought – promoting greater national and international cooperation and consensus on sustainable development issues, policies, goals and actions

Achieving a broad level of cooperation and consensus among stakeholders on the future of the natural resources sector is key in mobilizing an effective national response to challenges. Partnering and involving clients and stakeholders in the decision-making process is the approach the Department has used to protect existing resource-based benefits and to build new opportunities in the knowledge-based economy.

For example, NRCan continues to co-manage the federal process to develop a national implementation strategy to address climate change. This is carried out with Environment Canada, the Department of Foreign Affairs and International Trade (DFAIT), the Climate Change Secretariat and other federal and provincial partners. Stakeholders have been consulted and the strategy will be presented to Ministers in early 2000. Climate Change Action Fund (\$150 million over the period 1998-2001) accomplishments are reported in Goal 3.

The Department realizes that the development of suitable new technologies must be part of the global strategy for dealing with climate change. Therefore, in collaboration with its partners, it led the Committee on Energy Research and Technology of the International Energy Agency (IEA) in the preparation of a paper on greenhouse gas mitigation technologies. The paper identifies the potential contribution that technology can make in reducing greenhouse gases and was used as a basis for discussions at the recent IEA meeting of energy ministers.

Through a variety of means, NRCan globally promotes and influences the responsible development and use of natural resources. These include the transfer and dissemination of technology under the terms of bilateral and multilateral agreements, as well as cooperation and dialogue on policy matters through trade and investment missions and multinational bodies such as: the Asia-Pacific Economic Cooperation and Hemispheric Energy Initiative working groups; a Latin America Trade Mission; the United Nations (U.N.) Commission on Sustainable Development and other U.N. working groups.

Goal 1 (continued)

Other important efforts that positioned Canada as a leader in sustainable development, that communicated knowledge and expertise, and that helped build alliances and consensus on common natural resource issues, included the National Energy Efficiency Conference and Trade Show, and workshops on the Safe Use Principle which reinforces the principles of Canada's Minerals and Metals Policy.

Consensus on sustainable forest management was reached with the unveiling of a new five-year National Forest Strategy (1998-2003) (http://www.nrcan.gc.ca/cfs/nfs/strateg/control_e.html). The new strategy established the vision, strategic direction, and action items in pursuing sustainable forest development both domestically and abroad. Implementation of the strategy's commitments was confirmed by the signing of the Canada Forest Accord by 42 government and non-government organizations and by hundreds of Canadians.

Groundwater and its effective management is essential to the well-being and health of Canadians. New geological methods for evaluating groundwater resources were established in the Greater Toronto Area. These methods can also serve other Canadian areas (i.e., Quebec and the Prairies) in addressing issues of soil and water sustainability and management.

1.3 Fiscal, Regulatory and Voluntary Approaches

Result Sought – developing and promoting fiscal, regulatory and voluntary approaches that encourage the sustainable development of natural resources

For Canadians to play a meaningful role in sustainable development decisions, NRCan has a responsibility to provide the best possible fiscal and regulatory information.

To this end, NRCan is working to ensure Canada remains attractive to investors and gets the maximum possible economic and social benefits from its natural resource endowment consistent with sustainable development. In this connection, investors are continually kept informed of Canadian approaches to sustainable development and the advantages of investing in Canada. In 1998-99, NRCan undertook 15 mining investment seminars to targeted audiences in major financial centres.

One fundamental goal is to ensure that effects on Canada's mineral investment climate are taken into account when developing regulatory and other approaches to the implementation of sustainable development principles.

Goal 1 (continued)

For example, while mining regulations are primarily intended to achieve environmental and other goals, they also need to be designed with the needs of the investor and other stakeholders in mind. In this regard, NRCan developed an Internet-based virtual workshop approach to engage stakeholders in a nationwide review of regulations affecting mining, and completed a federally-coordinated review of federal environmental regulations.

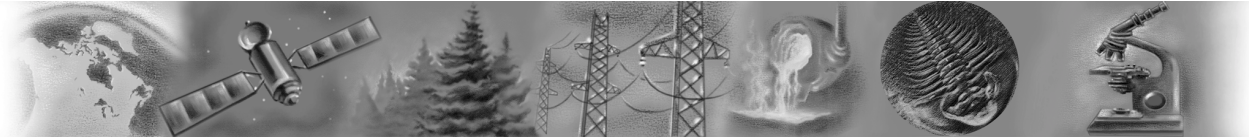
In a similar vein, NRCan and key regulatory departments coordinated the implementation of the federal government's commitments for regulatory improvements with respect to the mining industry. This was in response to a Report of the House of Commons Standing Committee on Natural Resources and Government Operations. More than 90 percent of these commitments have been or are in the process of being implemented.

In an effort to pursue non-regulatory approaches to sustainable development, the Department and its partners completed an Internet inventory of mining industry practices to conserve wildlife and habitat. This is being used to illustrate biodiversity protection practices and promote more effective biodiversity stewardship to stakeholders.

Canada's Model Forest Program (<http://mf.ncr.forestry.ca>) continues to show progress towards meeting its objective of demonstrating how partners can collaborate to find approaches to sustainable forest management. Partners involved in each of Canada's 11 model forests, and organizations outside of the program, are voluntarily adopting innovative approaches to sustainable forest management including, for example, the use of alternative harvesting practices.

Voluntary initiatives are also an important tool in NRCan's strategy to promote greenhouse gas reduction. As a strong supporter of the Voluntary Challenge and Registry (VCR), the Department continued to encourage private and public sector organizations to limit their net greenhouse gas emissions on a voluntary basis. To date, more than 900 participants have registered with the VCR, of which more than 540 participants now have action plans in place and 180 have already submitted progress reports.

Goal 2



To sustain the economic and social benefits derived from natural resources for present and future generations

Operating Environment and Importance

The natural resource sector is a cornerstone of our economy - integral to job creation and community development. Over 650 rural, remote and Aboriginal communities are home to more than 3.5 million Canadians that rely on the energy, forests and minerals and metals industries for their economic well-being. Direct and indirect employment accounts for almost 1.5 million jobs, thus providing the major source of economic opportunity.

A world-wide emergence of socio-economic trends and issues such as: changing producer and consumer behaviour patterns through advancements in technology and “green consumerism”; the expansion of freer trading zones in North America and Europe; the emergence of lower-cost competitors in Canada’s traditional export markets; and, increasing public involvement in natural resources decision-making, are creating new opportunities as well as challenges.

In response to these issues, NRCan, in collaboration with clients and stakeholders, is focusing on three primary challenges. It is working to demonstrate that Canada’s natural resources are being managed responsibly so that Canada can enhance its trading position and maintain its national and international reputation as a world leader in sustainable development; it is working to enhance industry competitiveness in a global economy through market diversification and in the development of innovative products; and it is providing support to rural and Aboriginal communities in the form of programs and targeted projects designed to enhance their economic and social well-being.

2.1 Economic and Social Benefits

Result Sought – creating economic opportunities and encouraging investment in innovative and higher-value uses of natural resources

Adopting and Developing Innovative Technologies and Products

The Department recognizes that, to protect and increase Canada’s market share in the new global economy, natural resource industries must be supported with leading edge science and technology (S&T) and policy knowledge. To this end, NRCan

Goal 2 (continued)

worked in partnership with the natural resource industry on ways of improving their operational efficiencies and in developing new and innovative technologies and products.

For example, NRCan worked with the mining industry to develop better technologies for the extraction of ore from mines with narrow-vein ore bodies. The resulting equipment had a direct positive impact on worker health, safety and productivity. One technology, the tele-operated water cannon, has been 100 percent efficient at recovering all ore hang-ups from vertical mine excavations, increasing annual mine production by 10-15 percent.

Furthermore, with its involvement in the development of the CANDRILL water-powered rock drill, NRCan played an important role in bringing foreign technology to Canada, leading to significant benefits to the Canadian mining industry and contributing to the creation of jobs. Testing of this prototype technology, which is to be manufactured in Canada, indicates that the drill improves working conditions while producing a two-fold increase in productivity due to greater penetration rates and higher energy efficiency.



CANDRILL Water-powered rock drill
Val-d'Or, Québec



Propane-powered Mobile Foundry Laboratory

In addition, the Mobile Foundry Laboratory, designed to encourage greater use of technology to maintain or improve foundry productivity and competitiveness, brought S&T directly to 45 foundries across Canada. For a limited sample of seven foundries, the average payback to these firms was 1.7 years. An evaluation study revealed that, in areas such as energy efficiency, incremental benefits justified the total cost of the program (NRCan - \$1.7 million for three years).

Tax Treatment / Investment Climate Initiatives

As tax treatment is a key component of our investment climate, NRCan is leading a government-industry study group in evaluating the recommendations of the Mintz Technical Committee on Business Taxation as they relate to mining. The analysis, to date, has been provided to the Department of Finance to assist in its overall evaluation of the Mintz report and will also be brought forward for discussion by provincial/ territorial mines ministers.

Goal 2 (continued)

The Department also worked to ensure that improvements to Canada's mineral investment climate are reflected where it counts, i.e. in decisions by investors worldwide, by strategic activities aimed at publicizing the economic and financial benefits of investing in Canada. In this regard, NRCan, with provincial and industry support, organized investment seminars highlighting Canada's geological and mining potential, and mining-related expertise in select locations – such as Tokyo, Miami and London.

In a similar vein, the Department continued to encourage a positive framework of fiscal and economic policies to foster the sustainable production of Canada's bitumen from oil sands. In this context, NRCan provided advice to Revenue Canada on the implementation of new depreciation rules to encourage investment in this important area.

Market Expansion Projects and Initiatives

NRCan also developed and evaluated innovative ideas for breakthrough technologies to reduce greenhouse gas emissions and the cost of producing synthetic crude oil. Through its Froth Treatment Pilot Facility, NRCan demonstrated the long-term viability of a new, high-efficiency process for the sustainability of the oil sands industry.

The Department further developed the renewable energy market to help create a self-sustaining industry. NRCan's Renewable Energy Deployment Initiative has generated significant interest in renewable energy systems resulting in industry investments of \$1.5 million for 1998-99. For example, the Canadian Coast Guard installed a solar air heating system in one of its buildings and several other departments have expressed an interest in this initiative.

Similarly, the Department's Energy Innovators Initiative, which assists participants in implementing comprehensive energy efficiency retrofit projects, has registered more than 490 commercial, institutional and municipal participants as energy innovators. These retrofit projects, which represent 100 million square metres of floor space and energy bills of \$1.6 billion, can also be replicated elsewhere. In total, more than 183 projects are underway. In addition, the Energy Innovators Plus Initiative, which was launched in 1998, has attracted so much interest that most of the \$3 million budget over three years has already been allocated.

Furthermore, the Department's Canadian Industry Program for Energy Conservation (CIPEC) has helped industry associations achieve targets for reducing energy intensity in their respective sectors resulting in reductions of 1 percent per year from the 1990 base year. At the company level, approximately 80 percent of the 250 companies that have registered as industrial energy innovators have prepared action plans detailing how they will achieve their energy efficiency targets.

As existing ore reserves are depleted, it is important to maintain adequate levels of mineral exploration in Canada to ensure continued employment opportunities in the mining sector and the sector's continuing contribution to Canada's trade balance and Gross Domestic Product. In this context, NRCan's Exploration Science & Technology (EXTECH II) program has sparked a major rejuvenation of mineral exploration in the Bathurst, New Brunswick area. A combined federal/provincial government expenditure of \$6.5 million has generated an estimated

Goal 2 (continued)

\$10 to \$15 million industry investment. It is expected that industry will invest a further \$20 to \$30 million over the next ten years.

NRCan, and its partners, continued to provide critical information to decision-makers under the National Geoscience Mapping Program (NATMAP). For example, the Program allowed for more efficient oil and gas development and exploration, assisted the agricultural and forestry industry (i.e., crops, drought, fires) and addressed watershed land uses.

Technology transfer is fundamental to Canada's knowledge-based economy. Each year, NRCan works with stakeholders to explore new methods for advancing technology such as state-of-the-art procedures for assessing the toxicity of metals in the environment when exploring for mineral deposits. Technology transfer resulted in one Canadian company generating \$200,000 in revenues in its first year.

Similarly, transferring research that results in marketable products provides direct economic benefits to industries competing in fast-growing global markets such as remote sensing, natural hazard research and disaster monitoring. For example, NRCan and partners designed technology for mapping underground rock formations from sound waves. One partner is generating exports of more than \$18 million involving 75 countries.

A Canadian Geoscience Council review of the Marine Geoscience Program (\$5 million) recognized that NRCan still has a strong program with the excellence of its science recognized nationally and internationally. The review provides numerous examples of innovative technology, responsiveness to client needs, and addressing immediate societal needs. This review was conducted as part of the response to the federal

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government's S&T strategy (<http://www.nrcan.gc.ca/ess/chiefgeo/reviewmarine.htm>).

In addition, an update to the 1995 evaluation of the impacts of NRCan's Industrial Partners Program (IPP), which helps Canadian earth science-related industries compete successfully in global markets by promoting collaborative research projects, confirmed that the economic benefits are substantially greater than the investment by NRCan and its partners. The economic benefits attributable to 26 IPP projects totalled \$105.8 million (realized in the first three years and anticipated in years 4 and 5). Although these benefits are lower than the \$144 million anticipated in the original study, they are still considerable and were substantiated by the 28 industrial partners.

In collaboration with Forintek Canada, NRCan developed a new and improved method for cutting veneers used in plywood and laminated veneer lumber. This method reduces the pressing time of thick panels by as much as 30 percent and increases product revenue up to \$1 million per year. To date, seven Canadian companies have implemented this technology with payback on investment presently averaging seven to eight days.

In addition, NRCan and Forintek also developed a Video Tooth Inspector System to help lumbermills. This technology can increase mill revenues by as much as \$324,000 per year. To date, 20 units have been installed in mills.

Did You Know ?

The secondary wood manufacturing industry is one of the main areas of employment growth in the forest products sector employing 54,800 people in 1997, up from 45,300 in 1996.

Goal 2 (continued)

2.2 Expanded Access to International Markets

Result Sought – maintaining and expanding access to international markets for Canadian resource-based products, knowledge, technologies and services

The Department employs a variety of methods to improve Canada's ability to maintain and expand access to world markets. These include, for example, foreign missions, conventions, trade agreements, special initiatives, and communication strategies for ensuring that international decision-makers are properly informed of Canada's sustainable development practices and policies.

Missions and Conventions

A Latin America trade mission and a Tokyo conference enhanced the profile of the Canadian natural resource sector and provided a forum for discussion to find common ground on specific issues. The successful international trade and investment mission to South America in 1998 (with 35 business leaders) led to \$47 million in new business.

In addition, under NRCan's International Business Strategy, 25 incoming and six outgoing missions to nineteen countries were completed in 1998-99 to assist the Canadian industry in promoting geomatics expertise. These missions resulted in, for example, a \$7.5 million mapping project in Mozambique related to land mine removal activities, and an agreement with Tunisia, worth up to \$5 million, to provide geomatics expertise.



South American mining officials and scientists with Canadian consultants during on-site training in rehabilitation of mine wastes

As well, under the auspices of the Canadian Council of Forest Minister's International Forestry Partnerships Program, a series of five foreign missions were conducted with American and European delegations to inform them of Canada's sustainable forest management policies and practices to prevent the imposition of trade barriers by foreign decision makers.

There is a need to elevate Canada's sustainable forest management agenda and level the playing field for Canada's forest industry. In this context, NRCan and its partners launched the Costa Rica-Canada Initiative to discuss the elements of a legally binding international instrument for the sustainability of the world's forests.

As a means of showcasing Canada's progress towards sustainable forest management, NRCan, in collaboration with DFAIT, was successful in securing Canada's bid to host the XII World Forestry Congress in Quebec City in 2003. The selection of Canada by the 175 member United Nations' Food and Agriculture Organization confirms Canada as the world leader in sustainable forestry.

Goal 2 (continued)

Did You Know ?

That between 1980 and 1994, native and exotic insects and disease affected approximately 6.72 million hectares of forests, about half of the total area harvested in Canada.

Market Expansion, Projects and Initiatives

Through NRCan's expertise, RADARSAT International was successful in marketing its data to the geological communities in Australia, Indonesia and Iran resulting in \$1.2 million worth of sales to exploration agencies in these countries.

While NRCan addresses sustainable development issues in developing countries, it simultaneously opens doors for Canadian subcontractors to showcase their environmental management technologies and services. With sponsorship from the Canadian International Development Agency, NRCan recently completed a three-year \$700,000 environmental management project in Argentina. As a result of private sector participation, twelve Canadian companies were able to create links for future business with the Argentine minerals sector.

NRCan recognizes that Canadian companies must adopt advanced materials and technologies to be competitive in international markets. To this end, the Department promoted emerging manufacturing technologies through its work on fabrication of prototypes using advanced materials. For example, an advanced and more durable automobile brake rotor using selective reinforcement of the braking area and thereby reducing the weight of the part without increasing machining costs was developed with very promising commercial potential.

Agreements, MOU's, Trade Directives and Dispute Resolution Mechanisms

Successful resolution of domestic and international trade issues and disputes are key objectives for NRCan. At the national level, federal, provincial and territorial energy ministers reached agreement on energy provisions for the Agreement on Internal Trade, including provisions for the transmission of cross-territory electricity and for increased efficiency of electricity markets across Canada. These provisions will help to ensure access to energy markets and to competitively-priced energy for all Canadians. On the international level, NRCan prepared a discussion paper on proposed U.S. regulations concerning the establishment and operation of regional electricity transmission organizations.

Did You Know ?

NRCan developed, through leading-edge research and development, an innovative forensic DNA tool to thwart illegal tree cutting, an activity that represents \$20 million a year in lost revenue in British Columbia alone.

At the international level, the Department and its partners engaged in negotiations with foreign governments to remedy situations where Canadian projects or products have encountered barriers to trade and investment. For example, pan-Canadian consultations with industry and provincial representatives were held to address challenges to value-added processing in the mineral products industry leading to a joint NRCan-Industry Canada publication entitled, *Summary of Consultations: Value-added Challenges in the Mineral Products Industry*.

Goal 2 (continued)

In collaboration with DFAIT, NRCan continued to provide expert advice on the implementation of the five-year Canada-U.S. Softwood Lumber Trade Agreement (April 1996-March 2001). The Agreement commits the U.S. not to take trade actions against imports of Canadian softwood lumber and commits Canada to provide export licenses for softwood lumber manufactured in British Columbia, Alberta, Ontario and Quebec. During the second year of the Agreement, total Canadian softwood lumber exports reached a record high of 18.0 billion board feet for a value of \$9.4 billion.

As a means of increasing technology transfer and market access for Canadian products, a Memorandum of Understanding (MOU) between Canada and China on forest sector cooperation was signed in November 1998. The MOU's framework includes forest fire management, park development, pulp and paper making, pest management and a program to provide Canadian organizations with a better understanding of the Chinese market.

The global spread of exotic pests pose a serious threat to Canada's forests and to market access for forest products. To protect Canada's forests from the introduction of non-native pests, such as the Asian Long Horned Beetle, the Canadian Food Inspection Agency, with scientific and technical support from NRCan, implemented a new trade directive in January, 1999 requiring all wood packaging from China be certified free from these pests.

2.3 Increased Aboriginal and Northern Community Capacity

Result Sought – building the capacity of Aboriginal, rural and northern communities to generate sustainable economic activity based on natural resources

Rural, northern and Aboriginal communities, in particular, depend greatly on natural resource development to provide jobs for more than 760,000 Canadians. NRCan recognizes the importance of strengthening the natural resource base and the capacity of these communities to participate in new resource sector opportunities and initiatives.

On April 1, 1999, the new territory of Nunavut was created. Through the wealth of its knowledge and expertise, NRCan is playing an important role in partnering with this new government to build capacity. For example, a new Canada-Nunavut Geoscience Office was established to provide single-window access to expertise, education and training on the mineral potential of the area.

Did You Know ?

NRCan's geoscientific knowledge contributed to the discovery of Canada's first diamond mine, a \$370 million investment in the northern economy that has created over 600 jobs.

Goal 2 (continued)

NRCan helped sustain the economic and social benefits for the current and future residents of North Baffin Island and Melville Peninsula when its North Baffin Geoscience Partnership project stimulated strong interest in mineral exploration by releasing comprehensive information on mineral showings and bedrock geology.

To meet the increased demands for research in the north, NRCan and its partners provided \$2 million in logistics support to 176 Arctic research programs related to aboriginal traditional knowledge, sustainable development and environmental and climate change issues. A client survey revealed an ongoing high degree of satisfaction with NRCan's services.

Did You Know?

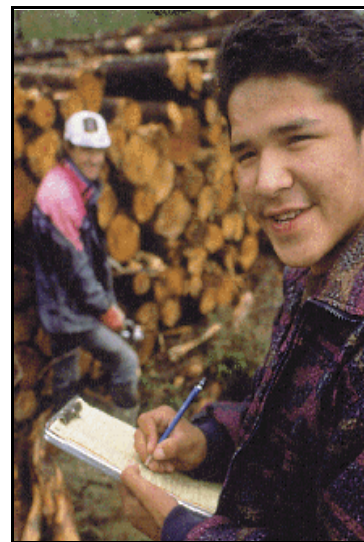
Since 1996, First Nations have raised \$20 million to complement \$16.4 million in federal funds.

The First Nation Forestry Program (FNFP) is a five-year joint \$25 million initiative, between NRCan and Indian and Northern Affairs Canada (INAC), whose purpose is to improve on-reserve economic conditions of First Nations. Results of an interim review, conducted jointly by NRCan and INAC on the FNFP, concluded that the program is making a positive difference in enhancing First Nations capacity to undertake forest-related businesses, is congruent with the visions and needs of a large majority of participating First Nations, and has been extremely resourceful in leveraging funds – 103 percent in the first year and 256 percent in the second year, over expected projections. The FNFP Annual Report is available at <http://www.fnfp.gc.ca> (see page 50 for a profile on the FNFP performance indicator).

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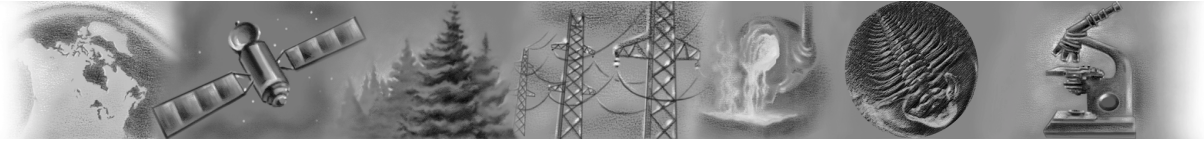
NRCan fostered the growth of the Canadian renewable energy industry by promoting Canadian technology expertise and facilitating access to markets where renewable energy technologies are cost competitive, such as in remote communities. One example of NRCan's efforts is RETScreen™, a software tool used by more than 3,500 clients from 105 countries to assess the technical and financial viability of renewable energy technologies such as wind, small hydro, solar and biomass energy.

Under NRCan's Sustainable Communities Initiative, partnership agreements have been established with federal, provincial, First Nations and community organizations to assist communities in incorporating geospatial knowledge into natural resources management plans, and in sustainable development decision-making.



The First Nations Forestry Program helps create jobs and sustainable communities

Goal 3



To manage the environmental impacts of natural resource development and use

Operating Environment and Importance

The environment is constantly undergoing change as a result of natural processes and human activity. We know that the environment can adjust to both human and natural stresses provided these stresses occur within an ecosystem's limit of adaptation. This places the onus on Canadians to develop natural resources in a way that respects and protects the integrity of natural ecosystems.

Environmental protection underpins all of the Department's S&T and policy research since a clean environment provides Canadians with many social and economic benefits and opportunities, and ensures resources for the future. From a social context, the protection of Canada's land, air and water improves our quality of life and demonstrates to the world our commitment to environmental stewardship. Economically, protecting the environment brings many new economic opportunities and risks since market access is becoming increasingly dependent on the development of natural resource products that are produced in an environmentally sustainable manner. Failure to demonstrate responsible management of the environment can affect an estimated \$100 billion (1998) natural resources industries export market comprised of: \$40 billion for forestry, \$31 billion for minerals and metals, and \$26 billion for energy.

Towards this end, the Department conducts leading edge S&T and policy research into minimizing the negative impacts of both human and natural activity on the environment. NRCan's primary objective is to ensure that all Canadians understand the dynamics of ecosystems and that clients and stakeholders are equipped with knowledge and the proper decision-making tools needed for sound natural resources management. Because energy production and use accounts for about 85 percent of the world's greenhouse gas emissions, the Department also plays a special role in developing Canada's position on climate change -- a central feature of the government's strategy in transforming Canada's energy economy and in meeting Canada's climate change commitment made at Kyoto in December 1997.

Goal 3 (continued)

3.1 Climate Change

Result Sought – *helping limit and adapt to climate change*

Canada has a commitment to reduce greenhouse gas emissions to six percent below 1990 levels within the period 2008-12. This represents a 20 to 25 percent reduction from a business-as-usual scenario.

As a first step, NRCan is co-leading, with Environment Canada, the development of a national implementation strategy to address climate change. Through domestic and foreign efforts, and in partnership with other government departments and the public, NRCan reviewed a number of short, medium, and long-term policy options, established the Climate Change Action Fund (CCAF), and geared many of its programs and technologies toward helping achieve Canada's climate change commitments. For example:

- the Energy Technology Futures Project prepared, in consultation with partners, 12 long-term technology perspectives on various areas of energy demand and supply, and on carbon dioxide capture and disposal; in addition, results of bilateral discussions with the U.S.A, the Organization for Economic Cooperation and Development and the European Union are feeding into the development of four long-term scenarios on the Canadian energy system that outline the technologies that Canadians could be using to reduce greenhouse gas



Climate change solutions include wind turbines, such as this one on the banks of the Belly River in southwest Alberta. (Photo: Vision Quest Windelectric Inc.)

emissions in the 2050 period;

- Canada's carbon budget model was applied to selected forest regions across Canada. Research findings in west central Alberta revealed that managed forests can have greater carbon storage pools than unmanaged forests; this information, along with information analyzed from other regions, will be incorporated into options on how to meet Canada's greenhouse gas reduction target under the Kyoto protocol;
- RADARSAT data was used for new mapping techniques and monitoring systems, snow accumulation and ice movements in Antarctica, ocean oil spills and wave conditions in the Maritimes; (NRCan \$180,000);
- NRCan supported research through the interdepartmental Program of Energy Research and Development (PERD) to address climate change and greenhouse gas issues; for example, research involving the drilling of a scientific research well in the MacKenzie Delta provided crucial information on the distribution of gas hydrates (methane coated with ice) and the risk of methane release should the permafrost degrade;

Goal 3 (continued)

- NRCan undertook geoscientific research on adaptations to climate change e.g. investigations on slope stability, sea-level rise and coastal erosion affecting navigation safety in waterways; and,
- Five evaluation and accountability frameworks were developed for the Climate Change Action Fund (CCAF) by NRCan, Environment Canada and the Climate Change Secretariat, with advice from the Treasury Board Secretariat and the Office of the Auditor General. The frameworks will guide the evaluation, accountability, performance measurement, reporting and data collection.

Did You Know ?

NRCan contributed to commercial and residential energy efficiency and alternative energy programs by providing \$60 million over 3 years, including \$12 million to stimulate market demand for renewable energy.

NRCan also delivers programs to renew, strengthen and expand Canada's commitment to energy efficiency (see profile of the energy efficiency performance indicator on page 51), and address the challenges of climate change. In this regard, NRCan delivers eighteen programs designed to influence Canadians' energy use at home, at work and on the road. Accomplishments include the following:

- the Commercial Building Incentive Program (\$30 million over 3 years) was developed to encourage building owners and developers to incorporate energy efficiency features into the design and construction of new commercial and institutional buildings; eight projects received funding in 1998-99; several approved projects showed an outstanding performance, reporting reductions in consumption in the area of 50 percent less energy than if they were constructed under the requirements of the Model National Energy code for Buildings;
- the EnerGuide for Houses Initiative (\$3 million over 3 years) was established to provide homeowners with an unbiased analysis of their homes' energy use and recommendations for energy efficiency improvements; and,
- the EnerGuide for Vehicles program was launched to help consumers understand energy consumption and costs when buying a new vehicle; beginning with the 1999 model year, new cars, vans and light-duty trucks sold in Canada now carry an EnerGuide fuel consumption label; as well, NRCan launched a new three-year Natural Gas Vehicle Program (\$7 million) to provide assistance for the purchase of factory-built natural gas vehicles, the conversion of existing vehicles, and the refuelling infrastructure that supports these vehicles.

Goal 3 (continued)

NRCan's energy efficiency and renewable energy technology development and deployment is key to addressing Canada's climate change commitments. Some of the technologies included in the transportation, buildings, industrial (NRCan \$4 million, \$5.5 million and \$4.6 million respectively) and community areas are highlighted below:

- NRCan improved the cost performance and reliability of transportation energy technologies resulting in cleaner, more efficient transportation fuels, greater numbers of vehicles using such fuels and an infrastructure to supply them; for example, the fuel cell engine built by Fuel Cell Engines Inc. for the Ford P2000 lightweight prototype car is now operational, demonstrating that fuel cell engines are suitable for automotive applications;



Ford P2000 Prototype Car
(Photo: Ballard Power Ltd.)

- NRCan supported the development of a biochemical conversion technology to produce cost-competitive ethanol fuel and value-added by-products; this

technology, along with the construction of a demonstration plant by Iogen Corporation with the involvement of industry, universities and other government departments, could replace 10 percent of Canada's traditional transportation fuel, reducing the annual increment in atmospheric carbon dioxide emissions by 8.1 million tonnes;

- the Department supported the field testing of high efficiency water heaters which can lead to a 40 percent reduction in energy requirements with a corresponding annual reduction in carbon dioxide;
- NRCan's Technology Initiatives for Communities helped a number of Canadian communities meet their energy needs in an efficient manner (i.e., heating, cooling, cogeneration, biomass). The initiative was such a success for a provincial utilities commission with respect to its district heating and cooling system that it has now started a \$3 million expansion of its system; and
- NRCan entered into a joint venture agreement with a Canadian house exporter and a Japanese-based company to build a Super E™ demonstration home in Sapporo, Japan. This project involves the demonstration of a number of Canadian energy efficient and healthy products adapted to, and integrated with, Japanese building components and practices. Five houses have already been shipped to Japan and the company has indicated that it would like to build 50 similar houses over the next three years.

Goal 3 (continued)

3.2 Technologies and Stewardship Practices

Result Sought – promoting science, technology and stewardship practices that reduce environmental impacts, conserve biodiversity, and increase the efficiency of natural resource development and use

Through its S&T and policy research, NRCan and its partners developed and transferred a number of technologies and management practices that promote the sustainable development of Canada's natural resources and reduce the harmful environmental effects caused by human activity and natural events. For example, the Department embarked on a program with industry and academia to improve transportation energy efficiency by reducing the weight of vehicle components through increased use of lightweight metal alloys, thus, reducing energy consumption.

With a view to protecting Canada's rich forest heritage, the Department and its partners developed and transferred integrated pest management strategies and decision support system models to control serious forest pests such as the Spruce Budworm, Gypsy Moth, Birch Leafminer and others. For example, in collaboration with the Quebec Ministry of Natural Resources, NRCan developed a computer-based early prediction model for Spruce Budworm detection to assist the province in developing forest management treatment programs.



Aerial spraying to control spruce budworm

In addition, NRCan's joint research with the Maritime provinces resulted in the implementation of partial tree cutting as an environmentally sound alternative to whole tree harvesting - a potential cause of site degradation in this region. An early assessment of this practice has shown a significant reduction of whole tree harvesting among participating Maritime forest companies and has significantly altered the design of forest harvesting equipment.

On another front, substantially reducing the liability for acidic drainage in Canada is important to the mining industry. In this regard, the Department transferred technologies and established international linkages through its Mine Environment Neutral Drainage (MEND) 2000 Program. MEND has been extended until December 31, 2000 with matching funding from the Mining Association of Canada (NRCan - \$420,000 over three years).

Goal 3 (continued)



BEFORE MEND 2000:
acid tailings in the Eastern Townships, Québec



AFTER MEND 2000:
water cover as a rehabilitation for the same site

Studies under the Department's Metals in the Environment (MITE) initiative improved the understanding of how trace amounts of naturally occurring metals (copper, zinc, lead, etc.) are released from bedrock into soils and distributed into the environment, particularly around Canadian smelters. These results have a direct impact on the development of effective national and international policies and regulations.

To promote and facilitate recycling efforts, NRCan has undertaken activities both domestically and internationally. For example, NRCan obtained the support of the Canadian Council of Energy Ministers to change the domestic regulatory regime to encourage the recycling of low risk materials that are currently regulated as hazardous waste. This change will facilitate efforts to promote recycling and remove barriers to recycling. As well, through its participation in a number of international fora, the Department was able to move global thinking forward on this important issue.

Furthermore, the Department successfully completed an operational Oceans Monitoring Workstation to detect oil spills, ship movements, and wave conditions in support of environmental protection and navigation safety. Satlantic, an industrial partner, has already sold a commercial version to Argentina (NRCan - \$100,000).

Did You Know ?

NRCan led the development of the nickel-cadmium battery recycling program, involving over 3,400 domestic retailers and all provinces and territories, to divert potentially hazardous material from landfill sites.

Goal 3 (continued)

3.3 Safeguarding Canada's Environment

Result Sought – safeguarding Canada's environment from the risks associated with natural resource development and use

NRCan recognizes that nuclear fuel waste management is a very important issue for Canadians and will provide a federal oversight to ensure that producers and owners of nuclear fuel waste carry out their responsibilities.

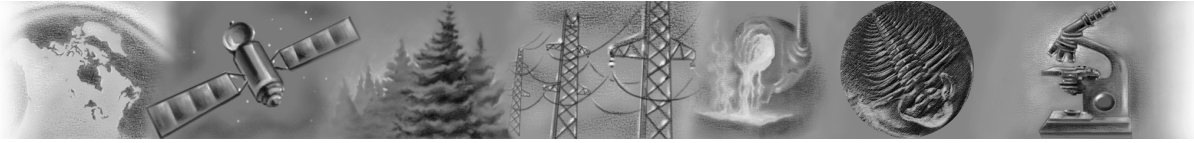
In this regard, the Government of Canada (GOC) basically supported the recommendations of the Nuclear Fuel Waste Management and Disposal Concept Environmental Assessment Panel (Seaborn Panel) which concluded that Atomic Energy Canada Limited's concept is technically safe but, in its current form, is not ready to be adopted as Canada's approach for nuclear fuel waste management. The GOC now expects the producers and owners of nuclear fuel waste to form waste management organizations as a separate legal entity, establish a dedicated fund to finance the operations and activities of the organization; and plan and carry out a work program consistent with the GOC response to the panel.

In addition, NRCan carried out small-scale clean-up of low-level radioactive waste under federal responsibility in Port Hope, on the Hay River Dene Reserve, and at an industrial site in Surrey, B.C., enabling property owners to make better use of their land.

In partnership with the mining industry, NRCan worked on projects to further safeguard Canada's working environment from the risks associated with mine development. Clients confirmed, through a recent impact study, that improved health and safety was a key result in five out of the seven projects reviewed. The projects ranged from development of new products that improve working conditions, to ensuring the safe functioning of mine equipment.

To further enhance the safety and reliability of Canada's pipeline infrastructure, NRCan established government/industry consortia. These consortia developed technologies for evaluating corrosion inhibitors and pipeline coatings and for assessing the potential for cracks to lead to failures. These technologies, in turn, help pipeline companies increase the effectiveness of their pipeline maintenance programs.

Goal 4



To contribute to the safety and security of Canadians

Operating Environment and Importance

Opinion polls regularly confirm that Canadians view environmental protection and public safety and security issues as intrinsically linked activities. Towards this end, the Department supports three main areas of public safety and security. It provides timely and effective responses to both human-induced and natural disasters in the form of technical advice, funding support, and transferred technology; plays an important role in securing national, territorial and economic sovereignty at a time when the traditional notion of sovereignty is being challenged and redefined by globalization; and provides the policy framework necessary for the development of safety and security regulations in the energy sector.

There are a variety of Departmental products and services which contribute to these streams in an increasingly integrated way. They include, for example, maintaining a national geospatial positioning framework, providing legal surveys to support effective land management, scientific expertise regarding the safe use of explosives and pyrotechnics, maintaining a national fire management information system (Fire M3) for monitoring and reporting fire conditions on a daily basis; aeronautical charts; and, topographical maps for search and rescue-related activities and emergency planning.

4.1 Natural Hazards

Result Sought – safeguarding Canadians from natural hazards

NRCan provided state of the art technology and timely information and expertise in response to natural disasters such as earthquakes, floods and forest fires occurring nationally and internationally as well as for human-induced tragedies and events. For example:

Swiss Air 111 tragedy: NRCan pooled its expertise with other agencies to provide remote sensing satellite imagery and geoscientific information on the crash site, within 24 hours, to assist organizations in their investigations.

Hurricanes Bonnie and Mitch: under the Disaster Response Management Project, NRCan provided RADARSAT images and data to allow relief agencies to evaluate the extent of the devastation, particularly regarding the condition of roads, rivers and vegetation.

Goal 4 (continued)



Satellite imagery of the effects of the Honduras hurricane

Forest Fires: NRCan implemented its world-class Fire M3 Information System which electronically detects, monitors and maps large national forest fires on a daily basis using satellite imagery. This cost-effective tool, which provides forest management agencies with timely and accurate fire data, assists local forest managers in making on-the-spot tactical resource decisions in often life-threatening situations. This information also enhanced the Weather Network's *Earth Watch* daily report to the public on fire activities.



A fire research technician in Edmonton examines an image of a forest fire

Even after crisis situations were over, NRCan continued to play an important role by providing key information on the risk (i.e., the probability of incidence and potential impact) of natural hazards and recommended steps to minimize the risk. For example:

- a major inventory of landslides was compiled for 80 percent of the Yukon to help identify potentially hazardous areas in planning for transportation and pipeline routes;
- seismic hazard assessments were provided for updating the National Building Code resulting in an estimated benefit to Canadians ten times greater than the cost of the research;
- the first phase of an examination was completed of the geological hazards associated with the Maritimes Basin under the Gulf of St. Lawrence which will reduce uncertainties affecting petroleum exploration investment; and,

Goal 4 (continued)

- NRCan, in collaboration with the government of the NWT, Aboriginal leaders, and U.S. forest fire researchers, continued testing the International Crown Modelling Experiment on high intensity forest crown fires which resulted in useful information on the effectiveness of protective firefighting gear and how close to construct fire-resistant buildings in the forest.

Did You Know ?

NRCan implemented award-winning technology to obtain forest fire information from satellites which will ultimately save countless lives and potentially millions of dollars.

4.2 Spatial Positioning, Mapping and Boundary Maintenance

Result Sought – maintaining a national framework for spatial positioning, mapping and boundary maintenance

NRCan maintained and provided access to the Canadian Spatial Reference System which ensures that the national standard for geographic positions is consistent with global standards. Successful demonstrations of the Global Positioning System Corrections (GPS•C) system for navigational positioning were completed in several Arctic locations. GPS•C is essential for safe marine navigation in the north as well as farming and “intelligent” transportation.

In support of search-and-rescue operations, the Department continued to supply digital, aeronautical charts to major clients such as Department of National Defence, the Transportation Safety Board and Navigation Canada. To ensure Canadian aviation safety, NRCan delivered these charts on an internationally agreed 56-day cycle (see profile of the aeronautical charts performance indicator on page 52).

Similarly, in order to provide the military with up-to-date information during serious situations, NRCan continued to maintain military emergency maps in support of DND’s responsibility for national Year 2000 contingency plans.

In June 1998, the *Canada Lands Surveyors Act* received Royal Assent and came into force in March 1999 along with the *Canada Lands Surveyors Regulations*. This Act establishes the Association of Canada Lands Surveyors (ACLS) as a self-governing association which will ensure the maintenance of high, professional standards for all land surveyors. NRCan continues to operate other components of the Canada Lands Survey System which provides an archive of survey documents to the public.

Did You Know ?

NRCan’s geoscientific data permitted the reassessment of potential property losses due to earthquakes and assisted insurance companies in evaluating their premium policies.

Goal 4 (continued)

4.3 Explosives Safety

Result Sought – promoting the safe use of explosives and pyrotechnics

NRCan is the government's primary source of expertise on explosives regulations and technology.

To ensure that the explosives industry, and users of explosives, clearly understand their obligations and meet the requirements of the *Explosives Act and Regulations*, NRCan developed a number of safety manuals, guidelines and standards and Codes of Practice related to the manufacturing, handling and use of explosives and pyrotechnics in Canada.

In addition, the Department provided training and launched a new system of graduated licences for fireworks supervisors and pyrotechnicians to ensure safe use. Over 1350 fireworks supervisor cards and 800 pyrotechnician cards were issued. It is expected that there will be a decrease in accidents and incidents involving display fireworks and pyrotechnics, despite the current increased level and complexity of activities in this expanding industry.

4.4 Policy Framework

Result Sought – providing the policy framework for safety and security in Canada's energy sector

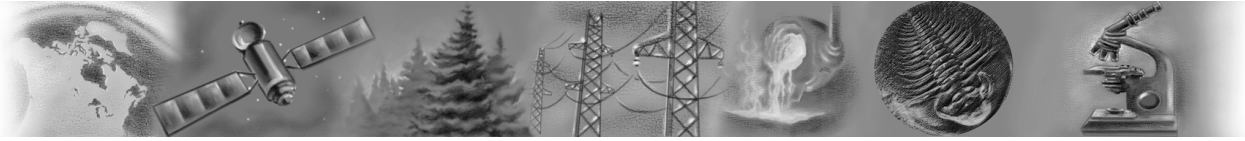
The health and safety of Canadians is a top priority on NRCan's agenda. The Department helps ensure that Canada continues to develop and use its resources in a manner that protects the health of its citizens, as well as its natural environment, landmass and offshore regions.

While the promulgation of the Offshore Health and Safety Regulations was delayed due to legal considerations, this issue remains a priority for the federal government and the Accord provinces. Discussions on this issue continue with the provinces of Nova Scotia and Newfoundland. In addition, NRCan and its partners established a Joint Research Project Agreement to coordinate research efforts in the area of offshore escape, evacuation and rescue.

As part of Canada's commitment to support the Comprehensive Nuclear Test Ban Treaty, NRCan expanded its world-renowned seismic monitoring activities for detecting underground nuclear explosions. The Department's rapid and accurate detection of the nuclear tests conducted by India and Pakistan in 1998 was proof that Canada is playing a leading role in this international venture.

NRCan developed options for revising the financial requirements under the *Nuclear Liability Act*. These recommendations were reviewed with the nuclear insurers in preparation for future discussions with nuclear operators.

GOAL 5



To manage the Department efficiently and effectively

Operating Environment and Priorities

This goal is about sound departmental management and effective decision making. NRCan recognizes that the achievement of sustainable development goals needs to be supported with similar achievements in good governance. This is particularly true in the current operating environment where the continued demand of allocating scarce resources and obtaining better value for money is leading the Government and NRCan to search for innovative approaches to management and accountability. Also, as a science and technology research department, part of good governance is ensuring that NRCan's infrastructure and program support functions remain strong and flexible in order to respond to the science and policy challenges inherent in the Department's mission.

5.1 Managing Departmental Resources

Result Sought – managing NRCan's resources responsibly

While the Department refocused and reorganized many of its programs, client expectations and demands in certain program areas continued to rise. Cost recovery enabled NRCan to take a more business-like approach in the delivery of its programs by improving management accountability and minimizing operational costs. Within this context, NRCan recovered in excess of \$20.8 million in 1998-99 from its net voted revenue authority and an additional \$16.4 million, during the same period, from its revolving fund authority.

In parallel with an assessment of its science and policy capacities, NRCan developed a retention, rejuvenation and recruitment (3R) strategy to respond to the need to revitalize NRCan's workforce. The 3R strategy focuses on continuous learning, career development, succession planning, recruitment, employment equity and workload. Implementation of actions will begin in the last quarter of 1999.

The 3R strategy also addresses issues raised by the Department's successful employment equity self-identification telephone survey. The survey, which was conducted across the Department in November 1998 and was a precedent in Government, recorded a response rate of almost 87 percent, and provided important information on NRCan's workforce.

Goal 5 (continued)

As a large proportion of the Department's corps of science professionals approach retirement age (40 percent of scientific staff and 70 percent of science managers over the next ten years), the 3R strategy will help to recruit and retain younger scientists, thereby ensuring that an appropriate skill mix is maintained, including science management and technical support.

NRCan's Geomatics Professional Development Program (\$467,000 annually) provided university graduates with hands-on training in various fields of geomatics and an opportunity to acquire marketable skills for future employment opportunities. An internal evaluation of the program revealed that it has been largely successful in meeting its mandate and objectives and there was a high degree of support for its continuation.

The evaluation study of the federal S&T Internship Program at NRCan (\$600,000 annually, funded by Human Resources Development Canada) concluded that the interns benefitted through increased contacts with employers and that on completion of the internship, about 85 percent of the participants found relevant employment. The evaluation also found that half of the participating companies likely would have hired someone in the absence of the program and, similarly, half the interns likely would have found relevant employment without the Program.

5.2 Products, Services & Operations

***Result Sought** – continuously improving NRCan products, services and operations*

Present challenges demand new strategies for success, including increased investment in the knowledge content and infrastructure required to prosper in the new knowledge economy. In this regard, NRCan completed its Classification Re-Engineering Project in preparation for conversion to the Universal Classification Standard. This accomplishment will result in huge savings in terms of time and money.

NRCan's Excellence Initiative launched its Guide to Good Management, which provides a template for a well-managed organization. The new guide complements the S&T Management Framework, and closely parallels the TBS Citizen-centered Service Delivery initiative. As a result, managers have on hand a reference document on the important considerations in managing their organizations.

Did You Know ?

NRCan reduced its material sent to landfill waste by more than 50 percent, surpassing the national target.

Goal 5 (continued)

Leading by Example

5.3 Result Sought – *using leading-edge environmental management tools and practices for NRCan operations*

5.4 Result Sought – *reducing wastes from NRCan operations*

5.5 Result Sought – *increasing the efficiency of energy and other resource use in NRCan operations*

5.6 Result Sought – *promoting the use of goods and services that are eco-efficient*

The way NRCan operates its facilities, manages its fleet, disposes of waste, purchases goods and services, and demonstrates environmental leadership can influence other federal departments' abilities to achieve their sustainable development goals. NRCan will further reduce greenhouse gas emissions from its own internal operations through the implementation of an internal climate change action plan. Sustainable development accomplishments related to protecting the environment from the impacts of NRCan's operational activities can be found in Section IV A. - Sustainable Development Strategy (page 38); in addition, information about the Department's vehicle fleet can be found on page 53.

Material Management

The implementation of the federal Financial Information Strategy (FIS) required the development of an Assets Management Policy. The policy includes financial requirements associated with FIS and clarifies that "custodian managers are responsible to manage their assets by using the life-cycle approach that incorporates assessment and planning, acquisition, operation/use, maintenance, safeguarding and disposal". All NRCan sectors are currently performing inventories for assets greater than \$1,000.

Work is under way for the implementation of an asset management module as part of NRCan's Government Financial System (GFS). The asset management module will not only track assets and prepare inventories, but will include the capability to calculate the depreciation of capital assets as required by FIS. This asset management function will be integrated with the financial components of the GFS.

Did You Know ?

NRCan reduced its vehicle fleet by 36 percent and ensured that 19 percent of its vehicles use alternative fuels.

Goal 5 (continued)

Modern Comptrollership

Modern Comptrollership is a management reform. It is about the sound management of resources and effective decision making. It involves a shift in emphasis from controls and compliance to results and values. Modernizing means shifting from a primarily financial focus to a broader management perspective.

Modern Comptrollership will provide managers with integrated financial and non-financial information, a mature approach to risk management, appropriate control systems, and a common set of values & ethics. Building on a strong base of sound management practices, it will enable decision makers to make appropriate choices and communicate them, which will lead to better service, better public policy and better results.

As a pilot department, NRCan has begun to implement the Modern Comptrollership Initiative. The Department assisted the Treasury Board Secretariat (TBS) in the production of a Comptrollership Assessment Framework and collaborated with a private sector consulting firm in the development of the Comptrollership Capacity Check. NRCan subsequently tested and validated the Capacity Check methodology on behalf of TBS and pilot departments.

Year 2000 Status

NRCan completed all repair, testing and implementation work for its three Government-wide Mission-critical functions (Aeronautical Charting, Geomagnetic Monitoring and Seismic Monitoring) and its financial system. Its Department-wide

Mission-critical functions were approximately 99 percent ready as of September 1999, with total completion reached by the end of November 1999.

An internal review of NRCan's state of Year 2000 readiness has concluded that: significant progress was achieved since the previous review; senior management support is visible; progress is being reported regularly; there is consistency in planning and documentation; project governance is well defined; sector readiness plans and testing strategies are in place; deadlines established by Treasury Board are generally met; and contingency plans are being developed and tested, where required. Next steps will include an additional review of Year 2000 Readiness with particular emphasis on due diligence.

NRCan prepared and delivered to the National Contingency Planning Group (NCPG) a Business Continuity Plan, which supports the Department's primary business functions and describes the contingency measures planned for each of the Minister's portfolio agencies and boards (Atomic Energy of Canada Limited, Atomic Energy Control Board, Canadian Wheat Board, Cape Breton Development Corporation, National Energy Board, Newfoundland and Nova-Scotia Offshore Petroleum boards).

The Department has also been actively involved in supporting the NCPG by facilitating the gathering of status information on Canada's energy infrastructure. NRCan is working with the major industry associations to gather information, which is then sent to the NCPG to report on the energy industry's readiness for the Year 2000. In general, the energy industry is expected to be well prepared before year end.

IV Consolidated Reporting¹

A. Sustainable Development Strategy

NRCan's first Sustainable Development (SD) Strategy was tabled in Parliament in December, 1997. The Strategy provides a view of sustainable development that recognizes that Canada will continue to use and develop its resources in a way that protects the health of the natural environment and landmass and ensures a legacy for future generations. In developing the strategy, NRCan integrated its policy goals with the goals of the SD Strategy, establishing sustainable development as the overarching umbrella for departmental activities.

In his May 1998 Report to Parliament, the Commissioner of the Environment and Sustainable Development recommended that "departments should establish a clear set of targets and present them to the House of Commons in their spring 1999 reports on plans and priorities." In response to the Commissioner's recommendation, the Department established targets for action commitments, where required, to ensure they are time bound and measurable. These targets provide NRCan's stakeholders with a clear indication of knowing when the action commitments have been met.

Many of the 68 action commitments included in the NRCan SD Strategy have multiple targets – 125 targets in total. For the fiscal year 1997-98, covering the first few months of the three-year implementation period, seven targets were achieved. Of the 48 targets scheduled for completion in fiscal year 1998-99, all but one have been achieved (see next paragraph). Furthermore, 16 targets scheduled for completion in subsequent years have been achieved ahead of schedule. In total, 70 (or 56 percent) of the targets have been achieved.



Progress on the one target that was scheduled for, but did not reach completion by March 31, 1999, is reported in detail on page 53 along with reports on performance indicators – one indicator for each goal (pages 49 -53).

Table 1 highlights a number of the action targets that were achieved in 1998-99, according to goal. The table also indicates how the action targets are helping to advance sustainable development. In other words, the table shows how incremental action advances the broader sustainable development yardsticks. Many of the targets include references to text in Section III of this report.

NRCan is on track in meeting its commitment to work with stakeholders to ensure the sustainable development of Canada's natural resources. Additional information on the implementation of the action commitments may be obtained by accessing the sustainable development home page on the NRCan web site at: <http://www.nrcan.gc.ca/dmo/susdev>.

1. a) For 1998-99, there are no major or significant regulatory initiatives to report.
- b) The report on NRCan's storage tanks has been discontinued as this information was provided directly to Environment Canada in compliance with the Canadian Environmental Protection Act.

Table 1: Selected Action Targets and Advancing Sustainable Development

| Goal 1: Enabling Canadians to make balanced decisions regarding natural resources | | |
|---|--|--|
| ACTION TARGETS |  ACHIEVED  | ADVANCING SUSTAINABLE DEVELOPMENT |
| Undertake the first national survey of energy use in commercial buildings; by 1998, finalize the design of the survey. | ✓ | Provides for development of intensity indicators at sector and segment levels and a baseline for determining the energy and environment impact of new energy efficiency programs, the <i>Commercial Building Incentive Program</i> and <i>Energy Innovators Plus</i> . |
| Launch new reporting on the health of Canada's forest ecosystems; by 1998, publish the First National Forest Health Assessment. | ✓ | Establishes the baseline on the health of Canada's forests in order to measure, assess and plan our progress towards the sustainable management of our forests. |
| By 1998, as directed by the Arequipa Declaration, organize and co-host, in cooperation with Latin American partners, a workshop on the Safe Use Principle. (See page 13) | ✓ | Promotes international cooperation on the sustainable development of minerals and metals and the implementation of the Arequipa Declaration of the Mines Ministers of the Americas and Action Plan. |
| By 1998, organize and host a meeting of the APEC Group of Experts on Mineral and Energy Exploration and Development with the theme of sustainable development of minerals and metals. | ✓ | |
| Report to federal, provincial and territorial mines ministers on a national review to improve regulatory system related to mining, by 1998. (See pages 13-14) | ✓ | Provides the opportunity for multi-stakeholder groups to express their views on how to improve the efficiency and effectiveness of the regulatory system related to mining. |

Note: In this section, target dates refer to fiscal year end. For example, a target beginning with, "by 1998" indicates that the target is scheduled for completion by the end of fiscal year 1998-1999 (i.e. March 31, 1999).

Goal 2: Sustaining the economic and social benefits from natural resources for present and future generations.

| ACTION TARGETS | ← | ACHIEVED | ← | ADVANCING SUSTAINABLE DEVELOPMENT |
|---|---|-------------------------------------|---|--|
| <p>By 1998, obtain funding approval from the Canada-Newfoundland Offshore Development Fund for:</p> <ul style="list-style-type: none"> the establishment of an evacuation training facility in St. John's; a training project related to the production phase of offshore oil and gas development in Newfoundland; an employment equity training program to promote female participation in non-traditional jobs; and, ongoing participation on the Newfoundland and Nova Scotia Benefits Committees for the review of benefits activities and enhancement of job creation and promotion of economic development. (See page 33) | | <p>✓</p> <p>✓</p> <p>✓</p> <p>✓</p> | | <p>Protects offshore and frontier environments and ensures that qualified Canadians have the opportunity to take advantage of this emerging resource area.</p> |
| <p>By 1998, provide technical training on acid mine drainage and life cycle assessment, and advice on ISO 9000 accreditation for the Canada-Brazil Project for Sustainable Development on the Minerals Sector.</p> <p>By 1999, provide baseline assessment and technical training in chemical analysis and environmental management, and by showcasing Canadian technologies and expertise for the Canada-Argentina Project for Technology Transfer in the Minerals Sector. (See page 20)</p> | | <p>✓</p> <p>✓</p> | | <p>Promotes sustainable development of minerals and metals internationally and showcases Canadian technologies and expertise in environmental management.</p> |
| <p>By 1998, develop International Business Strategy. (See page 19)</p> | | <p>✓</p> | | <p>Supports and promotes the geomatics industry's access to international contracts and markets.</p> |
| <p>Assess the resource potential of frontier areas and provide a basis for sustainable development in northern communities by:</p> <ul style="list-style-type: none"> compiling integrated information on the geology, hazards and permafrost conditions of the Yellowknife area, by 1999; and, completing a federal-territorial-Inuit supported compilation of northern Baffin Island geoscience, by 1999. (See page 21) | | <p>✓</p> <p>✓</p> | | <p>The report "Living with Frozen Ground" addresses the impact of the environment on humans and conversely of humans on the environment in Canada's largest northern community. The publication provides guidance for infrastructure and industrial development of the area in an environmentally responsible manner.</p> <p>Provides maps, reports and a digital knowledge base of the bedrock and surficial geology and mineral potential of defined areas of north Baffin Island and Melville Peninsula. This will aid in mineral exploration for possible economic deposits that could sustain economic and social benefits.</p> |

Goal 2: Sustaining the economic and social benefits from natural resources for present and future generations. (Continued)

| ACTION TARGETS | ← ACHIEVED ← | ADVANCING SUSTAINABLE DEVELOPMENT |
|---|--------------|---|
| By 1998, develop a study to identify the non-technical barriers to the development of renewable energy technologies in Canadian remote communities. (See page 22) | ✓ | Increases knowledge to help address barriers restricting the use of renewable energy in Aboriginal and remote communities through information transfer, technical training and other support. |
| By 1998, implement a training program on the Canada Lands Survey System in collaboration with Nunavut Arctic College. | ✓ | Provides training and skills development opportunities for Aboriginal people in land management and surveying. |
| By 1998, develop basic agreement with Industry Canada's Community Access and Smart Communities program to demonstrate the value of geospatial information, and initiate selection of communities for first round of pilots. By 1998, initiate with the Nicola Tribal Association, the Nicola Valley Institute of Technology and five local bands, the development of computer technologies for the analysis and storage of codes and environmental ethics, traditional Aboriginal information and forest management information. | ✓ ✓ | Develops, in partnership with other federal, provincial, territorial governments and local communities, the ability for Aboriginal, rural and northern communities to use geospatial data and information technology. This allows departments to effectively plan and manage natural resource development, land-use, and environmental and health protection. |

Goal 3¹: Minimizing the impacts of natural resource development and use on the environment and the safety of Canadians.

| ACTION TARGETS | ← ACHIEVED ← | ADVANCING SUSTAINABLE DEVELOPMENT |
|---|--------------|--|
| By 1998, launch Energy Technology Futures consultation process with multi-stakeholder groups. (See page 24) | ✓ | Develops an understanding among Canadian stakeholders of the potential range of long-term technological futures which could fundamentally alter the relationship between economic growth and greenhouse gas emissions. |

1. Some of the goals presented in NRCan's Sustainable Development Strategy, which was tabled in Parliament in December, 1997, are different than the goals presented in Section III because the latter reflects continuous refinements to the Department's draft Performance Measurement Framework.

Goal 3¹: *Minimizing the impacts of natural resource development and use on the environment and the safety of Canadians. (Continued)*

| ACTION TARGETS | ← | ACHIEVED | ← | ADVANCING SUSTAINABLE DEVELOPMENT |
|--|---|----------|---|--|
| <p>By 1998, launch EnerGuide for Houses program, Commercial Buildings Incentives program, and Energy Innovators Plus initiative. (See page 25)</p> <p>By 1998, bring into force the fourth amendment to the Energy Efficiency Act to expand the energy efficiency regulations to cover additional equipment and increasing the energy efficiency requirements of equipment under existing regulations.</p> | ✓ | | ✓ | <p>Increases the efficiency of Canada's energy use and reduces greenhouse gas emissions.</p> |
| <p>By 1998, complete development of a carbon database for Canadian soils, for integration in the Carbon Budget Model of Canadian Forests.</p> | ✓ | | | <p>Improves the knowledge base between Canada's forests, changes in climate and the global carbon cycle. Enables Canada to meet national and international reporting requirements, and plans for broad-scale adaption strategies, ensuring the forest sector's long-term environmental and economic viability.</p> |
| <p>By 2000, undertake projects with industry under the auspices of the CANMET Research Initiative on Light, Strong Materials. (See page 27)</p> | ✓ | | | <p>Develops technologies to significantly reduce the weight of automobiles, resulting in reduced fossil fuel consumption and carbon dioxide emissions.</p> |
| <p>By 1998, complete transfer of the Spruce Budworm Decision Support System to Alberta clients, where budworm is threatening northern spruce forests. (See page 27)</p> | ✓ | | | <p>Provides forest managers with an increased capacity to make sound decisions on their interventions while supporting biodiversity conservation and aesthetic values.</p> |
| <p>By 1998, prepare, in consultation with other federal departments, the government response to the Seaborn Panel, which will outline the next steps for the long-term management of nuclear fuel waste in Canada. (See page 28)</p> | ✓ | | | <p>Provides policy direction for the long-term management of nuclear fuel waste, leading to action to dispose of the nuclear fuel waste in an environmentally responsible manner.</p> |
| <p>By 1998, provide technical support for the pilot-phase of the International Lead Management Centre (ILMC). On-going advice and information will continue to be provided to the ILMC to enhance their projects in response to the OECD Ministerial Declaration on Lead in order to support their mandate to promote the continued use of lead in an environmentally sound manner.</p> | ✓ | | | <p>Supports the creation of an International Lead Management Centre, reducing the risks to human health from exposure to lead.</p> |

1. Some of the goals presented in NRCan's Sustainable Development Strategy, which was tabled in Parliament in December, 1997, are different than the goals presented in Section III because the latter reflects continuous refinements to the Department's draft Performance Measurement Framework.

| Goal 3¹: <i>Minimizing the impacts of natural resource development and use on the environment and the safety of Canadians. (Continued)</i> | | |
|--|-----------------|--|
| ACTION TARGETS | ACHIEVED | ADVANCING SUSTAINABLE DEVELOPMENT |
| By 1998, transfer the Spatial Fire Management Information System to fire management agencies in Saskatchewan, Alberta and British Columbia. (See page 31) | ✓ | Develops models to monitor and predict the behavior of extreme forest fires that threaten communities. |
| By 1998, complete second phase of the international crown fire experiment in the Northwest Territories, investigating fire behaviour, atmospheric emissions and effectiveness of personnel survival equipment. (See page 32) | ✓ | |
| By 1998, complete development and testing of human-caused and lightning-caused fire occurrence models for British Columbia. | ✓ | |
| By 1998, modify the Prescribed Fire Analysis System for use in the Yukon. | ✓ | |

| Goal 4¹: <i>Establishing NRCan as a leader in the federal government in managing in line with the principles of sustainable development.</i> | | |
|---|-----------------|---|
| ACTION TARGETS | ACHIEVED | ADVANCING SUSTAINABLE DEVELOPMENT |
| Update and improve NRCan environmental management policies and practices by: distributing a Departmental Environmental Protection Guide on manager and employee best practices; and, reviewing and updating the Departmental Environmental Policy, in 1998. | ✓ ✓ | Improves accessibility and enhances understanding of information concerning Environmental Assessment and Protection Policies. |
| By 1998, work with Environment Canada and Industry Canada to promote the participation in the ARET program. | ✓ | |

1. Some of the goals presented in NRCan's Sustainable Development Strategy, which was tabled in Parliament in December, 1997, are different than the goals presented in Section III because the latter reflects continuous refinements to the Department's draft Performance Measurement Framework.

B. Draft Performance Measurement Framework and Performance Indicator Reporting

Introduction

NRCan's draft Performance Measurement Framework includes goals, objectives and performance indicators which are based on the themes of sustainable development and good governance. The framework reflects a significant change from the department's previous business lines¹ and provides the foundation for all departmental planning and reporting documents as well as internal management practices². This report reflects the draft Performance Measurement Framework.

This section contains performance indicators for which there are numerical targets, directional targets (i.e. to maintain or improve on current performance), and in some cases, no targets (e.g. for 'macro' indicators, where it is too difficult to discern NRCan's contribution with any degree of precision). Starting this year, NRCan will report on five of these indicators (pages 49 to 53) to help readers assess the Department's progress in achieving its goals and objectives.

The following table presents NRCan's draft Performance Measurement Framework, including indicators, which is also available at <http://www.nrcan.gc.ca/dmo/susdev/epms.htm>.

1. S&T, knowledge infrastructure, developing federal policy and regulations, promoting Canada's international interests, and corporate management and administration
2. Example: NRCan's Report on Plans and Priorities, Sustainable Development Strategy, and S&T Management Framework.

Draft Performance Measurement Framework

| Goal 1 | |
|---|--|
| To enable Canadians to make balanced decisions regarding natural resources. | |
| Objectives | Draft Performance Indicators |
| <p>1.1 Creating easily accessible and integrated knowledge on the state of Canada’s landmass and natural resources, and the economic, environmental, and social dimensions of their use.</p> | <ul style="list-style-type: none"> • User satisfaction with relevance, accessibility and quality of information. • Public awareness of the importance and relevance of natural resources sectors, issues and NRCan’s S&T. • Adoption of NRCan-supported technology and practices. |
| <p>1.2 Promoting greater national and international cooperation and consensus on sustainable development issues, policies, goals and actions.</p> | <ul style="list-style-type: none"> • Participation in, and influence on, national and international multi-stakeholder approaches to sustainable development issues. • Degree of leveraging by NRCan from shared S&T projects. |
| <p>1.3 Developing and promoting fiscal, regulatory and voluntary approaches that encourage the sustainable development of natural resources.</p> | <ul style="list-style-type: none"> • Participation in, and influence on, fiscal, regulatory and voluntary sustainable development initiatives. • Influence of NRCan’s S&T-based recommendations on regulatory regimes. |

| Goal 2 | |
|--|---|
| To sustain the economic and social benefits derived from natural resources for present and future generations. | |
| Objectives | Draft Performance Indicators |
| <p>2.1 Creating economic opportunities and encouraging investment in innovative and higher value uses of natural resources.</p> | <ul style="list-style-type: none"> • Economic influence of NRCan S&T. • Employment levels and productivity in resource and resource-related industries. • Contribution of the natural resource sector to the Gross Domestic Product. • Capital investment in resource-related industries. |

| Goal 2 (cont'd.) | |
|--|--|
| To sustain the economic and social benefits derived from natural resources for present and future generations. | |
| Objectives | Draft Performance Indicators |
| 2.2 Maintaining and expanding access to international markets for Canadian resource-based products, knowledge, technologies and services. | <ul style="list-style-type: none"> Value and percent of exports of resource-based products, technologies and services. |
| 2.3 Building the capacity of Aboriginal, rural and northern communities to generate sustainable economic activity based on natural resources. | <ul style="list-style-type: none"> Number of shared projects and funds leveraged with rural, Aboriginal and Northern communities. Employment level of Aboriginal peoples and northern residents in resource sectors. |

| Goal 3 | |
|---|--|
| To manage the environmental impacts of natural resource development and use. | |
| Objectives | Draft Performance Indicators |
| 3.1 Helping limit and adapt to climate change. | <ul style="list-style-type: none"> a) Greenhouse gas emissions compared to Kyoto protocol; and, b) Greenhouse gas emissions to Gross Domestic Product ratio compared to other countries. Trends in the use of renewable energy. Trends in energy efficiency. |
| 3.2 Promoting science, technology and stewardship practices that reduce environmental impacts, conserve biodiversity, and increase the efficiency of natural resource development and use. | <ul style="list-style-type: none"> Environmental influence of NRCan's science, technology and stewardship practices. |
| 3.3 Safeguarding Canada's environment from the risks associated with natural resource development and use. | <ul style="list-style-type: none"> Progress towards addressing hazards associated with resource development and use. |

| Goal 4 | |
|---|---|
| To contribute to the safety and security of Canadians. | |
| Objectives | Draft Performance Indicators |
| 4.1 Safeguarding Canadians from natural hazards. | <ul style="list-style-type: none"> Impact of NRCan's S&T on the identification, mitigation and response to natural hazards. |
| 4.2 Maintaining a national framework for spatial positioning, mapping, and boundary maintenance. | <ul style="list-style-type: none"> User satisfaction with aeronautical charts, the Canada Land Survey System and the Canadian Spatial Reference System. |
| 4.3 Promoting the safe use of explosives and pyrotechnics. | <ul style="list-style-type: none"> Accident and incident rate in the explosives and pyrotechnic industries in Canada. |
| 4.4 Providing the policy framework for safety and security in Canada's energy sector. | <ul style="list-style-type: none"> Impact of regulatory framework for energy transmission, offshore development and Canada's uranium and nuclear industry. |

| Goal 5 | |
|--|--|
| To manage the Department efficiently and effectively. | |
| Objectives | Draft Performance Indicators |
| 5.1 Managing NRCan's resources responsibly. | <ul style="list-style-type: none"> Employee satisfaction with NRCan management practices. Progress towards maintaining an adequate capacity to deliver departmental programs through development and implementation of the Retention, Rejuvenation and Recruitment Strategy and a strategic facilities strategy. Savings realized from streamlining administrative processes, innovative service delivery, electronic commerce, improved facilities management, and information technology and bulk purchasing and contracts. |
| 5.2 Continuously improving NRCan products, services and operations. | <ul style="list-style-type: none"> Implementation of recommendations from audits, evaluations, and other studies of NRCan management and operations. Progress towards the implementation of NRCan's Guide to Good Management. Progress towards the implementation of NRCan's S&T Management Framework. |

Goal 5 (cont'd.)

To manage the Department efficiently and effectively.

| | |
|--|---|
| 5.3 Using leading-edge environmental management tools and practices for NRCan operations. | <ul style="list-style-type: none">• Progress of the Department's Environmental Management System towards the compatibility with ISO 14000 series of standards.• Progress towards the implementation of environmental health and safety audits and environmental assessment evaluation of NRCan operations. |
| 5.4 Reducing waste from NRCan operations. | <ul style="list-style-type: none">• Amount of solid non-hazardous waste from NRCan operations per capita per year.• Amount of greenhouse gases from NRCan operations. |
| 5.5 Increasing the efficiency of energy and other resource use in NRCan operations. | <ul style="list-style-type: none">• Portion of fleet converted to alternative fuels.• Energy consumption in NRCan owned and operated buildings.• Water consumption at NRCan per year. |
| 5.6 Promoting the use of goods and services that are eco-efficient. | <ul style="list-style-type: none">• Rate of purchasing by NRCan of environmentally friendly goods and services.• Rate of purchasing by NRCan of Green Power. |

Performance Indicator Reporting

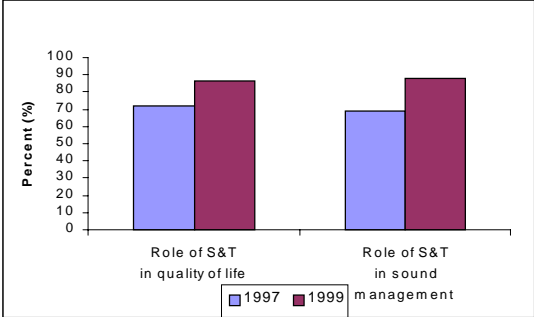
Natural Resources Canada's performance indicators will help Canadians assess the Department's progress in achieving its goals and objectives in the context of sustainable development. This section showcases NRCan's approach to reporting on its performance indicators. In this regard, one performance indicator is reported for each of the department's five goals. Each report is comprised of a four quadrant box that outlines the progress the department has made toward achieving its goals and objectives and identifies next steps. NRCan will expand on its reporting of performance indicators in future reports.

The first part (upper left quadrant) graphically describes the trend for the indicator. The second part (lower left quadrant) presents an interpretation of the trend (ie, what does it mean?) in terms of the indicator/target. The third part (upper right quadrant) describes NRCan's role in terms of influencing the trend. The fourth part addresses next steps and how the department might assess its activities based on the results of the performance measures.

Goal 1, Objective 1.1

Indicator: Public awareness of the importance and relevance of natural resource sectors, issues, and NRCan's S&T

Target: Maintain or improve awareness

| | |
|--|--|
| <p><u>Public awareness of the importance of S&T in the Natural Resource Sectors</u></p>  <p>Source: Tracking Survey of Canadian Attitudes towards Natural Resources Issues, 1997; <i>Rethinking Government</i>, Ekos Survey, 1999</p> | <p><u>NRCan's contribution</u></p> <ul style="list-style-type: none"> NRCan is Canada's major national repository of expertise related to energy, forest and mineral and metals resources as well as to the earth sciences. For example, it contributes to innovation and economic growth, it supports wealth creation in remote and northern communities and obtains information and shares knowledge on mitigating the impact of natural hazards such as earthquakes, landslides, etc. NRCan plays a significant role in promoting the sustainable development of Canada's natural resources through for example, the assessment of resources, the protection of the environment and biotechnology research in forestry. |
| <p><u>What Does the Graph Mean?</u></p> <ul style="list-style-type: none"> A majority of Canadians believe that science and technology plays either a very, or an important, role in providing a good quality of life and in ensuring the sound management and the sustainable use of Canada's natural resources. There is an increasing proportion of Canadians who believe that science and technology plays a significant role in the economy, the environment and in their everyday lives. | <p><u>What's Next?</u></p> <ul style="list-style-type: none"> NRCan will continue to promote its activities and the results of its science and technology efforts to the public, decision-makers, the media, and the research community at large. Follow-up tracking survey will be undertaken in 2000-01. NRCan will continue its S&T work with the forestry, minerals and metals, energy and earth sciences sectors to maximize economic and social benefits while safeguarding the environment. |

Performance Indicator Reporting (cont'd):

Goal 2, Objective 2.3:

Indicator: Leveraged funding from First Nations Communities and other Partners under the First Nation Forestry Program¹

| <p><u>First Nation Forestry Program (FNFP) Partnership Funding</u></p> <table border="1"> <caption>Expenditure (\$millions)</caption> <thead> <tr> <th>Year</th> <th>FNFP</th> <th>First Nations</th> <th>Other Sources</th> </tr> </thead> <tbody> <tr> <td>1996/97</td> <td>5.8</td> <td>4.2</td> <td>1.9</td> </tr> <tr> <td>1997/98</td> <td>5.5</td> <td>6.5</td> <td>5.3</td> </tr> <tr> <td>1998/99</td> <td>5.0</td> <td>3.8</td> <td>6.0</td> </tr> </tbody> </table> | Year | FNFP | First Nations | Other Sources | 1996/97 | 5.8 | 4.2 | 1.9 | 1997/98 | 5.5 | 6.5 | 5.3 | 1998/99 | 5.0 | 3.8 | 6.0 | <p><u>NRCan's Contribution</u></p> <ul style="list-style-type: none"> NRCan works closely with First Nations project applicants and encourages them to seek out partners to support projects. NRCan informs non-Aboriginal forestry companies and provincial government agencies of the First Nation Forestry Program and the potential opportunities to partner with First Nations. NRCan provides the infrastructure and coordination for the implementation of the program, including the coordination of the National Management Committee and provincial and territorial managements committees that bring the program partners together. |
|---|--|---------------|---------------|---------------|---------|-----|-----|-----|---------|-----|-----|-----|---------|-----|-----|-----|---|
| Year | FNFP | First Nations | Other Sources | | | | | | | | | | | | | | |
| 1996/97 | 5.8 | 4.2 | 1.9 | | | | | | | | | | | | | | |
| 1997/98 | 5.5 | 6.5 | 5.3 | | | | | | | | | | | | | | |
| 1998/99 | 5.0 | 3.8 | 6.0 | | | | | | | | | | | | | | |
| <p><u>What Does the Graph Mean?</u></p> <ul style="list-style-type: none"> Federal funding has been used by First Nations project applicants to lever additional project funds from First Nations communities and other non-Aboriginal partners annually since 1996-97. Non-Aboriginal partner funding has grown substantially since the beginning of the program. Over the first three years of the program, 1996-97 to 1998-99, federal funding of \$16.4 million resulted in an additional \$27.9 million being levered bringing total program value to \$44.0 million. Leverage ratios were 1:1 in 1996-97; 1:2.2 in 1997-98; and 1:1.9 in 1998-99. | <p><u>What's Next?</u></p> <ul style="list-style-type: none"> NRCan will continue to assist First Nations to acquire non-Aboriginal partner funds. NRCan will continue to market the benefits and importance of partnerships to government and non-Aboriginal forestry companies to ensure First Nations forestry needs are met. | | | | | | | | | | | | | | | | |

1. A target has not been established for this indicator.

Performance Indicator Reporting (cont'd):

Goal 3, Objective 3.1:

Indicator: Trends In Energy Efficiency¹

| | |
|--|---|
| <p><u>Change in Energy Use Due to Efficiency Gains</u></p> <p>Source: Office of Energy Efficiency</p> | <p><u>NRCan's Contribution</u></p> <ul style="list-style-type: none"> Several factors have contributed to saving energy. Among these are the efforts of NRCan's Office of Energy Efficiency (OEE) which manages and operates 18 energy efficiency initiatives. These initiatives are aimed at moving the market toward improved energy efficiency. Initiatives target all energy consumers and emphasize partnerships and economic investments. The OEE uses five basic policy tools in pursuing its vision of "Leading Canadians to energy efficiency at home, at work and on the road". These policy tools are: a) leadership, demonstrated by increasing energy efficiency in federal operations; b) information, to advise energy users of efficiency opportunities; c) voluntary actions, by which manufacturers of energy using equipment and major energy users commit to improving energy efficiency; d) regulations, to eliminate inefficient products from the market; and e) fiscal incentives, to encourage the use of energy-efficient technologies and practices. |
| <p><u>What Does the Graph Mean?</u></p> <ul style="list-style-type: none"> Between 1990 and 1997, energy use increased mainly because of changes in activity (e.g., an increase in Gross Domestic Product, the number of cars and houses), structure (i.e., the mix of activity) and weather. Changes in energy efficiency kept energy use from increasing more than it otherwise would have over this period. The potential growth in energy use was reduced from 17.3 percent to 12.9 percent due to improvements in energy efficiency. This reduction in energy use saved Canadians an estimated \$4.4 billion per year and reduced carbon dioxide emissions by 4.1 percent relative to what they would have otherwise been in 1997. | <p><u>What's Next?</u></p> <ul style="list-style-type: none"> At Kyoto, Japan in December 1997, Canada committed to reduce emissions to six per cent below 1990 levels between 2008 and 2012. Current projections show that additional effort will be required to meet this target. In the 1998 federal budget, the Government of Canada allocated \$50 million per year for three years to the Climate Change Action Fund to develop a national implementation strategy and some early measures to address climate change. The OEE is playing a key role in the national climate change consultation process. This process will lead to the development of a realistic and effective climate change national implementation strategy aimed at the Kyoto target. |

1. Following the development of an energy efficiency index, which is expected in fiscal year 1999-2000, a directional target will be established for this indicator and consideration will be given to establishing a quantitative target.

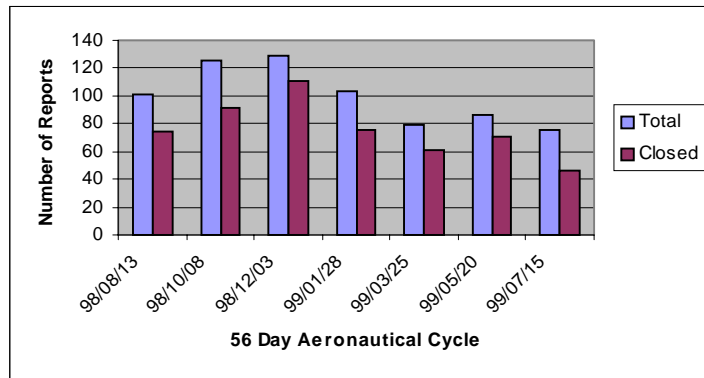
Performance Indicator Reporting (cont'd):

Goal 4, Objective 4.2:

Indicator: User satisfaction with aeronautical charts

Target: Maintain standards

Number of Discrepancy Management Reports Per 56 Day Aeronautical Cycle



NRCan's Contribution

- NRCan's Aeronautical and Technical Services (ATS) works for the safety of Canadians by:
 - publishing Canada's aeronautical charts, essential to the safety and efficiency of aviation in Canada;
 - managing the Emergency Mapping Program;
 - imaging and printing topographic maps, hydrographic charts and other cartographic products used for navigation, search and rescue.

What Does the Graph Mean?

- The graph shows the total number of Discrepancy Management Reports (DMRs) raised per 56-day aeronautical cycle and the number of those closed within the same cycle.
- A DMR can be a client complaint, or any kind of concern raised to the departments attention. Each concern will be investigated and reported back to the originator.
- NRCan expects to have closed and resolved at least 45% of DMRs within the same cycle, and the graph shows that this expectation is consistently met or exceeded.
- DMRs are addressed in accordance with the ISO 9001 standard.

What's Next?

- To reflect the changing needs of the aviation community, the ATS group has begun offering aeronautical information in digital form. This includes information from the Canadian Aeronautical Charts database as well as digital charts and electronic publications.
- The four High Enroute charts were replaced March 25, 1999, with a new series of six charts covering Canada. NRCan will monitor client reactions to this major improvement.

Performance Indicator Reporting (cont'd):

Goal 5, Objective 5.5:

Indicator/Target: Reduce the Departmental vehicle fleet size by 40 percent from 1995 figures and ensure, where technically and operationally possible, that all new vehicles run on alternative transportation fuels, by 1998¹.

| <p><u>NRCan Vehicle Fleet / Alternative Fuel Vehicles</u></p> <table border="1"> <thead> <tr> <th>Year</th> <th>Alternative Fuel Vehicles</th> <th>Total Number of Vehicles</th> </tr> </thead> <tbody> <tr> <td>1999</td> <td>90</td> <td>448</td> </tr> <tr> <td>1998</td> <td>82</td> <td>492</td> </tr> <tr> <td>1997</td> <td>80</td> <td>503</td> </tr> <tr> <td>1996</td> <td>67</td> <td>621</td> </tr> <tr> <td>1995</td> <td>60</td> <td>700</td> </tr> </tbody> </table> | Year | Alternative Fuel Vehicles | Total Number of Vehicles | 1999 | 90 | 448 | 1998 | 82 | 492 | 1997 | 80 | 503 | 1996 | 67 | 621 | 1995 | 60 | 700 | <p><u>NRCan's Contribution</u></p> <ul style="list-style-type: none"> Conventional fuel vehicles account for 22 percent of all carbon dioxide emissions produced annually in Canada. The federal government's fleet inventory of 25,000 vehicles is one of the largest in Canada, consuming 2 percent of all energy used for ground transportation. NRCan's Fleet Program is committed to reducing the number of Departmental vehicles through more efficient transportation strategies, such as pooling and sharing of fleet resources among federal departments. All new additions to NRCan's fleet inventory will operate on cleaner burning alternative fuels whenever possible. Over the last two years, this has translated into two-thirds of NRCan's purchases being alternative fuel vehicles. |
|---|---|---------------------------|--------------------------|------|----|-----|------|----|-----|------|----|-----|------|----|-----|------|----|-----|--|
| Year | Alternative Fuel Vehicles | Total Number of Vehicles | | | | | | | | | | | | | | | | | |
| 1999 | 90 | 448 | | | | | | | | | | | | | | | | | |
| 1998 | 82 | 492 | | | | | | | | | | | | | | | | | |
| 1997 | 80 | 503 | | | | | | | | | | | | | | | | | |
| 1996 | 67 | 621 | | | | | | | | | | | | | | | | | |
| 1995 | 60 | 700 | | | | | | | | | | | | | | | | | |
| <p><u>What Does the Graph Mean?</u></p> <ul style="list-style-type: none"> Since 1995, NRCan has reduced its vehicle fleet size from 700 vehicles to 448 vehicles. This is a reduction of 36 percent over the five-year period. In addition, NRCan now has 90 vehicles (19 percent of the fleet) that run on alternative fuels. | <p><u>What's Next?</u></p> <ul style="list-style-type: none"> NRCan will meet its overall 40 percent reduction target by March 31, 2000. 50 percent of NRCan's fleet inventory will be comprised of lower emissions, alternative fuel vehicles by March 31, 2001. NRCan will serve as a model for other fleet holders. | | | | | | | | | | | | | | | | | | |

1. This interim indicator/target is from NRCan's SD Strategy.

V Financial Performance

Financial Performance Overview

NRCan is in the process of shifting its reporting structure from business lines (S&T, developing federal policy and regulations, promoting Canada's international interests, knowledge infrastructure, corporate management and administration, Geomatics Canada Revolving Fund, and Sunset/Special Programs) to the goals shown in Section III of this report. One of the main repercussions of this shift in this year's report is a disconnect between textual performance reporting and financial information. Consequently, NRCan's financial reporting system is being "re-tooled" and the situation corrected for April 1, 2000.

Financial Variances

The lapse in the Operating Vote is less than the 5 percent carry forward authority allowed by the Treasury Board. The variance in the Capital is not significant. However, the variance in Grants and Contributions reflects the allocation of the Climate Change Action Fund (an increase of approximately \$24 million).

The variances between planned and actual non-respendable revenue are attributed to the refund of previous year's expenditures, adjustments to previous years' payables at year-end, interest on overdue accounts receivables. Also, actual respendable revenue was greater than previously forecasted (but within the allowable threshold of 125 percent of the Main Estimates amount) due to fluctuation in market conditions and an increased demand for NRCan's products and services.

Definitions

The financial tables in this section present financial information as "planned spending", "total authorities" and "actual spending". The definitions of these terms are:

- Main Estimates - These dollar figures match those shown in Part II Main Estimates. They represent what the plan was at the beginning of the year.
- Planned Spending - These dollar figures match those shown in *Natural Resources Canada 1998-99 Estimates, A Report on Plans and Priorities*. They represent what the plan was at the beginning of the year, adjusted to include Federal Budget Announcements.
- Total Authorities - These dollar figures include the main and supplementary estimates for Natural Resources Canada and match the dollar figures shown in the *Public Accounts for 1998-99*. They represent what additional spending Parliament has approved for Natural Resources Canada to reflect changing priorities and unforeseen events.
- Actual Spending - These dollar figures match those shown in the *Public Accounts for 1998-99* for Natural Resources Canada. They represent what was actually spent.

1. Summary of Voted Appropriations

Authorities for 1998-99

Financial Requirements by Authority (millions of dollars)

| Vote | Program | Main Estimates 1998-99 | Planned Spending ¹ 1998-99 | Total Authorities ¹ 1998-99 | Actuals 1998-99 |
|------------------------|--|---------------------------|--|---|--------------------|
| 1 | Operating expenditures | 372.8 | 413.0 | 416.8 | 408.2 |
| 5 | Capital expenditures | 12.6 | 12.6 | 12.6 | 10.1 |
| 10 | Grants and contributions | 42.6 | 43.6 | 64.3 | 39.0 |
| (S) | Minister of Natural Resources -- Salary and motor car allowance | 0.1 | 0.1 | 0.1 | 0.1 |
| (S) | Contributions to employee benefit plans | 41.1 | 41.1 | 43.2 | 43.2 |
| (S) | Canada - Nova Scotia Development Fund | 4.1 | 4.1 | 1.0 | 1.0 |
| (S) | Canada - Newfoundland Development Fund | 5.5 | 5.5 | 3.3 | 3.3 |
| (S) | Canada - Newfoundland Offshore Petroleum Board | 1.4 | 1.4 | 1.2 | 1.2 |
| (S) | Canada - Nova Scotia Offshore Petroleum Board | 0.7 | 0.7 | 0.7 | 0.7 |
| (S) | Payments to the Nova Scotia Offshore Revenue Account | 0.5 | 0.5 | 2.5 | 2.5 |
| (S) | Payments to the Newfoundland Offshore Petroleum Resource Revenue Fund | 0.2 | 0.2 | 0.2 | 0.2 |
| (S) | Geomatics Canada Revolving Fund | 0.6 | 0.6 | 6.5 | 0.1 |
| (S) | Nova Scotia Fiscal Equalization Offset Payment | 0.4 | 0.4 | 0.7 | 0.7 |
| Total Budgetary | | 482.6 | 523.8 | 553.1 | 510.3 |
| L15 | Total Non-budgetary: Loan to Nordion International Inc. for the construction of two nuclear reactors and related processing facilities to be used in the production of medical isotopes | 37.9 | 37.9 | 37.9 | 37.9 |
| Total NRCan | | 520.5 | 561.7 | 591.0 | 548.2 |

1. Votes 1 and 10 include \$40.0 million for the Climate Change Action Fund.

2. The additional variance between Planned Spending and the Total Authorities, total budgetary is mainly attributable to funding received via Supplementary Estimates. The major items are the Carry Forward and Collective Bargaining.

2. Comparison of 1998-99 Total Planned Spending to Actual Spending and Total Authorities

Departmental Planned versus Actual Spending and Total Authorities by Business Line (millions of dollars) (Budgetary)

| Business Lines | Operating | Capital | Voted Grants and Contributions | Statutory Grants and Contributions | Total Gross Expenditures | Less: Respendable Revenue ¹ | Total Net Voted Expenditures |
|--|--------------|-------------------------|--------------------------------|------------------------------------|--------------------------|--|------------------------------|
| Science and Technology | | | | | | | |
| Reference levels | 187.7 | 6.9 | 18.5 | - | 213.1 | (14.8) | 198.3 |
| <i>Total authorities</i> | <i>194.6</i> | <i>3.4</i> | <i>21.1</i> | - | <i>219.1</i> | <i>(15.2)</i> | <i>203.9</i> |
| Actuals | 193.3 | 2.1 | 20.3 | - | 215.7 | (15.2) | 200.5 |
| Knowledge Infrastructure | | | | | | | |
| Reference levels | 122.4 | 2.6 | 9.6 | - | 134.6 | (3.0) | 131.6 |
| <i>Total authorities</i> | <i>136.2</i> | <i>0.3</i> | <i>4.9</i> | - | <i>141.4</i> | <i>(2.4)</i> | <i>139.0</i> |
| Actuals | 134.9 | - | 4.9 | - | 139.8 | (2.4) | 137.4 |
| Developing Federal Policy & Regulations | | | | | | | |
| Reference levels | 73.2 | 2.7 | 13.4 | 2.1 | 91.4 | (1.8) | 89.6 |
| <i>Total authorities</i> | <i>71.0</i> | <i>0.4</i> | <i>17.4</i> | <i>1.9</i> | <i>90.7</i> | <i>(2.7)</i> | <i>88.0</i> |
| Actuals | 68.2 | - | 12.1 | 1.9 | 82.2 | (2.7) | 79.5 |
| Promoting Canada's International Interests | | | | | | | |
| Reference levels | 10.0 | 0.4 | - | - | 10.4 | 0.0 | 10.4 |
| <i>Total authorities</i> | <i>9.5</i> | <i>0.1</i> | <i>0.2</i> | - | <i>9.8</i> | <i>(0.3)</i> | <i>9.5</i> |
| Actuals | 8.4 | - | 0.2 | - | 8.6 | (0.3) | 8.3 |
| Sunset/Special Programs | | | | | | | |
| Reference levels | 2.8 | - | 1.1 | 10.7 | 14.6 | 0.0 | 14.6 |
| <i>Total authorities</i> | <i>6.6</i> | - | <i>20.6</i> | <i>7.7</i> | <i>34.9</i> | <i>(0.2)</i> | <i>34.7</i> |
| Actuals | 6.1 | - | 1.4 | 7.7 | 15.2 | (0.2) | 15.0 |
| Corporate Management & Administration | | | | | | | |
| Reference levels | 37.4 | - | 0.1 | - | 37.5 | 0.0 | 37.5 |
| <i>Total authorities</i> | <i>63.1</i> | <i>8.4</i> | <i>0.1</i> | - | <i>71.6</i> | <i>0.0</i> | <i>71.6</i> |
| Actuals | 61.4 | 8.0 | 0.1 | - | 69.5 | 0.0 | 69.5 |
| Geomatics Canada Revolving Fund | | | | | | | |
| Reference levels | 17.4 | - | - | - | 17.4 | (16.8) | 0.6 |
| <i>Total authorities</i> | <i>22.8</i> | - | - | - | <i>22.8</i> | <i>(16.4)</i> | <i>6.4</i> |
| Actuals | 15.9 | 0.6 | - | - | 16.5 | (16.4) | 0.1 |
| Total | | | | | | | |
| Reference levels | 450.9 | 12.6 | 42.7 | 12.8 | 519.0 | (36.4) | 482.6 |
| <i>Total authorities</i> | <i>503.8</i> | <i>12.6</i> | <i>64.3</i> | <i>9.6</i> | <i>590.3</i> | <i>(37.2)</i> | <i>553.1</i> |
| Actuals | 488.2 | 10.7³ | 39.0 | 9.6 | 547.5 | (37.2) | 510.3 |
| Other Revenues and Expenditures | | | | | | | |
| Less: Non-Respendable Revenues² | | | | | | | |
| Reference levels | | | | | | | 9.5 |
| <i>Total authorities</i> | | | | | | | 9.5 |
| Actuals | | | | | | | 17.2 |
| Add: Cost of services provided by other departments | | | | | | | |
| Reference levels | | | | | | | 23.0 |
| <i>Total authorities</i> | | | | | | | 46.5 |
| Actuals | | | | | | | 46.5 |
| Net Cost of the Program | | | | | | | |
| Reference levels | | | | | | | 496.1 |
| <i>Total authorities</i> | | | | | | | 590.1 |
| Actuals | | | | | | | 539.6 |

1. These revenues were formerly called "Revenues Credited to the Vote".

2. These revenues were formerly called "Revenues Credited to the CRF".

3. Actual Capital includes \$10.1 million for the Department and \$0.6 million for the Revolving Fund.

3. Historical Comparison of Total Net Planned Spending to Net Actual Spending and Total Authorities

Departmental Planned versus Actual Spending and Total Authorities by Business Line (millions of dollars) (Budgetary)

| Business Lines | Actuals 1996-97 | Actuals 1997-98 | Main Estimates 1998-99 | Planned Spending 1998-99¹ | Total Authorities 1998-99¹ | Actuals 1998-99 |
|---|----------------------------|----------------------------|---------------------------------------|---|--|----------------------------|
| Science and Technology | 249.7 | 203.9 | 198.3 | 199.3 | 203.9 | 200.5 |
| Knowledge Infrastructure | 126.3 | 137.6 | 131.6 | 131.7 | 139.0 | 137.4 |
| Developing Federal Policy and Regulations | 62.4 | 66.5 | 89.6 | 129.7 | 88.0 | 79.5 |
| Promoting Canada's International Interests | 9.2 | 6.5 | 10.4 | 10.4 | 9.5 | 8.3 |
| Sunset / Special Programs | 52.1 | 24.8 | 14.6 | 14.6 | 34.7 | 15.0 |
| Corporate Management and Administration | 50.4 | 76.6 | 37.5 | 37.5 | 71.6 | 69.5 |
| Geomatics Canada Revolving Fund | (1.2) | (0.6) | 0.6 | 0.6 | 6.4 | 0.1 |
| Total Budgetary | 548.9 | 515.3 | 482.6 | 523.8 | 553.1 | 510.3 |

1. Includes \$40.0 million for the Climate Change Action Fund. This was initially located in the Developing Federal Policy and Regulations business line and later moved to the Corporate Management and Administration business line.

4. Details of Revenue by Class¹

Revenue received is non-respendable revenue and is not available to finance activity expenditures, with the exception of the Geomatics Canada Revolving Fund. However, respendable revenue is also available to offset expenditures up to 125 percent of the amount of revenue reported in the Main Estimates.

| (millions of dollars) | Actuals 1996-97 | Actuals 1997-98 | Planned Revenue ² 1998-99 | Actuals 1998-99 |
|---|--------------------|--------------------|--|--------------------|
| Privileges, licenses and permits | 17.9 | 14.3 | 10.7 | 13.0 |
| Return on investments | 2.1 | 1.4 | -- | 0.1 |
| Proceeds from sales | 3.0 | 2.2 | 1.3 | 1.8 |
| Services and service fees | 12.4 | 15.2 | 15.7 | 16.6 |
| Refunds of previous years' expenditures | 1.2 | 0.8 | -- | 3.3 |
| Adjustments to Payables at Year End | 8.3 | 1.3 | -- | 0.6 |
| Provision of Departmental Services to the Geomatics Canada Revolving Fund ³ | 1.8 | 1.1 | 1.1 | 1.1 |
| Revenue credited to the Geomatics Canada Revolving Fund ⁴ | 17.6 | 15.9 | 16.8 | 16.4 |
| Miscellaneous | 2.1 | 0.6 | 0.3 | 1.5 |
| Total Revenue | 66.4 | 52.8 | 45.9 | 54.4 |
| Less available for respending: | | | | |
| Respendable Revenues ⁵ | 15.8 | 18.5 | 19.6 | 20.8 |
| Geomatics Canada Revolving Fund ⁴ | 17.6 | 15.9 | 16.8 | 16.4 |
| Non-Respendable Revenues⁶ | 33.0 | 18.4 | 9.5 | 17.2 |

1. Items in this table represent the major categories and types of revenue generated by NRCan.

2. As per 1998-99 Annual Reference Level Update.

3. These amounts are taken from the Pro-Forma Statements presented in the Geomatics Canada Transitional Business Plan.

4. This amount represents the actual cash received by the revolving fund and consequently does not take into account the receivables.

5. These revenues were formerly called "Revenues Credited to the Vote".

6. These revenues were formerly called "Revenues Credited to the CRF".

Note: The Revenue by Class does not include GST Tax Revenues.

5. Total Transfer Payments by Business Line (millions of dollars)

| Business Lines | Actuals 1996-97 | Actuals 1997-98 | Main Estimates 1998-99 | Planned Spending 1998-99 | Total Authorities 1998-99 | Actuals 1998-99 |
|--|--------------------|--------------------|------------------------------|--------------------------------|---------------------------------|--------------------|
| GRANTS | | | | | | |
| Science and Technology | 0.2 | 0.1 | 0.2 | 0.2 | 0.1 | - |
| Knowledge Infrastructure | 1.2 | 0.1 | 0.2 | 0.2 | 0.1 | 0.1 |
| Developing Federal Policy and Regulations | 0.1 | 0.2 | 0.1 | 0.1 | 0.7 | 0.7 |
| Promoting Canada's International Interests | - | - | - | - | - | - |
| Sunset/Special Programs | - | - | - | - | - | - |
| Corporate Management and Administration | - | - | - | 0.1 | - | - |
| Total Grants | 1.5 | 0.4 | 0.5 | 0.6 | 0.9 | 0.8 |
| CONTRIBUTIONS | | | | | | |
| Science and Technology | 27.1 | 17.9 | 18.2 | 19.2 | 21.1 | 20.3 |
| Knowledge Infrastructure | 1.3 | 4.1 | 9.5 | 9.5 | 4.9 | 4.8 |
| Developing Federal Policy and Regulations | 6.0 | 15.0 | 15.5 | 15.5 | 18.5 | 13.3 |
| Promoting Canada's International Interests | - | 0.1 | - | - | 0.2 | 0.2 |
| Sunset/Special Programs | 43.9 | 22.6 | 11.8 | 11.7 | 28.3 | 9.2 |
| Corporate Management and Administration | - | 0.1 | - | - | 0.1 | - |
| Total Contributions | 78.3 | 59.8 | 55.0 | 55.9 | 73.1 | 47.8 |
| Total Transfer Payments | 79.8 | 60.2 | 55.5 | 56.5 | 74.0 | 48.6 |

6. Loans, Investments and Advances by Business Line (millions of dollars)

| Business Lines | Opening April 1st 1997 | Opening April 1st 1998 | New loans issued | Repayments 1998-99 | Outstanding Balance 1998-99 |
|--|--|--|---------------------------------|-------------------------------|--|
| Loans | | | | | |
| Sunset / Special Programs | | | | | |
| Regional Electrical Interconnections New Brunswick Electric Power Commission | 5.0 | - | - | - | - |
| Atomic Energy of Canada Ltd. | | | | | |
| Housing | 0.4 | 0.3 | - | 0.1 | 0.2 |
| Heavy Water Inventory | 11.5 | 10.5 | - | 1.0 | 9.5 |
| Loans to facilitate the implementation of the Hibernia Development Project | 132.0 | 132.0 | - | - | 132.0 |
| Nordion International Inc. | - | 14.9 | 37.9 | - | 52.8 |
| Total Loans | 148.9 | 157.7 | 37.9 | 1.1 | 194.5 |
| Investments and Advances | | | | | |
| Sunset / Special Programs | | | | | |
| Lower Churchill Development Corporation | 14.8 | 14.8 | - | - | 14.8 |
| Atomic Energy of Canada Ltd. | 164.2 | 164.2 | - | - | 164.2 |
| DEVCO Working Capital Advance | - | - | 20.0 ¹ | 7.7 | 12.3 |
| Total Investments and Advances | 179.0 | 179.0 | 20.0 | 7.7 | 191.3 |
| Total | 327.9 | 336.7 | 57.9 | 8.8 | 385.8 |

1. The DEVCO Working Capital Advance is not reflected in the non-budgetary amounts for the Department. Although DEVCO is included in the Minister's Portfolio, it is an Agency of NRCAN and reports separately.

7. Geomatics Canada Revolving Fund Financial Summary

The Fund was established under Appropriation Act No. 3 in 1993-94 to provide products and services suitable for industry distribution, value-added services, and to help strengthen the geomatic industry on the international market. The Fund received a continuing, non-lapsing authority from Parliament to make payments out of the Consolidated Revenue Fund, not to exceed \$8 million at any time.

The good financial performance over the last three years has allowed the Fund to undertake the development of new products and the streamlining of its operational processes in order to improve the quality of its services to the geomatics industry and the Canadian public. This investment will continue over the next year and the benefits are expected to materialize in 2001-02.

The impact of the newly signed collective bargaining agreements on direct and indirect expenses explain the increase of 4 percent in expenditures and part of the decrease of 6 percent in revenue since these increases were not factored in the prices of products and services at the beginning of the fiscal year. They are now included in the new prices in 1999-2000.

| (thousands of dollars) | Actuals 1996-97 | Actuals 1997-98 | Planned Spending 1998-99 | Total Authorities 1998-99 | Actuals 1998-99 |
|--------------------------------------|--------------------|--------------------|--------------------------------|---------------------------------|--------------------|
| Revenues | | | | | |
| Products | 10,248 | 10,593 | 11,000 | 11,000 | 9,845 |
| Services | 3,519 | 4,158 | 2,900 | 2,900 | 4,433 |
| Consulting | 3,027 | 1,907 | 2,900 | 2,900 | 1,373 |
| Total revenues | 16,794 | 16,658 | 16,800 | 16,800 | 15,651 |
| Expenditures | 15,412 | 15,211 | 16,400 | 16,400 | 15,818 |
| Profit (Loss) | 1,382 | 1,447 | 400 | 400 | (167) |
| Changes in Working Capital | 407 | 207 | (1,000) | (1,000) | (742) |
| Capital acquisitions | (47) | (1,771) | (300) | (300) | (517) |
| Other items | 203 | 1,374 | 300 | 300 | 447 |
| Cash requirements | 1,945 | 1,257 | (600) | (600) | (979) |
| Cash at April 1 st | (3,649) | (1,704) | (3,200) | (3,200) | (447) |
| Cash at March 31 st | (1,704) | (447) | (3,800) | (3,800) | (1,426) |
| Year end adjustments | (463) | (1,084) | - | - | (237) |
| Cumulative Net Authority Used | (2,167) | (1,531) | (3,800) | (3,800) | (1,663) |

8. Contingent Liabilities (millions of dollars)

| List of Contingent Liabilities | Amount of Contingent Liability | | |
|---|---------------------------------------|--------------------------|---|
| | March 31 1997 | March 31 1998 | Current as of March 31, 1999 |
| Claims and Pending and Threatened Litigation | 54.9 | 7.9 | 22.4 |
| Total Contingent Liabilities | 54.9 | 7.9 | 22.4 |

VI Supplementary Information

A. Honours and Awards: “People are Our Principal Strength”

The following is a summary of awards given to NRCan staff and organizations in the past year:

Nick Beck received the Canadian Hydrogen Association Medal “for outstanding services for the advancement of hydrogen energy and the hydrogen economy in Canada” at the Canadian Hydrogen Conference.

Dr. Marc Bétournay and **Dr. T-T Chen**: received Fellowships from the Canadian Institute of Mining, Metallurgy and Petroleum for their contributions to the mining industry.

Patti Bordeleau, Cheryl Corkery, Robert Lévis, Louise Traversy, Ghislaine Joly, Louise Levesque and **Huguette Villeneuve**: received the Canadian Public Professional Personnel Management Association's 1999 Gold Star Agency Award for their contribution to a very successful self-identification survey on NRCan employment equity statistics which established a best practice for government.

Martine Brisebois, Michael Waterfield and **Mark Kennedy**, received the Canadian Public Professional Personnel Management Association's 1999 Gold Star Agency Award for their innovative work in developing a web-based orientation program for NRCan staff.

Steve Burgess, Jim Clarke, Peter Hale, Hélène Jetté, David Pasho and **Paula Caldwell-St. Onge**: received the Head of Public Service Award for pioneering an open, internet-based, consultation process to develop recommendations for the 1998 Mines Ministers' Conference.

Dr. Graeme Bonham-Carter: received the 1998 Krumbein Medal, the highest honour bestowed by the International Association of Mathematical Geology.

Dr. Dale Buckley: was invited by the Chemical Institute of Canada to be their Atlantic Region Visiting Lecturer, the first marine scientist to be so honoured.

Dr. Josef Cihlar, Dr. Zhanqing Li and **Dr. Bryan Lee** of NRCan, **Serge Nadon** of Environment Canada, and **Goran Pavlic** and **Dr. Robert Fraser** of Intermap Technologies Ltd.: received the Head of Public Service Award for their "exceptional achievement in extracting and delivering forest fire information from satellites".

Dr. John Clague: was elected a Fellow of the Royal Society of Canada.

Don Dainty, Mahe Gangal and Michel Grenier: were named in a formal letter of thanks to the Mineral Technology Branch from Ontario's Provincial Coordinator for Mining for their contributions towards the fostering of uniform standards and regulations in mining.

Elhachmi Es-Sadiqi: received, along with two collaborators from McGill University, the Meritorious Award for their technical paper presented at the Mechanical Working and Steel Processing Conference.

Dr. Gwendy Hall: received the International Association of Exploration Geochemists' Distinguished Lecturer award recognizing her research in analytical methods in exploration geochemistry.

Dr. Tony Hamblin and Kirk Osadetz: were presented with Tracks Awards by The Canadian Society of Petroleum Geologists for their continuing contributions to the *Bulletin of Canadian Petroleum Geology*, as well as their leadership in the scientific and technical programs of the Society.

Dr. Ted Irving: received a major honour with his appointment as a foreign associate of the U.S. National Academy of Science.

Dr. Ian Jonasson: shared the Canadian Institute of Mining and Metallurgy's (CIM) Barlow Memorial Medal.

Dr. Rod Kirkham: was awarded the Geological Association of Canada's Derry Medal for his contributions to the origin of ore deposits, notably the geology of copper deposits.

Dr. Jan Kouba: received an award at the 10th International GPS Service (IGS) Governing Board Meeting in San Francisco, for his leadership and significant contributions to the International GPS Service (IGS) as the Analysis Coordinator from 1993 through to December 31, 1998.

Dr. Krystyna Klimaszewska: received the Public Service Award of Excellence for her contribution in research into the somatic embryogenesis (i.e. cloning) of pine trees. Her work helped position Canada as world leader in forest biotechnology and laid the groundwork for opening-up international markets.

Dr. Tadeusz Kudra: was honoured with a Certificate of Recognition from McGill University for his teaching services as Adjunct Professor of Chemical Engineering.

Selcuk Kuyucak and Renata Zavadil: won a Best Paper Award for their technical paper presented at the triennial Cast Expo, Steel Division.

Dr. Mohan Malhotra: was awarded the degree “Doctor Honoris Causa” by the *Universidad Autonoma de Nueve Leon*, Mexico’s largest university, for outstanding contributions to concrete technology and for his work as a consultant to the University since 1968. Dr. Malhotra also received the Frank Erskine Award by the Expanded Clay and Shale Institute at a ceremony held in Santa Fe, USA, in recognition of his outstanding contribution to the durability of lightweight concrete.

Tom Malis: won, together with two collaborators from Fibics Inc., the Best Poster Award at the Annual Meeting of the Microscopy Society of America. This is the first time a Canadian paper has won this award.

Dr. Shaheer Mikhail: received the 1998 Outstanding Service Award of the North American Thermal Analysis Society in Cleveland, Ohio. This international award is given once a year in recognition of significant contributions to the Society, in the field of thermal analysis and high-temperature chemistry.

Dr. Grant Mossop: was named the University of Calgary's 1998 Distinguished Alumni Award winner in recognition of his distinguished career and leadership in the earth sciences.

Mrs. Joan Murphy, received a Mentor of the Year Award from the Federal Public Sector Youth Internship Program for mentoring a graduate student.

Gord Olsson: received the Professional Recognition Award from the Alberta Land Surveyors Association. This award honours "Alberta Land Surveyors who have brought distinction to themselves, to the surveying profession, or to society in general through extraordinary service or achievement".

Doug Percy: received a Certificate of Appreciation from Environment Canada for Assistance in remote sensing provided during the Swissair 111 incident, September 1998 at Peggy’s Cove.

Mihaela Popescu, Yemi Fasoyinu and Mahi Sahoo: won a Best Paper Award for their technical paper presented at the triennial Cast Expo, Copper Alloy Division.

Dr. Winston Revie: was made a fellow of two leading societies: NACE International (the National Association of Corrosion Engineers) and CIM (the Canadian Institute of Mining, Metallurgy and Petroleum).

Dr. Marc St-Onge: was honoured as the Atlantic Geological Society's 1998 visiting lecturer.

Kumar Sadayappan, Yemi Fasoyinu, Denis Cousineau, Mahi Sahoo and Renata Zavadil: won the Howard F. Taylor Award in recognition of the paper having the greatest long-range technical significance in the field of cast metals technology and presented at an Annual Congress of the American Foundrymen’s Society.

Dr. Don Sangster: recipient of The Geological Association of Canada's highest award, the Logan Medal for his internationally renowned work on the genesis of lead and zinc deposits.

Dr. Wladimir Smirnoff, received the Order of Canada in April, 1998 for his lifetime work and accomplishments in developing preparations of *Bacillus thuringiensis* (Bt), a biological insecticide presently in use for the control of spruce budworm.

Dr. Harvey Thorleifson: was named a 1998-1999 CIM Distinguished Lecturer.

Dr. John Udd: received a Distinguished Service Medal from CIM for his long and meritorious service and research benefits to the mining industry.

Dr. Eleanor White: was honoured with a Public Service Award of Excellence by the President of the Treasury Board in recognition for her leading-edge work with DNA technology that will curtail illegal tree cutting, an activity that costs \$20 million a year in lost tax revenue in one province alone.

Michael Wiggin: received a lifetime membership award for meritorious service to the district energy industry at a recent Canadian District Energy Association.

Awards Presented to NRCan by Other Organizations in 1998-99

CANMET, Bells Corners: received the First Prize award in the Existing Industrial Facility category at the 1999 American Society of Heating, Refrigeration and Air Conditioning Engineers Ottawa Valley Chapter meeting.

NRCan was honoured by the Canadian Centre for Management Development in recognition for its quality management practices. These management practices were documented in the Centre's good-practices report on citizen-centred service delivery as part of their research to accelerate the modernization of service across the public sector in Canada.

NRCan received the Thomas G. Morry Award from the Canadian Public Personnel Management Association for outstanding work in the re-engineering of its classification process resulting in substantial savings in cost and time.

The EnerGuide Labelling Program: received an Award of Merit from the Toronto Chapter of the International Association of Business Communicators for its package of information developed for the 1998 EnerGuide Month activities. The package included point of sale information, and pocket cards for appliance sales people.

Awards Presented by NRCan to Other Organizations in 1998-99

NRCan has recognized other organizations for their valuable contributions to the Department's vision, mission and goals:

EnerGuide for Vehicle Awards were presented by Minister Goodale and the Minister of Transport, the Honorable David Collenette, at the Canadian International Auto Show in Toronto to recognize seven manufacturers who have shown leadership in designing and building fuel-efficient vehicles: Chrysler Canada, General Motors of Canada Ltd., Mazda Canada Inc., Mercedes-Benz of Canada Inc., Suzuki Canada Inc., Toyota Canada Inc., and Volkswagen of Canada Inc..

At the First National Energy Efficiency Awards conference, Minister Goodale presented awards recognizing Canadian innovation and progress in making more efficient use of energy resources to the following organizations and individuals in the categories of energy-using equipment, building projects, industry, transportation, outreach and student competition: Inglis Limited, DML Control Inc., Robert Dumont, Yukon Energy Corporate Office, Collège de l'Outaouais, Swan Lake Recreation Complex, Potash Corporation of Saskatchewan, Stantec Global Technologies, Ontario Power Generation, Labatt Breweries of Canada, Bison Transport, Dofasco and Stelco; Traxis Inc., Toronto District School Board, and Ryerson Polytechnic University.

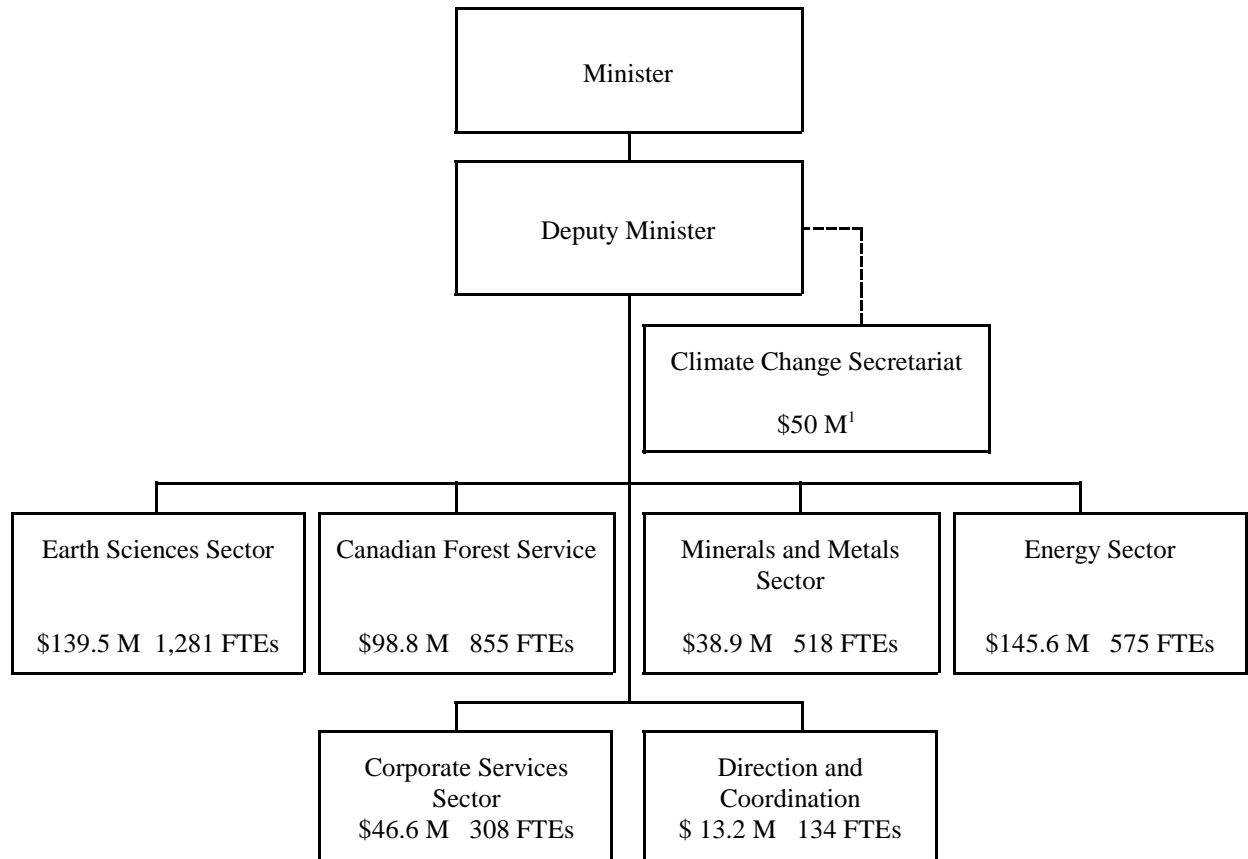
Minister Goodale presented the VCR Inc. Council of Champions and Leadership Awards to the following organizations and individuals who have distinguished themselves by their commitment, action and leadership toward the voluntary reduction of greenhouse gas emissions: Encal Energy Limited, Southern Alberta Institute of Technology, the Alberta Government, the City of Ottawa, TransAlta Utilities, DuPont Canada Inc., MacMillan Bloedel Limited, Dofasco Inc., Syncrude Canada Limited, Husky Oil Operations Limited, Petro-Canada, Enbridge Consumers Gas, the Canadian Association of Petroleum Producers, and the Honorable Anne McLellan.

Rick Gudz received the 1998 Real Property Award for individual achievement. The award recognizes his efforts in promoting and facilitating the implementation of NRCan's Federal Buildings Initiative (FBI) in Canadian Forces Bases located in Western Canada. As a result of his efforts, six bases have issued contracts or have tendered for proposals for retrofits for improved energy efficiency. More than \$18 million of private-sector money will be invested and \$2.2 million of energy savings will be generated.

On behalf of Minister Goodale, the 1998 National Topographic Data Base Excellence Award was given to Quebec's Innovision Géomatique Inc. in recognition of their superlative services.

B. 1998-99 Organization Chart

NRCan delivers on its goals and objectives with strong internal interdependency and sharing of knowledge and expertise across the following organizational groups and sectors:



The **Earth Sciences Sector** provides the comprehensive geoscience and geomatics knowledge base to support public sector activities in Canada and investment decisions and operations by the Canadian private sector at home and overseas. It extends logistics support to Arctic science through the Polar Continental Shelf Project. Geomatics Canada provides geographical information, topographic maps and aeronautical charts, legal surveys of Canada Lands, geodesy for precise positioning, and applications of remotely sensed earth observation data. Through the Geological Survey of Canada, the Sector provides the framework for mineral and petroleum exploration and helps Canadians mitigate the impact of hazards such as earthquakes and toxic substances in the environment.

1. The Climate Change Secretariat reports to the Deputy Minister of NRCan and Deputy Minister of Environment Canada. The resources are notionally allocated as follows: \$40.0 million to NRCan of which \$5.0 million was transferred to Industry Canada via supplementary estimates; and \$10.0 million to Environment Canada.

The **Canadian Forest Service** promotes the sustainable development of Canada's forests and the competitiveness of the Canadian forest sector for the well-being of present and future generations of Canadians. As the premier forestry science and technology (S&T) research and national policy coordination agency in Canada, the Canadian Forest Service plays a pivotal role in building a consensus on key forest issues, shaping national and international forest agendas, and generating and transferring knowledge through its world-class forestry research. Its policy development and S&T research programs are delivered through a headquarters establishment and ten national science research networks operating out of five forestry research centres located across Canada.

The **Minerals and Metals Sector** promotes the sustainable development of Canada's minerals and metals resource industries by integrating economic, social and environmental objectives. It provides policy advice, S&T, and commodity and statistical information to support decision-making. It is also the federal government's primary source of expertise on explosives regulations and technology. The Sector promotes globally the safe use of minerals and metals, as well as the application of sound science to decisions involving minerals and metals, and facilitates the development of domestic and international partnerships to address important challenges concerning the responsible development and use of minerals, metals and their products.

The **Energy Sector** fosters the sustainable development and responsible use of Canada's energy resources to meet the present and future needs of Canadians. It focuses on S&T, policies, programs, knowledge and international activities in the areas of energy efficiency, renewables and alternatives, and energy resources to further sustainable development. Through its work, the Sector promotes better environmental and consumer choices, contributes to technical innovation, job creation and economic growth, facilitates environmental protection and increased public safety and security, and helps to ensure reliable and secure energy supplies for Canadians.

The **Corporate Services Sector** provides central financial, administrative, information management and human resource services.

Direction and Coordination consists of the Department's Executive Offices as well as a Strategic Planning and Coordination Branch, Legal Services, Communications Branch, and an Audit and Evaluation Branch.

The **Climate Change Secretariat** in cooperation with the provinces and territories, coordinates the development of the National Implementation Strategy on Climate Change, acts as a focal point for developing the federal government's domestic policy and programming on climate change, and manages the Climate Change Action Fund. The Secretariat reports to the Deputy Ministers of NRCan and Environment Canada.

C. Contact and Internet Addresses for Further Information, and Statutory Annual Reports

Natural Resources Canada
Headquarters Library
Public Enquiries
Main Floor, 580 Booth Street
Ottawa, ON, K1A 0E4

Telephone: (613) 995-0947
Fax: (613) 992-7211
E-mail: questions@NRCan.gc.ca

Statutory Annual Reports:

1. The State of Canada's Forests
<http://www.nrcan.gc.ca/cfs/proj/ppiab/sof/common/latest.shtml>
2. State of Energy Efficiency in Canada
http://oee.nrcan.gc.ca/seec/exec_summ.htm

Headquarters and Sector Internet Sites:

| | |
|---------------------------------------|---|
| Natural Resources Canada Home Page | http://www.nrcan.gc.ca |
| Canadian Forest Service | http://www.nrcan.gc.ca/cfs |
| Climate Change – Government of Canada | http://climatechange.gc.ca/english/html/index.html |
| Climate Change – NRCan | http://www.climatechange.nrcan.gc.ca/english/html/index.html |
| Climate Change Secretariat | http://climatechange.gc.ca/english/html/feature/feature.html |
| Corporate Services Sector | http://www.nrcan.gc.ca/css/css-pe.htm |
| Earth Sciences Sector | http://www.nrcan.gc.ca/ess |
| Energy Sector | http://www.es.nrcan.gc.ca |
| Minerals and Metals Sector | http://www.nrcan.gc.ca/mms |
| ResSources | http://www.nrcan.gc.ca/ressources |
| Statutes and Regulations | http://www.nrcan.gc.ca/dmo/spcb/regiss_e.html |
| Sustainable Development | http://www.nrcan.gc.ca/dmo/susdev |

Earth Sciences Sector Internet Sites:

| | |
|---|---|
| Aeronautical and Technical Services | http://aero.nrcan.gc.ca |
| Canada Centre for Remote Sensing | http://www.ccrs.nrcan.gc.ca |
| Canadian Geoscience Publications Directory | http://ntserv.gis.nrcan.gc.ca |
| Canadian Geospatial Data Infrastructure | http://cgdi.gc.ca |
| Canadian National Earthquake Hazards Program | http://www.seismo.nrcan.gc.ca |
| Canadian National Geomagnetism Program | http://www.geolab.nrcan.gc.ca/geomag |
| Centre for Topographic Information | http://maps.nrcan.gc.ca |
| Centre for Topographic Information – Sherbrooke | http://www.ccg.nrcan.gc.ca |
| Earth Sciences Information Centre | http://www.nrcan.gc.ca/ess/esic |
| GeoConnections | http://cgdi.gc.ca |
| Geodetic Survey | http://www.geod.nrcan.gc.ca |
| Geological Survey of Canada | http://www.nrcan.gc.ca/gsc |
| Geomatics Canada | http://www.geocan.nrcan.gc.ca |
| Legal Surveys Division | http://www.geocan.nrcan.gc.ca/lcd |
| National Air Photo Library | http://airphotos.nrcan.gc.ca |
| National Atlas of Canada | http://www-nais.ccrs.nrcan.gc.ca |
| National Atlas on SchoolNet | http://www-nais.ccrs.nrcan.gc.ca/schoolnet/ |
| National Geoscience Mapping Program (NATMAP) | http://ntserv.gis.nrcan.gc.ca/natmap |
| Polar Continental Shelf Project | http://polar.nrcan.gc.ca |
| ResSources GSC | http://rgsc.nrcan.gc.ca |

Canadian Forest Service Internet Sites:

| | |
|---------------------------------|---|
| CFS Atlantic Forestry Centre | http://www.fcmr.forestry.ca |
| CFS Great Lakes Forestry Centre | http://www.glfc.forestry.ca |
| CFS Laurentian Forestry Centre | http://www.cfl.forestry.ca |
| CFS Northern Forestry Centre | http://www.nofc.forestry.ca |
| CFS Pacific Forestry Centre | http://www.pfc.cfs.nrcan.gc.ca |

Minerals and Metals Sector Internet Sites:

| | |
|---|---|
| Aquatic Effects Programme | http://www.nrcan.gc.ca/mets/aete/ |
| Biominet | http://www.nrcan.gc.ca/mets/biominet/ |
| Business Climate for Mineral Investment | http://mmsd1.mms.nrcan.gc.ca/business |
| Canadian Explosives Research Laboratory | http://www.nrcan.gc.ca/mms/explosif/cerldireng.htm |
| Canadian Certified Reference Materials Project (CCRMP) | http://www.nrcan.gc.ca/mets/ccrmp |
| Canadian Lightweight Materials Research Initiative (CLiMRI) | http://climri.nrcan.gc.ca |
| Canadian Minerals Yearbook | http://www.nrcan.gc.ca/mms/cmy/index_e.html |
| Canadian Mining Technology Network (CMT-Net) | http://cmt-net.nrcan.gc.ca |
| CANMET Environment Laboratory | http://envirolab.nrcan.gc.ca |
| CANMET Experimental Mine (Val-d'Or) | http://www.nrcan.gc.ca/mms/canmet-mtb/valdor/menu_e.htm |
| CANMET Materials Technology Laboratory | http://www.nrcan.gc.ca/mms/canmet-mtb/mtl |
| CANMET Mineral Technology Branch | http://www.nrcan.gc.ca/mms/canmet-mtb |
| CANMET Mining and Mineral Sciences Laboratories | http://www.nrcan.gc.ca/mms/canmet-mtb/mmsl.htm |
| Certifying Agency for Nondestructive Testing | http://ndt.nrcan.gc.ca |
| Economic and Financial Analysis Branch | http://www.nrcan.gc.ca/mms/efab/ |
| Explonet (Pilot under Construction) | http://www.nrcan.gc.ca/mms/efab/mmsd/explonet/which.htm |
| Explosives Regulatory Division | http://www.nrcan.gc.ca/mms/explosif/ |
| Mine Environment Neutral Drainage (MEND 2000) | http://www.nrcan.gc.ca/mets/mend/ |
| Minerals and Metals – A World to Discover | http://www.nrcan.gc.ca/mms/school/e_mine.htm |
| Minerals and Mining Statistics Division | http://www.nrcan.gc.ca/mms/efab/mmsd/ |
| Mining and Mapping MMS Knowledge | http://mmsd1.mms.nrcan.gc.ca/maps/ |
| Mining Taxation World | http://www.nrcan.gc.ca/ms/efab/tmrd/ |
| Proficiency Testing Program for Mineral Analysis Laboratories (PTP-MAL) | http://132.156.144.82/ptp/main.asp |

Energy Sector Internet Sites:

| | |
|---|---|
| CANMET Energy Technology Branch | http://www.nrcan.gc.ca/es/etb |
| CANMET Information Centre | http://www.nrcan.gc.ca/es/msd/cic/cicintro.htm |
| Energy Policy Branch | http://www.nrcan.gc.ca/es/new/enquir2.htm#Energy Policy Branch |
| Energy Resources Branch | http://www.nrcan.gc.ca/es/erb/erb/index.html |
| Office of Energy Efficiency | http://www.oe.nrcan.gc.ca |
| Office of Energy Research and Development | http://www.nrcan.gc.ca/es/new/oerd.htm |

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**Reader Feedback
NRCan's 1998-99 Performance Report**

We would like to hear from Canadians who read this report. Your comments will help ensure that we provide relevant information that is easily understood. Please send your completed questionnaire to the mail or e-mail address or fax number shown below.

1) Did you find the information you were looking for? YES / NO

2) a) What parts of the document did you find most useful?

b) the least useful?

3) Would you recommend this report to others? YES / NO

4) Are there any other comments you would like to make regarding this report?

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Natural Resources Canada
Headquarters Library
Public Enquiries
Main Floor, 580 Booth Street
Ottawa, Ontario
K1A 0E4

By Fax:

(613) 992-7211

By E-mail:

questions@NRCan.gc.ca

Thank you for your cooperation.