ESTIMATES

Natural Resources Canada

2001-2002
Estimates

Part III – Report on Plans and Priorities

Canada

The Estimates Documents

Each year, the government prepares Estimates in support of its request to Parliament for authority to spend public monies. This request is formalized through the tabling of appropriation bills in Parliament. The Estimates, which are tabled in the House of Commons by the President of the Treasury Board, consist of three parts:

Part I – The Government Expenditure Plan provides an overview of federal spending and summarizes both the relationship of the key elements of the Main Estimates to the Expenditure Plan (as set out in the Budget).

Part II – The Main Estimates directly support the *Appropriation Act*. The Main Estimates identify the spending authorities (votes) and amounts to be included in subsequent appropriation bills. Parliament will be asked to approve these votes to enable the government to proceed with its spending plans. Parts I and II of the Estimates are tabled concurrently on or before 1 March.

Part III – Departmental Expenditure Plans which is divided into two components:

(1) **Reports on Plans and Priorities (RPPs)** are individual expenditure plans for each department and agency (excluding Crown corporations). These reports provide increased levels of detail on a business line basis and contain information on objectives, initiatives and planned results, including links to related resource requirements over a three-year period. The RPPs also provide details on human resource requirements, major capital projects, grants and contributions, and net program costs. They are tabled in Parliament by the President of the Treasury Board on behalf of the ministers who preside over the departments and agencies identified in Schedules I, I.1 and II of the *Financial Administration Act*. These documents are to be tabled on or before 31 March and referred to committees, which then report back to the House of Commons pursuant to Standing Order 81(4).

(2) **Departmental Performance Reports (DPRs)** are individual department and agency accounts of accomplishments achieved against planned performance expectations as set out in respective RPPs. These Performance Reports, which cover the most recently completed fiscal year, are tabled in Parliament in the fall by the President of the Treasury Board on behalf of the ministers who preside over the departments and agencies identified in Schedules I, I.1 and II of the *Financial Administration Act*.

The Estimates, along with the Minister of Finance's Budget, reflect the government's annual budget planning and resource allocation priorities. In combination with the subsequent reporting of financial results in the Public Accounts and of accomplishments achieved in Departmental Performance Reports, this material helps Parliament hold the government to account for the allocation and management of public funds.

As part of its ongoing efforts to streamline reporting requirements, the Treasury Board of Canada Secretariat has requested that Natural Resources Canada and thirteen other departments explore alternative reporting structures to this year's *Report on Plans and Priorities*. It has, therefore, exempted the department from the usual guidelines for the preparation of this report.

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Natural Resources Canada

2001-02
Estimates

A Report on Plans and Priorities

Approved

Ralph Goodale
Minister of Natural Resources Canada

Table of Contents

I Minister's Message

Ralph Goodale
Minister of
Natural Resources Canada

I am pleased to present the 2001-02 Report on Plans and Priorities for Natural Resources Canada (NRCan).

Canada's natural resources sector is among the most productive and high-tech in the country, supporting our dynamic economy, a healthy environment and strong communities.

In the recent Speech from the Throne, the Government of Canada committed to building a stronger and more inclusive Canada, and securing a higher quality of life for all Canadians. It also recognized that good management of our natural resources directly benefits Canada's economy and quality of life.

A Vision for Canada's Natural Resources Sector

As we enter the new millennium, Canada must become and remain 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 productive and competitive – leading the world as a living model of sustainable development.

NRCan helps shape the enormous economic, social and environmental contributions of this sector. Through innovation and partnership, NRCan works with Canadians to make wise use of our resources, contributing to a better quality of life today while ensuring that future generations will continue to benefit from our invaluable natural bounty.

Through consultation with Canadians, NRCan has identified four areas in which to focus its attention: knowledge, innovation, resource management and communities.

Knowledge enables Canadians to make informed decisions about the sustainable development of our natural resources. NRCan's scientific research and development makes the Department one of Canada's foremost sources of knowledge about sustainable development — the science, the technology and the policy. Our efforts will also focus on continuing to make knowledge and expertise about natural resources available to Canadians. NRCan On-Line, for example, is an exciting new initiative that will revolutionize how Canadians access and use information about natural resources through the Internet. It includes internationally recognized initiatives such as GeoConnections and the National Atlas of Canada.

Innovation is key to creating opportunities for Canadians. NRCan's resource innovation strategy will be an important element of the government's overall plan. It will generate new approaches to

sustainable resource development and to competing in the global economy. This strategy will build on Canada's strengths in natural resources research and in developing technologies, value-added products and services that help us make wise use of our resources and boost our productivity and competitiveness.

A healthy environment is fundamental to our quality of life. Good management of our resources will allow us to protect our environment while meeting our economic and social priorities. Canada's actions to address climate change are a good example. We have already increased energy efficiency and reduced emissions through innovative technology, improved industrial practices and better awareness. Our efforts have resulted in more opportunities for Canadian businesses in international markets. We will expand our climate change research, and the development and use of new energy technologies, as well as continue building partnerships throughout the world.

A key priority of the Speech from the Throne is sharing opportunities. NRCan is committed to ensuring that Canadians in all communities continue to share in the opportunities offered by the sustainable development of our natural resources. NRCan's aim will be to help communities develop diversified economies. Initiatives such as the Model Forest Program and the Sustainable Communities Initiative will continue to help them develop the skills and capacity to adapt to and benefit from the knowledge-based economy.

I am proud of the progress we have achieved and look forward to further successes. As we help to ensure the sustainable development of Canada's natural resources, NRCan will continue to work with all Canadians to achieve a higher quality of life.

Management Representation

Report on Plans and Priorities 2001-02

I submit, for tabling in Parliament, the 2001-02 Report on Plans and Priorities for Natural Resources Canada.

To the best of my knowledge, the information:

- accurately portrays the Department's mandate, priorities, strategies and planned results;
- is consistent with the disclosure principles outlined in the Guidelines for Preparing a Report on Plans and Priorities;
- is comprehensive and accurate; and
- is based on sound underlying departmental information and management systems.

I am satisfied as to the quality assurance processes and procedures used for the production of the Report on Plans and Priorities.

The Planning, Reporting and Accountability Structure on which this document is based has been approved by Treasury Board Ministers and is the basis for accountability for the results achieved with the resources and authorities provided.

Name: _____
Bruce C. Holden

Date: _____

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. Planning Context

To remain focussed on the Department's vision and mission, NRCan has established a structure of five long-term goals, associated objectives and performance measures. Our five goals are:

To provide Canadians with:

Goal 1 - information to make balanced decisions regarding natural resources

Goal 2 - sustainable economic, social and environmental benefits derived from natural resources for present and future generations

Goal 3 - strategies that reduce environmental impacts in the natural resources sector

Goal 4 - safety and security in the natural resources sector

Goal 5 - a department that is efficiently and effectively managed.

Canada's natural resources sector faces critical public policy challenges. These are:

Economic and political circumstances

We live in an era in which geographical boundaries are disappearing and where people, goods, currencies, ideas and information move at unprecedented rates. Globalization and the emergence of the knowledge economy have accelerated social, political and economic change with the potential for a higher quality of life worldwide, including rising standards of living, more democratic and open governments, increased cultural diversity and greater protection of human rights. Globalization is creating increasing demands for international cooperation on transnational issues, thus challenging both national and international organizations. In this context, business firms and nonprofit organizations are playing increasingly larger roles in national and international affairs, and the quality of governance at all levels will substantially determine how well we cope with these global forces.

Domestic factors will reflect the changes evident in globalization. A more diverse society and political culture within Canada is increasing the range of public debate and bringing new and competing perspectives on public policy to the fore.

Social implications

Natural resources sustain the livelihoods of 3.6 million Canadians in more than 600 communities, many of which are rural, remote, northern and Aboriginal. Approximately one and a half million

Canadians are employed directly or indirectly in jobs created by the natural resources sector. Polling results in 2000 indicated that over 60 percent of respondents regarded most jobs in the natural resources sector as highly skilled, with bright prospects for the future and good pay. At the same time, however, only one-third believed that Canada's natural resources were being developed in a sustainable manner.

Canadian communities, urban and rural, are undergoing dramatic changes as a result of the transition to a knowledge economy and are confronted with multiple social, environmental and economic challenges. Canadians are facing pressures for adaptation and transformation in their communities, changing demographics, pressures on traditional industries and concerns over the environmental impacts of natural resource development and use. Urban areas face increasing demands on their life support systems, such as air, water, transportation systems and infrastructure, as cities and towns continue to grow. In spite of their inherent complexities, these issues also bring new opportunities. Communities that have the necessary skills, tools and information can capitalize on the potential of the knowledge-based economy.

Because the natural resources sector impacts on the lives of so many Canadians, there is a growing public consensus on the need to engage citizens in those decision-making processes affecting the development, use and export of natural resources, thus shaping more sustainable outcomes for their communities.

Technology and resource use

Average productivity growth in the natural resources sector has been three times higher than the rest of the economy over the past two decades. Innovation is at the core of productivity growth and central to the ability of Canada's natural resources and related sectors to compete successfully in international markets. The ongoing integration and synergies of the revolutions in information technology, biotechnology and materials science will continue to generate increases in investment in technology. In partnership with all stakeholders, the government plays a key role in patient, sustained investment in research and development (R&D) which will further stimulate innovation within advanced countries.

The sustainable development challenge for industry, governments and individuals will be to ensure that decisions affecting economic development and social well-being are balanced with environmental considerations. Achieving this objective requires a dramatic improvement in resource efficiency and waste reduction. This, in turn, demands a rethinking of business strategies to focus on ways companies can deliver higher value products that are more durable and at the same time increase their productivity. This shift will involve the development of materials, products and industrial processes and services that are more eco-efficient, that use less materials and that are less carbon-intensive, to continue the transition to a more sustainable economy and society. Governments and industry will need to continue to make strategic investments in their science and technology capacities to respond to this challenge.

Sustainable development

Recent public opinion surveys have revealed that the public's key environmental concerns include: maintaining a healthy environment; leaving a legacy for future generations, conserving biodiversity and protecting ecological systems; performance measurement indicators; and accountability for the

sustainable management of natural resources.

In view of the important benefits it derives from the natural resources sector, Canada must inform other nations of its ability to develop and use natural resources sustainably and responsibly, to develop technologies for continued innovation and to mitigate the potentially detrimental environmental impacts of resource development. For example, NRCan is addressing climate change in the context of the sustainable development of Canada's energy, forest and mining sectors. Opportunities exist for the development and deployment of renewable and alternative sources of energy, new technologies and processes, which can reduce, capture or sequester greenhouse gases. According to the Worldwatch Institute, efforts to create an environmentally sustainable economy have already generated an estimated 14 million jobs worldwide, with the promise of millions more in this new century. Some of the most rapid job growth is taking place in the development of wind energy and solar photovoltaics, and the expansion of recycling and re-manufacturing. By adopting the principles of sustainable development and eco-efficiency, we can sustain economic growth while using our resources in a more balanced manner.

Good governance

To make sustainable development a reality, Canadians require knowledge to make informed decisions and to take responsible actions. Shifting towards sustainable choices demands readily accessible information and positive reinforcement. As well, research on sustainable development issues, and the transfer of that knowledge to the broader public, is critical to achieving Canada's sustainable development goals. Governments must continue to accord a high priority to developing and disseminating the knowledge required to support more sustainable activities.

Good governance will increasingly be characterized by the ability to form strategic partnerships with all levels of government and with a broad range of stakeholders. These strategic partnerships will form the backbone of NRCan's ability to further the public good in areas such as the stewardship of natural resources, public health and safety, and providing public services that are responsive to the needs of citizens. Governments must also help to increase the capacity of Canadians to generate, obtain, and exploit information and new technologies to ensure that citizens can contribute effectively to government decision-making.

Improving management of the Department requires continued effort and attention. The federal government's modern management agenda presented in *Results for Canadians* provides a framework which underpins improvement in management practices in the four key areas of: citizen focus in designing, delivering, evaluating and reporting on its activities; values which respect and reinforce Canadian institutions of democracy and which are guided by the highest professionalism and ethical values; a focus on results and on reporting these results in simple and understandable ways to elected officials and to Canadians; and, given the limited nature of public funds, ensuring responsible spending.

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B. Departmental Priorities Over the Planning Period

Natural Resources Canada has a legislated mandate to promote the sustainable development of natural resources, meeting the needs of the present generation without compromising the ability of future generations to meet their own needs. Addressing the inter-generational transfer of equity – natural, social and economic capital – requires a clear vision and a strategy to advance it.

The 2001 Speech from the Throne (SFT) sets out the Government of Canada's broad goals, directions and priorities for its new mandate. The government's overarching goal is to continue to build a stronger, ever more inclusive Canada and secure a higher quality of life for all Canadians. It will focus its efforts in the following key areas:

- creating opportunity – building a world-leading economy driven by innovation, ideas, and talent;
- sharing opportunity – creating a more inclusive society and clean, healthy environment;
- creating and sharing opportunities globally – enhancing Canada's voice in the world; and
- celebrating Canadian citizenship.

During the planning period, NRCan will make significant contributions to the government agenda set out in the SFT. The speech highlights the government's commitment to innovation through doubling federal investment in research and development by 2010. This includes strengthening the research capacity of government laboratories and investing in strategically targeted research, coordinated with partners, in areas such as natural resources management, water quality and oceans research.

The SFT also outlines the government's commitment to promote global sustainable development, implement the recently announced First National Business Plan on Climate Change, create and share opportunity with Aboriginal people, and invest in research and development to protect surface and ground water supplies. It notes as well the importance of a public service distinguished by excellence and that is innovative, dynamic and reflective of the diversity of the country.

NRCan has identified four strategic departmental priorities – under the theme of *A Sustainability Agenda for the 21st Century* – that derive from our extensive consultations with stakeholders and the priorities identified in the SFT. NRCan's strategic priorities are aligned with the Department's five long-term goals and will guide NRCan in developing and implementing initiatives, over the next three years. The priorities have particular resonance with Canadians in sectors and regions in which we face significant challenges. To this end, NRCan has developed a regional lens approach which will adjust and adapt departmental priorities to match the needs of various regions.

NRCan's four strategic priorities are:

Creating and sharing knowledge for balanced decisions about Canada's landmass and resources is central to providing opportunity for all Canadians to realize social, economic and environmental benefits from our resources and ideas.

The world is undergoing a fundamental socioeconomic change from an industrial society to an information society and a global

knowledge-based economy. Societies and organizations that do not adapt to these changes will become increasingly marginalised. Conversely, those that adapt successfully will be in excellent position to create wealth and enhance the well-being of their citizens.

Knowledge will be the key resource of this emerging economy. The value of goods and services is shifting from the cost of materials to embedded knowledge. The ability to create and apply new knowledge is likely to become the only sustainable competitive advantage in the 21st century. We will have to become smarter about finding, extracting, and processing resources, as well as using and recycling materials if Canada is to remain competitive in the global economy.

NRCan is one of the country's foremost centres of knowledge and expertise on the sustainable development and use of natural resources. The Department is committed to becoming the preferred source of knowledge, information and data about Canada's natural resources, through integrated on-line access to its products and services. Increasingly, the Department is utilizing the enabling power of the Internet to share information and knowledge at local, regional and national levels with stakeholders and citizens in Canada and internationally. NRCan On-Line (NOL), which is the departmental component of Government on Line (GOL), along with nationally and internationally-recognized initiatives such as GeoConnections, the Atlas of Canada, and the National Forest Information System are NRCan's primary vehicles for making this knowledge and information available. This enables the government to more effectively reach and engage individual Canadians and promote a stronger sense of national identity by presenting an integrated view of the Canadian landmass and its resources; in addition, it also promotes its strong resource heritage and future potential (pages 16-18).

Canada borders on three oceans, has the longest coastline of any country and a continental shelf that is two-thirds its land mass. Furthermore, our offshore provides economic and social benefits. NRCan expertise has helped develop an extensive knowledge base on Canada's continental shelf. To manage this resource sustainably and enhance the benefits we derive from it, the Department will proceed with the development of an offshore minerals management regime. This initiative will be based on a two-phased approach to public consultations on potential risks of, and opportunities for offshore mineral development.

Positioning Canada's natural resources sector as a world leader in innovation will sustain the country's comparative advantage in natural resource products, services, knowledge and S&T.

Many Canadians increasingly regard innovation as a national imperative if we are to succeed in the global, knowledge-based economy. Governments and industries are recognizing that it is only through the generation of better ideas, and the development and implementation of innovative products, services, and processes that Canada will be able to achieve its sustainable development goals. Governments have a unique role to play in providing the vision, coordination, knowledge and strong leadership needed to catalyse a more strategic approach to creating innovations to enable sustainable development within the natural resources sector.

NRCan is developing a new resource innovation strategy through the engagement of stakeholders and communities across all regions of Canada. Natural resource-based firms have identified insufficient R&D and related networks, the high costs of R&D and shortages of highly skilled workers as the principal barriers to innovation. NRCan's innovation policy framework calls for the creation and sharing of scientific and technical research, developing skilled knowledge workers, support for commercialization, and business and market development.

Canada's overall innovation and sustainability record will be strengthened with resource sector solutions. The wealth of scientific and technical knowledge that NRCan provides helps to strengthen stewardship of our natural resource endowment. The application of innovative new ideas and technologies will contribute to economic, environmental, health and social benefits for all regions and will result in a higher quality of life for Canadians (pages 20-29).

Establishing Canada as an international model for resource stewardship and environmental responsibility encompasses global responsibility, sustainable resource management and health, safety and security. NRCan will promote Canada as a model of resource stewardship in these priority areas.

Stewardship embodies the concept of understanding and communicating the contribution of Canada's land, water, air and biological resources to our economy, environment and society. Stewardship demands a more open, multi-disciplinary approach to decision-making that encourages cooperation among stakeholders and communities, examines new governance models and develops innovative partnerships with the provincial and territorial governments.

Canada has the responsibility to develop and use its natural resources in line with the principles of sustainable development for economic prosperity, environmental improvement and social well-being. In the federal context, NRCan's areas of influence in promoting stewardship and environmentally responsible practices include: national economic policies and taxation; international agreements and trade, Northern Canada, Aboriginal lands and the offshore; international and national environmental protection; national information and science and technology; and nuclear energy policy research and regulation.

A major priority for the Government of Canada is delivering on the investment in the First Business Plan of the National Implementation Strategy on Climate Change. The Minister of Natural Resources has undertaken the lead role for the domestic implementation of this plan. Investments will be made across all sectors of the economy to promote greater efficiency, develop renewable and alternative sources of energy and support new environmental technologies and science to reduce greenhouse gases and other air pollutants in a cost-effective and sustainable manner. Other key components are participation in Canada's clean air agenda; energy efficiency; energy S&T management and capacity; promoting Canada as an international model for sustainable development in minerals and metals; a national recycling strategy; and understanding metals in the environment (pages 30-38).

Fostering adaptable and sustainable communities will support community leadership and partnerships as well as build

skills and capacity for sustainable development.

Community sustainability is defined as the long-term capacity of a community to support and sustain itself without detracting from the capacity of other communities and the environment – a healthy respect for interdependence. A sustainable community empowers itself to achieve a hopeful and common vision for the future. It effectively responds to change through community-based, integrated decision-making and environmental stewardship, which result in greater resilience and economic viability. Sustainable communities have the collective capacity to "get things done".

In Canada, communities are undergoing change and are facing complex social, environmental and economic challenges. These include economic boom-or-bust cycles in rural and resource-reliant communities, changing demographics, and concerns over environmental degradation.

NRCan's many opportunities for advancing sustainable communities include its information highway initiatives; renewal of Canada's Model Forest and First Nation Forestry programs; expansion of renewable energy and energy efficiency community initiatives as well as green infrastructure; and engagement in horizontal efforts to coordinate federal support for community leadership and capacity-building. The key to developing these community-based approaches to sustainability is the active engagement of citizens in needs assessment, priority setting and decision-making, and a commitment to work collaboratively (pages 27-29).

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C. Partners in our Key Commitments

The Department exercises good governance, using innovative ways to deliver departmental programs through partnerships, in collaboration with other federal, provincial and territorial governments, and with industry and stakeholders. These partnership arrangements have produced good results in cost sharing, cost recovery, and the advancement and transfer of new technology. They represent an effective and efficient approach to developing and delivering science and technology (S&T) and other programs that support Canada's progress toward sustainable development. By maintaining and, in some areas, enhancing a positive federal presence, NRCan and its partners are able to work together more effectively in achieving common goals and objectives in an era of resource constraints. In most cases, each partner is helping NRCan to achieve more than one goal; therefore, to avoid repetition, a break down of partners by goal is not given. The Department's key co-delivery partners are listed below.

Other Government Departments/Agencies

- Agriculture and Agri-Food Canada
- Canada Customs and Revenue Agency
- Canada Mortgage and Housing Corporation
- Canadian International Development Agency
- Canadian Space Agency
- Climate Change Secretariat
- Environment Canada
- Finance Canada
- Fisheries and Oceans Canada
- Foreign Affairs and International Trade Canada
- Health Canada
- Human Resources Development Canada
- Indian and Northern Affairs Canada
- Industry Canada
- Investment Partnerships Canada
- Justice Canada
- National Defence
- National Research Council
- Public Works and Government Services Canada
- Statistics Canada
- Team Canada Inc
- Transport Canada

External

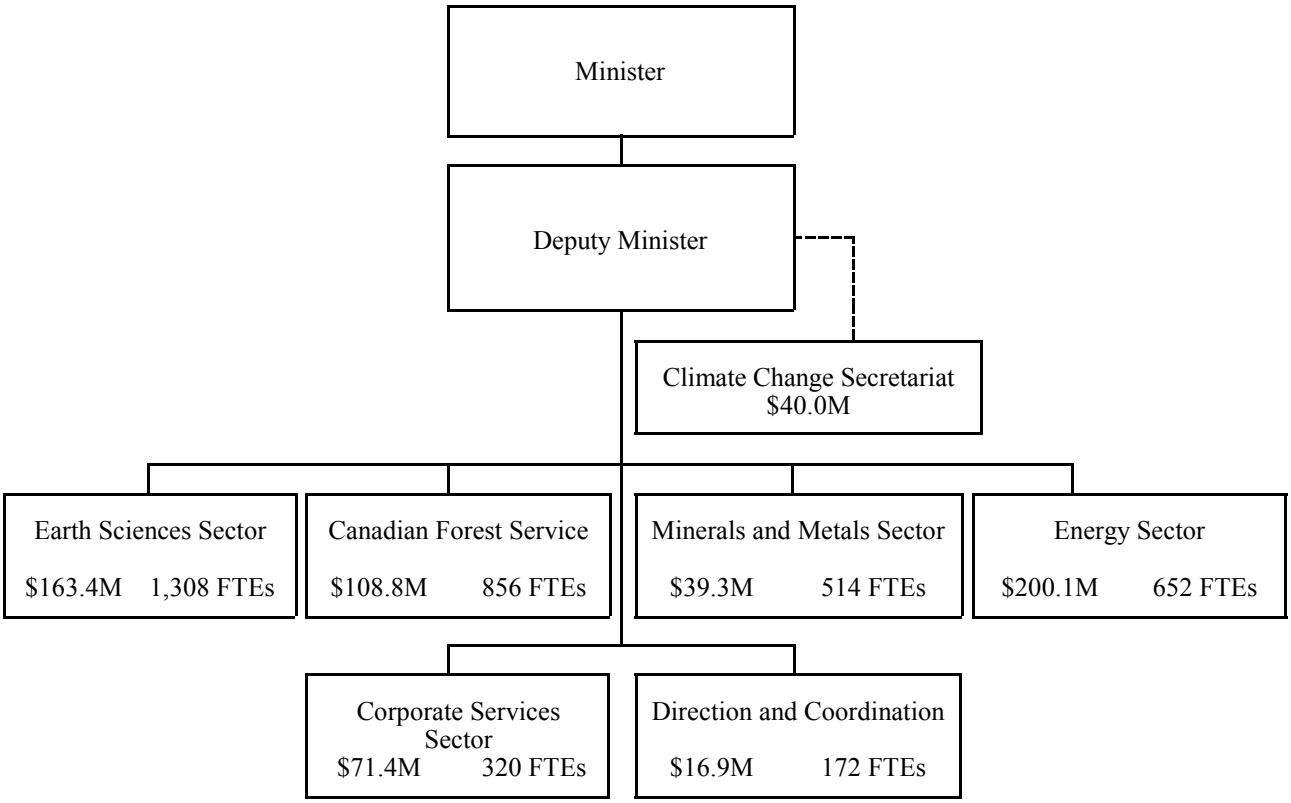
- Aboriginal Organizations
- Academia
- Industry
- International Governments and Agencies
- Non-Government Organizations
- Provincial/Territorial/Municipal Governments
- United Nations Agencies

Portfolio

- Atomic Energy of Canada Limited
- Canadian Nuclear Safety Commission
- Canadian Wheat Board
- Cape Breton Development Corporation
- National Energy Board
- Newfoundland and Nova Scotia Offshore Petroleum Boards

D. Accountability

The Deputy Minister of Natural Resources Canada is accountable for the key commitments identified in this document. The Assistant Deputy Ministers and Corporate Directors General are accountable to the Deputy Minister for the delivery of the key commitments within their assigned areas of responsibility.



The **Earth Sciences Sector** promotes the sustainable development of Canada's natural resources by providing comprehensive S&T related to geoscience and geomatics knowledge. This knowledge supports public sector activities in Canada, 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 accurate positioning, and the archive and application of earth observation data. Through the Geological Survey of Canada, the Sector provides the framework for mineral and petroleum exploration, helps Canadians mitigate the impact of hazards such as earthquakes and toxic substances in the environment, and contributes to climate change science, impacts and adaptation. Policy analysis, development and coordination is provided to support the sector's mandate.

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 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 five 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, renewable energy, alternative transportation fuels, and conventional energy to further sustainable development. Through its work, the sector helps address the climate change challenge, promotes better environmental and consumer choices, facilitates North American and international trade in energy, contributes to technical innovation, job creation and economic growth, facilitates environmental protection and increased public safety and security, and helps to ensure competitively priced, reliable and secure energy supplies for Canadians.

The Corporate Services Sector provides centres of expertise and supporting infrastructure in the areas of financial management, human resources management, information management, access to information and privacy, information technology and real property management. The sector also assists the Department in meeting its due diligence requirements in the areas of environment, health, safety and security.

Direction and Coordination provides services to the Department's Executive Offices through the following branches. The **Strategic Planning and Coordination Branch** provides strategic policy leadership, expertise, and advice for departmental and portfolio priorities, horizontal policy/science issues and initiatives, and sustainable development in Canada and internationally. The **Audit and Evaluation Branch** provides senior management with independent professional advice and assurances on the performance of management frameworks, departmental programs, policies and operations, and on risk management. The **Communications Branch** leads departmental communications in support of the Minister, government priorities and the natural resources sector; it provides advice for internal and external audiences. **Legal Services** provides day-to-day legal advice and guidance to ensure that NRCan's activities, policies and operations are consistent with the law, regulations and with high ethical standards.

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 coordinating 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.

E. Financial Spending Plan

(millions of dollars)	Forecast Spending 2000-01	**Planned Spending 2001-02**	Planned Spending 2002-03	Planned Spending 2003-04
Budgetary Main Estimates (gross)	630.6	**680.3**	587.9	573.1
Less: Respendable Revenue	39.5	**41.5**	41.7	41.8
Budgetary Main Estimates	591.1	**638.8**	546.2	531.3
Non-Budgetary Main Estimates	7.8	**0**	**0**	**0**
Total Reference Levels	598.9	**638.8**	546.2	531.3
Adjustments to Planned Spending[1&2]	58.6	**150.8**	178.7	193.9
Sub-total Planned Spending	657.5	**789.6**	724.9	725.2
Less: Non-respendable revenue	11.7	**12.1**	12.2	12.2
Plus: Cost of Services received without charge	23.8	**28.6**	28.4	28.4
Total Planned Spending	669.6	**806.1**	741.1	741.4
Full-Time Equivalents (FTEs)	3775	3822	3819	3812

[1] Reflects the best forecast of total planned spending to the end of the fiscal year.

[2] Planned spending adjustments reflect initiatives announced in Budget 2000, the Economic Statement and Budget Update 2000, and other items approved after the completion of the Main Estimates. These include:$30 million for the Port Hope area clean-up in 2000-01; $50 million in 2001-02 for the Sustainable Development Technology Fund; an additional $40 million in 2002-03 and 2003-04 for the renewal of the Climate Change Action Fund; $20 million in 2002-03 and 2003-04 for the renewal of the Efficiency and Alternative Energy programs; and $76.7 million in 2001-02, $97.2 million in 2002-03 and $112.4 million in 2003-04 for the Federal Action Plan 2000 on Climate Change.

III Plans, Results and Resources

Section III summarizes NRCan's key commitments by the Department's five goals and supporting objectives. Its structure is based on NRCan's Planning, Reporting and Accountability Structure (PRAS) which was approved by Treasury Board in August 1999.This section also reflects key commitments from NRCan's *Sustainable Development Strategy - Now and for the Future* which is also aligned to the PRAS.

NRCan recognizes the important role that the Report on Plans and Priorities plays in helping understand the Department. As much as possible, the planned results are written in a jargon-free manner and are presented in the form of an integrated policy-science perspective over the planning period. This perspective reflects the horizontal management of the Department, presents examples of key commitments that support its five goals, and integrates our planned reviews. Information about planned results not appearing in this report can be found on the various web sites shown on pages 57-59 and is also available within sectors as part of their business and operational plans. NRCan's planned results will be delivered in collaboration with other federal departments, provincial governments, industry, academia and key stakeholders (see page 12). To present a whole-of-government view, Section III also includes information on collective initiatives. Associated costs are shown, where available.

Goal 1 - To provide Canadians with information to make balanced decisions regarding natural resources.

Forecast Spending 2000-01: $162.3M
Planned Spending 2001-02: $157.3M
Planned Spending 2002-03: $152.3M
Planned Spending 2003-04: $151.1M

As demonstrated by: (short to medium-term objectives)	Performance Indicators	Departmental Priorities Over the Planning Period	Government Priorities
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.	User satisfaction with relevance, accessibility and quality of information. Public awareness of the importance and relevance of the natural resources sector, its issues, and NRCan's S&T. Adoption of NRCan-supported technology and practices.* 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. Participation in, and influence on fiscal, regulatory and voluntary sustainable development initiatives.* Influence of NRCan's S&T-based recommendations on regulatory regimes.	Knowledge • NRCan On-Line • GeoConnections, National Atlas and Canada-wide GPS • National Forest Information System Resource Innovation • Resource Innovation Strategy • Forest 2020	Creating Opportunity • innovation • connecting Canadians Sharing Opportunity • clean environment

* Performance information on the above indicators will be provided in the Departmental Performance Report for the period ending March 31, 2002.

What we aim to achieve

The Power of Creating and Sharing Knowledge – NRCan On-Line (NOL) is an exciting new initiative and key departmental priority that will revolutionize not only how NRCan delivers its programs and services to Canadians, but also how Canadians will access and use information, on the Internet, regarding natural resources. NOL is an opportunity to build on departmental strengths concerning leadership in knowledge creation and sharing, to enable Canadians to have quick access to accurate information, to help them make better decisions. Whether scientists search for new information to create knowledge, homeowners want information on how to save energy costs in their home, or a teacher needs information on how students can reduce greenhouse gas emissions, all will have fast access to this information via NOL.

NOL is part of two broader government initiatives known as Government On-Line (GOL) and Connecting Canadians. The government's primary goal is to be "the government most connected to its citizens by 2004." NOL presents an opportunity to provide S&T information and knowledge on-line as a key service supporting our public interest roles and government priorities, and facilitating the effective operation of the national S&T system. In the new Internet environment, NOL enables NRCan to integrate natural resources information and knowledge across scientific and policy disciplines, and across government departments and other orders of government. Areas of action include: creating integrated information and knowledge, developing an innovative knowledge management framework, strategies and dynamic tools for decision-making, and enabling on-line access in partnership with other levels of government, academia, the private sector, non-government organizations and international institutions. Over the planning period, NRCan will update the results-based management and accountability framework.

Creating and sharing information through the Internet is powerful and beneficial to Canadians. Knowledge about Canada's natural resources is central to ensuring the sustainability of social, economic and environmental benefits from one generation to the next. For example, having access to the right information on natural resources could enable a rural community to make better economic decisions; in turn, economically viable communities enhance Canada's quality of life and competitiveness.

NRCan is currently developing on-line access to departmental S&T information and knowledge with Agriculture and Agri-Food Canada, Fisheries and Oceans, Environment, and Health Canada. Over the next four years, the Department will be implementing the vision of a Canadian knowledge network on the sustainable development of natural resources. This will enable Canadians, businesses and our international clients to access natural resources information at one Internet site giving the user the ability to design, build and achieve any sustainable development objective from the knowledge and advice acquired from the site. The network will also help the Department meet its ongoing priorities of northern S&T, national and international sustainable resource development, climate change, environmental protection, and healthy and sustainable communities.

In addition, NOL will play a key role in some of NRCan's management priorities such as the strengthening of our S&T capacity, information

management and information technology (page 45).

Although the vision will take years to achieve, the launch of NOL provides the compass for NRCan to navigate its way through the transformation to the knowledge-based economy, thereby creating the foundation for the future wealth of Canada for the new millennium.

Meeting Canada's geospatial challenge

No matter what you read today, it is evident that the world economy and society are undergoing a vast change – the shift to knowledge-based growth. NRCan is well positioned to support the government's commitment of connecting Canadians, thereby contributing to the creation of knowledge and improving productivity growth and quality of life. Hence, the effective management of knowledge is becoming the decisive determinant of success. The sustainable development of our natural resources demands that economic, environmental and social considerations be factored into Canada's policies and decision-making. Now in its second year of infrastructure development, GeoConnections (http://cgdi.gc.ca) is NRCan's cornerstone to providing national geospatial information. This initiative, which was announced in the 1999 Federal Budget ($60 million over five years), is a key component of NOL. Many of the benefits of geospatial information technology and management are delivered through integration between systems, improving productivity and enhancing the quality and timeliness of data used throughout business processes. Over the planning period, the Department will use a results-based management and accountability framework to serve as a basis for ongoing evaluation of GeoConnections work conducted in collaboration with managers.

Working with government partners, academia and the private sector, the Department will intensify its efforts to:

- sign an Inter-governmental Geomatics Accord which will foster closer federal-provincial-territorial collaboration, cost-sharing and better integration of geomatics information and services to support applications in health care delivery, the environment, education and training, and growing businesses;
- develop on-line national framework data and the National Atlas of Canada as a communication tool to support policy development, enhancing capabilities to meet the requirements of policy and decision-makers for integrated and cross-domain geographical information; and
- meet targets to support an operational, Canada-wide Differential Global Positioning System (GPS), via a Canadian communications satellite, a service to improve GPS-derived positions to a better than five-metre positioning accuracy with enhancement that is under development.

Improving the Department's capacity to report on Canada's forests – The Department remains highly committed to improving its capacity to report on the sustainability of Canada's forests and forest

management practices. Unfortunately, the ability to report on Canada's forests in a comprehensive manner is beyond the capacity of current federal-provincial-territorial and non-government information systems. This operational reality, combined with increasing public demands for more social and environmental information, and criticism over Canada's inability to report in these areas, has led the Department to propose a new National Forest Information System (NFIS) designed to address these limitations and to serve as a conduit to area information systems. It is envisaged that the new system will be the most comprehensive repository of forest information in Canada, and the single most powerful information tool for use by all forest interests across Canada.

Towards this end, under the auspices of the Canadian Council of Forest Ministers (CCFM) and the CCFM's NFIS Steering Committee, NRCan will develop the new Internet-based NFIS designed to enhance Canada's capacity to report forest information. Phase I (infrastructure development in 2001-02) will include seeking opportunities for cooperation and coordination with the provinces, territories and non-government concerns, and developing a governance model to define the role and mandate of each jurisdiction and the areas of information needed to meet Canada's national and international sustainable forest management commitments; it will also include the development of a systems architecture or blueprint to establish the scope of the NFIS proposal and provide a national portal. NRCan will house and administer the NFIS Project Office and provide secretariat support to the NFIS Steering Committee.

The results of Phase I will be presented to the CCFM meeting in September 2001. The total cost of Phase I is estimated at $400,000 including the federal share of $133,200 or 33 percent. NFIS development resources will be funded through NRCan's GeoConnections Program.

As a key component of the NFIS, NRCan officials will also be working with the CCFM Evaluation Committee in reviewing Canada's national Criteria and Indicators (C&I) Framework for measuring, monitoring and reporting progress towards sustainable forest management and will be using internal forest S&T research findings in the validation of existing indicators and/or in the development of new indicators and monitoring techniques, as required. Expenditures are estimated at $900,000 over the planning period.

A new vision for Canada's forest sector: Forest 2020 – In August 2000, the Department, under the auspices of the CCFM, proposed a solution-based concept to address Canada's need to balance the myriad of economic, social and environmental pressures and demands placed on Canada's forests. The concept, known as Forest 2020, focuses on ensuring Canada's future as a major supplier to the world's growing demand for fibre while setting aside more of its natural forests for social and environmental uses. The Forest 2020 concept – which complements Canada's National Forest Strategy (1998-2003) and the Canada Forest Accord – consists of a three-tiered approach that would see the protection of more of Canada's primary old growth forests, allow for more wood to be grown in Canada's second growth forests, and would see the creation of a proposed new forest asset through the establishment of fast growing tree plantations – a new concept for Canada.

In terms of anticipated benefits to Canadians, the ability to expand protected forest areas

without compromising Canada's commercial timber supply capabilities is perhaps the most important benefit arising from this proposal. The concept is also expected to spawn the creation of new companies as well as having the potential to create thousands of new jobs and to secure the economic and social development future of many forest-dependent and Aboriginal communities across Canada. The proposal will contribute to Canada's prominence as a powerful global trading nation and advance its commitment under the Kyoto Protocol to reducing Canada's greenhouse gas emissions. Forest 2020 will also bring together environmental leadership, community stability, economic development and recent advances in science and technology to enhance and sustain the high contribution of forests to the quality of life of all Canadians.

NRCan and provincial and territorial governments are working closely together to articulate this new approach; in 2001-02, the CCFM will be leading a dialogue process with Canadians. The Department has established a Secretariat to coordinate and support Forest 2020 activities. Federal infrastructure costs are estimated at $525,000 in 2001-02.

Participants in First Nation Forestry Program building a log cabin

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Goal 2 - To provide Canadians with sustainable economic, social and environmental benefits derived from natural resources for present and future generations.

Forecast Spending 2000-01:$206.4M
Planned Spending 2001-02: $202.4M
Planned Spending 2002-03: $188.5M
Planned Spending 2003-04: $174.2M

As demonstrated by: (short to medium-term objectives)	Performance Indicators	Departmental Priorities Over the Planning Period	Government Priorities
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.	Economic influence of NRCan S&T.* Employment levels and productivity in resource and resource-related industries. Contribution of the natural resources sector to the GDP. Capital investment in resource and resource-related industries.* Value and percent of exports of resource-based products. Number of shared projects and funds leveraged with rural, Aboriginal and northern communities. Employment level of Aboriginal people and northern residents in resource sectors.	Knowledge • Targeted Geoscience Initiative Resource Innovation • diversifying Canada's oil and gas • lightweight materials Resource Stewardship & Environmental Responsibility • promoting fairness and competitiveness in energy markets • improvements in the mining tax regime • clean water initiatives Adaptable and Sustainable Communities • Renewable Energy and Community Energy Systems • green municipal infrastructure initiatives • Enhanced Aboriginal Involvement Strategic Initiative • Northern S&T Strategy • First Nation Forestry Program • Aboriginal Model Forest	Creating Opportunity • innovation • skills and learning • trade and investment Sharing Opportunity • strong and safe communities Creating and Sharing Opportunities Globally • international institutions

* Performance information on the above indicators will be provided in the Departmental Performance Report for the period ending March 31, 2002.

What we aim to achieve

Oil and gas: ensuring a good energy mix through policy and technologies – As Canada and the world will continue to utilize hydrocarbon-based fuels for the foreseeable future, it is important to provide a safe, efficient, reliable and increasingly environmentally clean mix of energy options. As demonstrated in the commitments that follow, and through its policy and technologies, NRCan will continue to contribute to economic growth while reducing the environmental impact of the production of bitumen, heavy oil and natural gas.

Promoting fairness and competitiveness in energy markets – In response to consumer concerns about rising gasoline and diesel fuel prices, NRCan, jointly with Industry Canada and the Conference Board of Canada, will study the dynamics of national gasoline markets as well as diesel fuel markets in five major urban centres. The resulting conclusions and recommendations will help inform the government review of competition legislation and may lead to new initiatives to increase consumer awareness. NRCan is also sponsoring research into the fuel supply effects of recently implemented sulphur-in-gasoline regulations. This research will determine the likely effects of refinery investments on the availability and price of gasoline and other refined petroleum products in the 2002-04 period and will help government decision-making on any remedial measures needed to address specific fuel supply problems.

Diversifying Canada's oil and gas – NRCan provides S&T to extend and diversify Canada's oil and gas production from onshore, offshore and northern regions. This includes support for the conversion to refined petroleum products that reduce costs and mitigate adverse environmental consequences while reducing greenhouse gas (GHG) emissions, the development of standards and regulations, and addressing cross-cutting environmental and safety issues ($16.5 million in 2001-02). For example, the Department will identify new environmentally-friendly field upgrading processes to produce pipelineable bitumen and heavy oil to increase the contribution of oil sands and heavy oil to Canada's oil supply. As well, the Department will continue to assess oil and gas pipeline integrity under severe conditions in the North.

NRCan will continue discussions with interested provinces on the establishment of new offshore management regimes to ensure the sustainable development of resources and to support regional economic development. This initiative will also foster partnerships among small- and medium-sized enterprises, universities and research institutions to develop innovative technologies and become more competitive in pursuing industrial opportunities associated with offshore oil and gas development in Canada's frontier lands and in other parts of the world.

The North American energy market is becoming increasingly integrated. Rising demand for energy raises significant opportunities and challenges. The Department will be in the forefront of promoting Canada's interests.

NRCan, in consultation with the Department of Foreign Affairs and International Trade (DFAIT), will negotiate an agreement with the Government of the Republic of France for the exploration and exploitation of transboundary

petroleum fields off St-Pierre and Miquelon. The agreement will ensure that the management of transboundary fields is conducted in a way that promotes safety and protects the environment. The agreement will also ensure that resource revenues are fairly and equitably allocated.

Looking forward – To provide a longer term vision for the industry, NRCan will work with key industry representatives and the National Task Force on Oil Sands to develop a technology-based roadmap for the oil sands industry to the year 2025. The roadmap will provide the R&D necessary to support offshore regulation, and will cover productivity, upgrading and opportunities for sustainable value-added products and co-products for the industry.

Improvements in the mining tax regime – Mining taxation is a key element influencing the health of Canada's minerals and metals industry. NRCan plays an active role in ensuring that key mining provisions of Canada's tax regime meet the demands of international competitiveness, fairness, and clarity. This effort pays dividends in ensuring Canada's business climate attracts the investment needed to explore for and develop mines, providing opportunities for economic development and generating jobs for Canadians. Over the next three years, NRCan will work with Finance Canada, in consultation with industry, to improve key provisions of the mining tax regime. In the immediate future, this work will establish the precise scope and parameters of the 15 percent exploration tax credit announced in the Economic Statement and Budget Update of October 18, 2000. Expenses that are eligible for the tax credit will be defined and necessary adjustments will be made to ensure maximum benefit and simplicity for users of the federal credit and provincial incentives targeted at similar activities. NRCan will also ensure greater clarity in the administration of the *Income Tax Act* by providing a workable definition of "bulk sample" and will ensure greater precision in the distinction for tax purposes between depreciable assets and assets qualifying as an exploration expense. More information on taxation can be found at: http://www.nrcan.gc.ca/mms/efab/tmrd

Advanced technology in mining – Over the planning period, NRCan will foster innovation and advanced technology in the mining industry. In turn, the application of advanced technology will expand economic opportunities for Canadians in growing global markets.

Canadian-built mine locomotive – the world's first fuel cell industrial vehicle.

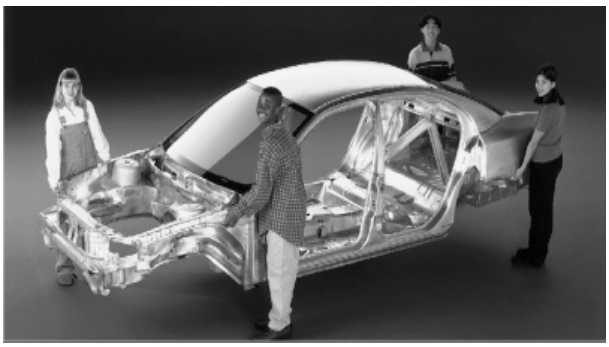
For example, fuel cells are expected to become the next generation of power technology for transportation. In response, a North American consortium, co-championed by NRCan, is exploring the replacement of diesel power by hydrogen fuel cell power in underground mining vehicles. Currently, 1300-1500 diesel emitting vehicles are responsible for 90 percent of the underground handling of ore production in Canada. The application of fuel cell technology to underground mining by retrofitting these vehicles would provide a

number of benefits. First, it would eliminate underground diesel emissions (a suspected carcinogen) and reduce heat and noise, improving the work environment for underground miners. Second, it would reduce a significant portion of carbon dioxide emissions (700,000 tonnes/year), providing the mining industry with an opportunity to contribute to Kyoto emission targets. Third, it would decrease operating costs both by lowering mine ventilation needs by more than 35 percent (ventilation is responsible for 40 percent of the electrical consumption in an underground mine), and by significantly improving vehicle productivity (hydrogen fuel cell power systems are twice as efficient in delivering power as conventional diesel equipment).

This initiative brings together many stakeholders including mining companies, equipment manufacturers, research organizations, government regulatory agencies and trade unions. NRCan will contribute to the development and application of hydrogen fuel cell technologies for hard rock mining by performing extensive scientific, safety and productivity tests, as well as technology adaptation and design work on a number of different production vehicles including the world's first fuel cell industrial vehicle, a Canadian-built mine locomotive. The mine locomotive project, which has a total value of $1.4 million, will be completed in 2001-02. It is co-funded by NRCan's Industry Energy Research and Development program ($150,000 in 2001-02), the U.S. Department of Energy, three international equipment manufacturers and four Canadian mining companies. NRCan will also participate in other demonstration projects as a partner of the North American consortium (total value of the remaining projects over four years is approximately $19 million).

If this initiative is successful, Canada stands poised to capture world markets for applied fuel cell technology in mining – a clear example of the linkage between innovation and economic growth.

High performance materials for transportation – Over the planning period, NRCan will develop lightweight, high performance materials and manufacturing processes for a new generation of fuel efficient vehicles – lightweight vehicles using conventional fuels as well as those using fuel cell, electric and hybrid power technologies. The resulting innovations will assist Canadian vehicle parts manufacturers and assemblers to remain economically strong, contributing to the creation of jobs.



Lightweight car body (Source: Alcan Aluminum Limited)

NRCan will continue to coordinate the Canadian Lightweight Materials Research Initiative (CLiMRI), a government/industry partnership aimed at reducing vehicle weight. Research will be performed in advanced manufacturing, vehicle design, life cycle analyses, coatings, new alloys and plastics, parts manufacturing and vehicle assembly. Not only will this initiative help stimulate one of Canada's most important industrial sectors, it

will also allow Canada to reap further benefits from the investments which have already been made in other unique Canadian technologies such as fuel cells. As well, CLiMRI will contribute to the production of vehicles that are more fuel efficient leading to a reduction in greenhouse gas emissions.

NRCan will apply its scientific capabilities as a leading researcher within CliMRI. The Department will study the design of lightweight parts and components for the ground transportation sector through research on material substitution and development of new manufacturing processes.

In 2001-02, CLiMRI will receive $850,000 from the Program of Energy Research and Development (PERD), and $1.2 million from other stakeholders (cash and in-kind support contributions). Similar levels of PERD support are expected over the next few years. The estimated cost to fully fund this initiative is $80 million over five years, of which $40 million would be provided by financial support and in-kind contributions from non-federal government stakeholders. CLiMRI is currently seeking the remainder of this critical investment in innovative materials research. Additional information regarding CLiMRI is available at: http://climri.nrcan.gc.ca

Water - a precious resource for Canadians – The availability of abundant and clean water is critical to the well-being and health of Canadians, to the sustainable development of Canada's natural resources, and the preservation and sustainability of ecosystems. To this end, NRCan is increasingly tasked to contribute its significant scientific, policy and other expertise to address growing Canadian water concerns. A better understanding of this strategic resource is needed to make informed decisions for health and safety.

Installation of a high capacity water pump in the production well for aquifer pumping test, north of Montreal.

NRCan is undertaking a number of collaborative initiatives with all levels of governments, universities and stakeholders to further its dialogue on a broad set of priority water issues in Canada. The Department will:

- contribute to the development of a National Groundwater Program (NGP) through work in geosciences and forest science for which a National Steering Committee will be established; a national workshop will be held in the Fall of 200l where a framework for national coordination will be presented for discussion; a finalized document establishing a NGP framework would result in jointly co-ordinated and delivered initiatives and policies with other federal and provincial governments ($300,000 in 2001-02);
- in partnership with Environment Canada and Agriculture and Agri-Food Canada, contribute to water-related risk assessments through high precision trace elements analyses for potentially toxic elements; the resulting information will be integrated into ecosystem and human health risk management strategies by federal and provincial agencies through the five natural resources departments working group;

- integrate satellite imagery with geographic coverages, in-situ data and models to define the physical characteristics of drainage basins and evaluate water resources; this will allow the Department not only to monitor and map flooded areas and assess damage, but to add a predictive component through the models and in-situ data; this work is being done in collaboration with the U.S. Geological Survey, the Manitoba Remote Sensing Centre, and municipal governments ($150,000 in 2001-02);
- assess the impact of forest harvesting methods on water quality and biodiversity of aquatic organisms as one of NRCan's actions for the protection of the Great Lakes Basin initiative, entitled Great Lakes Basin 2020 Action Plan ($150,000 in 2001-02); and
- work on joint research with the mining and energy industries and various agencies to improve effluent treatment techniques and solid waste management as a way of minimizing and preventing water pollution.

These actions will contribute to a national reference base that will be used to address emerging surface and groundwater issues in a national, coordinated and strategic way.

Stimulating new investment in mineral exploration – Canada's geoscience knowledge base is one of the country's key advantages in attracting investment in an increasingly competitive exploration market. This knowledge, however, needs to remain current, comprehensive and accessible to ensure a sustainable future and to remain a worldwide leader.

To this end, NRCan is playing an important role in stimulating new investment in mineral exploration through the Targeted Geoscience Initiative (TGI), for which $15 million, over three years, was announced in the 2000 Federal Budget. In 2000, 22 new TGI projects began in nine provinces and three territories, and 10-12 more will commence over the planning period. Experience has demonstrated that, on average, an expenditure of $1 million to acquire and disseminate geoscience knowledge of this sort generates $5 million in new exploration activities.

Of these federal-provincial-territorial collaborative TGI projects, one category includes regional geochemistry surveys in prospective areas of New Brunswick, northeastern Alberta and central British Columbia ($350,000 in 200l-02). Such surveys – which can define local concentrations of nickel, copper, gold, platinum and other important metals in lake sediments – are used by private sector exploration companies to target their exploration activities and have contributed to the discovery of new mineral deposits in several regions of Canada. As well, the results of comprehensive geological and geophysical TGI studies of bedrock and surface deposits – in isolated or poorly known regions of Newfoundland, Quebec, Saskatchewan, Nunavut – have strong potential for defining new terrains for mineral commodities that are becoming increasingly important to Canada's mining industry. NRCan has already spent $1.9 million on these studies in 2000-01.

In addition, NRCan will supplement and maintain the national knowledge bases on non-renewable earth resources, including alternative fuels – gas hydrates, coal bed methane, heavy oil and bitumen. This geoscientific knowledge will help promote discovery of the resources required to sustain mineral and hydrocarbon production in Canada, through thematic research conducted in collaboration with provinces, territories, industry and academia.

Enhancing the international profile of Canada's natural resources – Trade and investment missions are designed to enhance the profile of Canada's natural resources sector, lead to increased exports of Canadian resource-related products and services, and promote Canada as a destination for foreign direct investment.

Over the planning period, NRCan plans to undertake two to three ministerial-led missions to destinations of strategic interest to Canadian natural resources industries. These visits will demonstrate Canada's role as a global leader in the sustainable development of natural resources, foster the responsible use of resources by advocating Canadian policies and practices, establish links to promote the use of S&T, and protect and enhance market access for Canadian natural resources goods and services.

Positioning Canada's forest sector on the international scene – A major feature of the Department's goal of pursuing sustainable resource development is to ensure that Canada continues to maintain and enhance its competitive position in export markets.

For example, in collaboration with the CCFM and DFAIT, the Department will focus its efforts on securing Canada's market share in the U.S., Japan and Europe by counter balancing negative and/or incomplete forest information through the provision of factual and authoritative information and advice to Canada's embassies and missions through the International Forestry Partnerships Program (IFPP). Its primary objectives are to: position Canada as an environmentally responsible forestry nation; support Canada's trade framework by promoting Canadian forestry initiatives and achievements; ensure that trade barriers based on forest policies are not erected in export markets; and promote forest products as an environmentally-friendly and renewable choice. Approved funding for the IFPP has been established at $800,000 annually (2000-05), cost-shared between the federal government and the provinces.

NRCan will continue to monitor the Canada-U.S. Softwood Lumber Agreement (SLA) and will be engaged in consultations, negotiations, and briefings with DFAIT on the future of the agreement and/or to propose alternatives. The SLA expires on March 31, 2001. The Department will also be monitoring national and international certification trends, conducting consultations, and will report to the CCFM through the Working Group on Certification and Equivalency by September 2001. Costs are estimated between $100,000-$150,000 in 2001-02.

In addition, NRCan and stakeholders will be engaged in a number of major international initiatives designed to advance Canada's concept of sustainable forest management world-wide through partnerships, information exchange and dialogue. These are: participate in deliberations at the Conference of the Parties (CoP6) of the U.N.'s Convention on Biological Diversity; work with the twelve members of the Montreal Process countries in developing and refining an international C&I framework for temperate and boreal forests; pursue efforts toward an international forest convention; and compile information on behalf of the G8 members of the Action Programme on Forests when Canada hosts the G8 summit in 2002.

In addition, Canada will be hosting the XIIth World Forest Congress in Quebec City, September 2003. This event is expected to attract some 5,000 forest leaders from 175 countries and will enable Canada to showcase its concept of sustainable forest

management to the world ($10 million of which $3.5 million will be shared equally between the federal government and Quebec over the next two years).

Energy efficiency and renewable energy for sustainable communities – Meeting the emission reduction goals identified in the Kyoto Protocol will require more efficient communities. With its partners and through interdepartmental collaboration, NRCan will continue to improve the design and integration of energy, transportation, land use, and water and waste systems to permit the progressive, sustainable development of communities. The initiatives that follow are examples of what NRCan will undertake to build vibrant, sustainable communities, by providing tools to increase energy efficiency and the use of renewable energy sources such as small hydro, biomass and photovoltaics.

Small hydro turbine being manufactured.

In partnership with the Federation of Canadian Municipalities and Indian and Northern Affairs Canada (INAC), NRCan will facilitate the use of local resources to meet the communities' energy needs, to stimulate the local economies and to reduce GHG emissions through energy efficiency and fossil fuel displacement. For example, NRCan will continue to implement local and renewable resource-based community energy systems across Canada to create a critical mass and to reduce GHG emissions for space heating (and ultimately electricity) by at least 80 percent in Aboriginal and small communities. S&T activities like this one support the development and application of novel technologies to make better use of renewable resources in remote and off-grid communities.

Developing the renewable energy market by reducing production costs and increasing the use of renewable energy sources can provide growth in this sector of the economy while reducing GHG emissions. In partnership with industry, NRCan will increase the efficiency of wind energy conversion by 10 percent and reduce the manufacturing and delivery costs of wind turbine blades and control systems by 10 percent, over the planning period. NRCan will also increase the efficiency of small hydro turbines and biomass conversion systems by 5 percent ($1.1 million in 2001-02).

As part of its initiatives for buildings and communities ($9.1 million in 2001-02), NRCan will conduct S&T to support improvements in the performance, cost effectiveness and integration of technologies and tools, including the establishment of cost-effective interconnections of heat sources and sinks at the community level to link cost-effective and environmentally sound sources of heating or cooling capacity. As well, there are 200,000 or so residents in Canada's 310 remote communities who are not connected to the main electricity grid or to natural gas networks. To help them meet their energy needs, NRCan will apply renewable energy technologies and

integrated systems such as wind-diesel systems, distributed photovoltaic-diesel systems and biomass-based systems.

Providing opportunities for all Aboriginal stakeholders in sustainable forest development – NRCan is highly committed to programs that enable Aboriginal self-reliance through capacity building for sustainable forest development. In partnership with INAC, NRCan will manage the delivery and seek the renewal of Canada's five-year $24.9 million First Nation Forestry Program (FNFP) designed to improve the economic conditions of First Nations communities. The program enhances the capacity of First Nations to develop viable forest-based businesses, promotes new jobs and business opportunities, supports sustainable forest development on reserve, and investigates mechanisms to finance First Nations forestry development. The FNFP, which terminates on March 31, 2001 has supported a total of 969 First Nations forest projects across Canada and the creation of more than 55,000 person-weeks of employment. This represents 3,961 First Nations project participants receiving on-the-job forestry training. In addition to the $21 million contributed by the FNFP to project costs, First Nations and their partners contributed an additional $49 million bringing the total value to over $70 million. Expenditures in 2001-2002 are estimated at $7.5 million. This consists of $2.75 million from INAC; $1.75 million from NRCan; and an estimated $3.0 million from First Nations and other partners. Additional information on the FNFP is available at the following web-site address: www.fnfp.gc.ca

Canada's Model Forest Program (CMFP) ($8 million in 2001-02) is a network of eleven national forests which provides on-the-ground opportunities towards sustainable forest management. In 2001-02, the CMFP partners will continue to pursue the goal of developing and refining local level indicators of sustainable forest management. As part of the CMFP, the Department will manage the delivery of the Aboriginal Model Forest which provides the opportunity for Aboriginals to have a direct role in the development, exploration of applications, and approaches to sustainable forest management. It also provides the opportunity to demonstrate Aboriginal traditional use approaches to forests. Funding for the Aboriginal Model Forest is augmented through partner contributions. NRCan expenditures covering this component of the Model Forest Program in 2001-02 is estimated at $500,000.

The Department will be implementing the Enhanced Aboriginal Involvement Strategic Initiative designed to support and enhance the participation of all Aboriginal People (including First Nations, Innu, non-status Indian, and Métis) groups/organizations, active partners of, living within, or in close proximity to Canada's model forests, for the purpose of incorporating traditional and contemporary knowledge into the goals and objectives of the Model Forest Program. As appropriate, this initiative may be expanded to develop market-based economic opportunities for some or all forest resources under consideration, including timber and non-timber products, services and benefits. NRCan expenditures for 2001-02 is estimated at $175,000.

In support of the Minister's role as federal interlocutor for Métis and non-status Indians, NRCan will be assessing requirements and developing options to facilitate Métis and off-reserve Aboriginal participation in forestry. Total NRCan planned spending for 2001-02 is estimated at $290,000.

Promoting business growth through good community infrastructure – A good community infrastructure is an essential base, not only for land management, but for providing the services that promote business growth. NRCan's goal is to provide stronger support to increase the capacity of Aboriginal, rural and northern communities through improved land management services, training and job creation. The Department also supports the business community for the procurement of products and services required by research scientists to conduct studies critical to addressing sustainable development.

Community lands administrator viewing a survey plan in Iqualuit.

In support of these departmental responsibilities, an estimated $10 million annually, over the planning period, will be allocated to the management and conduct of surveying contracts for land management in Aboriginal and northern communities. Through the Polar Continental Shelf Project, the Department will also spend an estimated $l million in 200l-02, on the coordination and provision of logistics support for scientific research in the North. Without this support, many Arctic scientific research projects – that aim to provide critical information to support national, northern and international environmental, social and economic issues – would not be conducted.

The Department is also supporting sustainable communities projects that will help enhance the quality of life in rural communities and better equip them with the tools necessary to prosper in our economy. Over forty partnership-based projects will be developed during 200l-02. The following are a few selected examples that are helping rural communities address regional issues:

- developing an inventory of areas of small fruit called chicoutay (cloudberries) growing in the peat bogs of the St. Lawrence North Shore region, the community of Blanc-Sablon, Québec will be able to estimate potential volumes using Geographic Information Systems (GIS), and will be able to strategically plan the harvesting of the fruit by targeting locations; this viable source of income has the potential to diversify its regional economy and create forty new jobs in a community which is primarily based on fisheries ($30,000 in 2001-02); and
- a reserve-wide land management system using GIS to enhance the administration of Blood Tribe land will be implemented with partners; this will result in managing road network information, topological information, drainage systems, and will be used for emergency response, flood analysis and land use planning; this southern Alberta land is critical to the Tribe's traditional and cultural values, and is a finite resource ($30,000 in 2001-02).

NRCan will continue to focus and consider the impact on rural Canadians in future policy, program and service decisions. To this end, NRCan will develop a Northern S&T Strategy for Canada in collaboration with other federal departments, building on NRCan's present investments in interdepartmental R&D, geoscience and presence in the North. This initiative addresses the northern component of the overall federal S&T capacity review; innovative options for addressing northern S&T capacity gap will also be developed.

Goal 3 - To provide Canadians with strategies that reduce environmental impacts in the natural resources sector.

Forecast Spending 2000-01:$205.6M
Planned Spending 2001-02: $348.4M
Planned Spending 2002-03: $304.0M
Planned Spending 2003-04: $319.2M

As demonstrated by: (short to medium-term objectives)	Performance Indicators	Departmental Priorities Over the Planning Period	Government Priorities
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 resource development and use. Canada's environment safeguarded from the risks associated with natural resource development and use.	GHG emissions compared to Kyoto protocol; and GHG emissions to GDP ratio compared to other countries. Trends in use of renewable energy.* Trends in energy efficiency. GHG emissions from federal operations. Progress towards the identification of impacts and adaptation measures. Environmental influence of NRCan's science, technology and stewardship practices. Progress towards addressing hazards associated with resource development and use.*	<u>Knowledge</u> • climate change information and adaptation • sustainable development criteria and indicators • results of Metals in the Environment initiative • development and transfer of pest management strategies and forest health monitoring <u>Resource Innovation</u> • Technology Early Action Measures • Sustainable Development Technology Fund • energy efficiency and alternative energy technologies • Canadian Resource Recovery Strategy <u>Resource Stewardship and Environmental Responsibility</u> • Action Plan 2000 on Climate Change • Climate Change National Implementation Strategy • First National Business Plan on Climate Change • clean air initiatives • promoting environmental stewardship in minerals and metals internationally • sustainable forest management	<u>Creating Opportunity</u> • innovation • trade and investment <u>Sharing Opportunity</u> • clean environment

* Performance information on the above indicators will be provided in the Departmental Performance Report for the period ending March 31, 2002.

What we aim to achieve

Addressing the climate change challenge – NRCan works closely with other departments and stakeholders to undertake analysis and prepare Canada's international negotiating mandate and position for the United Nations Framework Convention on Climate Change, including meetings of the Conference of the Parties which are defining the rules and modalities of the Kyoto Protocol. Under the 1997 Kyoto Protocol on global climate change, Canada made an international commitment to reduce its greenhouse gas (GHG) emissions to six percent below the 1990 level by the period 2008 to 2012. Canada's aim is to achieve the objectives of the Kyoto Protocol at the lowest possible costs through strategic domestic action, the development of market-driven Kyoto mechanisms (international emissions trading, clean development mechanism and joint implementation), and the comprehensive inclusion of carbon sinks (both forestry and agricultural soil management). Reducing GHG emissions is a challenge for Canada, from an environmental, economic and social perspective. Technologies, programs and knowledge aimed at addressing climate change will provide both national and international benefits.

NRCan has a primary responsibility for the domestic implementation of climate change initiatives. The Department's actions will contribute towards the understanding, prediction and mitigation of climate change, as well as Canada's ability to adapt to the resulting changes. In consultation with other federal departments, provincial and territorial government officials and stakeholders, NRCan is analyzing and developing appropriate strategies for addressing climate change and is modeling the costs and benefits of various mitigative options to reduce emissions. Considerable commitment is required to reduce GHG emissions by the public as consumers, by industry as energy producers and users, and by federal-provincial-territorial and municipal governments. The Department is now implementing many components of the Government of Canada's Action Plan 2000 on climate change, as well as the federal-provincial-territorial National Implementation Strategy and First National Business Plan on Climate Change released in October 2000. It is projected that Action Plan 2000, when fully implemented, will achieve one third of Canada's reduction target during the commitment period established by the Kyoto Protocol. The remainder of Canada's Kyoto target will be addressed in future plans.
The Department will work with its partners in reducing GHG emissions in key sectors of the economy, and in providing the science and technology, programs and knowledge that support the development of climate change solutions for Canada. The initiatives featured below, and in the energy efficiency story that follows, highlight some of NRCan's priority areas for action in the next three years. These include understanding climate change, taking action through innovative technologies and programs in all sectors of the economy, and adapting to climate change. For additional information, see NRCan's climate change web site at http://www.climatechange.nrcan.gc.ca/

Taking action on climate change – A prime example of taking action on climate change is the Technology Early Action Measures (TEAM) initiative, a highly coordinated interdepartmental effort that provides incremental financing and networking support to encourage additional investment in

innovative technology to reduce GHG emissions. TEAM accelerates the development of new technologies for early entry in the marketplace, ensuring Canadian competitive advantage in GHG reduction technologies across all sectors of the economy and in its 65 domestic and international projects (total investment of $700 million on the strength of a $60 million federal investment). These have the potential to reduce GHG emissions by an estimated 60 megatonnes per year through replication over the next ten years. Building on this success, the year 2001-02 will see 33 projects delivered through NRCan's programs ($15.6 million in 2001-02). One of these projects – for which TEAM is funding $1.9 million and NRCan $50,000 – will see the development of automated assembly lines to produce photovoltaic (PV) panels. PV panels convert solar energy into electricity and are ideally suited for use in remote areas not located on an electricity grid. The panels will be installed and monitored in test sites in Canada and China, and are expected to reduce carbon dioxide emissions by up to 130 tonnes annually.

The Carbon Dioxide Capture and Storage (CO_2 C&S) Initiative, which forms part of the Action Plan 2000 on Climate Change, is another important initiative whose overall objective is to position Canada to make the best use of CO_2 C&S as a tool to help reduce GHG emissions and meet Canada's target under the Kyoto Protocol. The initiative will cover five years in total, from 2001-02 through 2005-06. In the first year, NRCan will set up a unit dedicated to this initiative, perform additional technical and economic analysis of CO_2 C&S to better appreciate its relative potential in the Canadian context, and provide additional funding to the International Energy Agency's Weyburn CO_2 Monitoring Project to address concerns over the effectiveness and efficiency of carbon dioxide storage via CO_2-based enhanced oil recovery.

NRCan, a leader in the energy efficiency of its own operations, also plays a key role in government-wide efforts to reduce GHG emissions from federal operations. The Department is providing input to the interdepartmental Climate Change House-in-Order process for sharing of the federal target of 31 percent reduction in GHG emissions by 2010. The task of target sharing will be undertaken by means of a three-year action plan and entails assigning specific targets to key departments, who will be required to report annually on their progress. NRCan is taking a lead role in managing this task and in providing enhanced services to departments and agencies to help them achieve their targets.

In the same vein, NRCan, in partnership with Environment Canada and Public Works and Government Services Canada, will implement a program to displace federal government purchases of carbon-intensive sources of electricity with electricity from emerging renewable energy sources with minimal or no GHG emissions. To achieve this objective over the next five years, the federal government will purchase about 20 percent of its electricity requirements from emerging renewable electricity sources. In addition to reducing GHG and other air emissions from federal operations, this initiative will encourage partnerships with provinces, municipalities and larger enterprises to leverage demand for electricity from emerging renewable energy sources; increase the competitiveness of electricity from these sources; and encourage electric utilities to market this type of power to other customers.

Understanding and adapting to climate change – Recognizing the need to address impacts and adaptation as part of the Kyoto Protocol, NRCan will undertake a range of geoscience related research activities aimed at

improving our knowledge of the relationship between climate, earth systems and human activity to assess the impacts of climate change and our capacity to adapt. In addition to improving our understanding of past climate changes, NRCan scientists will work with stakeholders to examine climate impacts and responses related to permafrost degradation and infrastructure, flood and landslide hazards, drought, water resources and coastal erosion due to rising sea level.

Through the Adaptation Liaison Office, the Department will work to improve coordination of the national impacts and adaptation research and stakeholder communities; the enhanced Climate Change Action Fund research program will fund research to better identify our vulnerabilities to climate change, both regionally and sectorally. NRCan will also lead a national assessment of climate change impacts and adaptation to provide the latest information to decision makers and the Canadian public.

NRCan will continue to provide Canadians with the education and information they need to understand and adapt to the consequences of climate change, and to make well informed decisions about their use of energy. For example, the Department will develop and produce a series of regional climate change impact documents and a web site for the Prairies, Ontario, Quebec, the Atlantic region and Nunavut. Through increased knowledge, we expect to achieve longer term behavioral and lifestyle changes that improve the efficiency of the use of energy.

In addition, the Department will continue efforts to ensure that all the required policy and S&T mechanisms are in place to support the public's understanding of the role forests play in the world's carbon cycle and how forests adapt to climate change. The objective is to arrive at an internationally acceptable measure of forest carbon stocks and changes over time in support of Canada's Kyoto commitment.

Over the planning period, NRCan will: assess the effects of fire on carbon cycling and GHGs and the effects of climate change on forest ecosystems; assess and predict the effects of climate change on natural forest disturbances; develop regional and national models for estimating Kyoto forest carbon stocks and changes, along with systems, tools and maps for predicting forest ecosystem changes; determine climate change impacts on biodiversity; develop systems and tools for the reduction of soil carbon loss resulting from harvesting of forests; develop management options and strategies for climate change adaptation and mitigation scenarios; and design a national afforestation program and the development of a measurement and reporting system for forest sinks ($9.2 million over the planning period).

Showing leadership – NRCan and Environment Canada, in collaboration with Industry Canada, are establishing an arms-length research foundation to administer the Sustainable Development Technology Fund (SDTF). The $100 million SDTF will be used to develop and demonstrate technologies aimed at finding solutions to Canada's challenges in climate change and air quality.

Energy efficiency, a key tool for action on climate change – About 80 percent of Canada's total GHG emissions are in the form of carbon dioxide mostly generated from the use of fossil fuels. Indeed, Canadians spent more than $81 billion in 1998 on energy to heat and cool their homes and offices, to operate their appliances, vehicles, planes and

trains, and to power industrial processes. Improving the efficiency of energy use in Canada is a key component in Canada's action plan on climate change. NRCan is a leader in practices, programs and technologies to improve energy efficiency ($60 million in 2001-02).

NRCan also administers regulations on the energy efficiency performance and labeling of energy-using equipment. For example, a typical new refrigerator that falls under these regulations is about 40 percent more efficient than it was ten years ago. In 2001-02, the Department will continue to place stringent efficiency requirements on equipment with the aim of eliminating inefficient products from the market and providing major energy savings for consumers ($1.2 million in 2001-02).

Cleaner transportation for the future – The transportation sector is responsible for a large proportion of Canada's GHG emissions, and end-use energy in this sector is expected to grow. To address this issue, the Department will develop innovative technologies and lightweight materials for transportation applications (see page 23 for details); strengthen the knowledge base for the production of bio-energy; continue to develop advanced technologies for fuel cell, electric and hybrid vehicles; and cooperate with the U.S. Department of Energy on future fuels. These developments are expected to achieve a 30 percent reduction in transportation-related emissions by 2020 and a greater reliance on electric and hybrid vehicles.

In addition, NRCan will continue to conduct S&T to reduce emissions from transportation sources to improve air quality and health, reduce GHG production, improve energy efficiency, and provide economic benefits from next generation vehicles and systems ($13.2 million annually).

NRCan fleet vehicle fueled by natural gas

Energy-efficient industry – The Canadian industrial sector is responsible for 34 percent of GHG emissions. The sector is very diversified which makes it quite a challenge to tackle. Opportunities do exist, however, to significantly reduce its GHG emissions through the development and commercialization of innovative products, processes or systems ($15.9 million annually). For example, NRCan is partnering to develop a new genre of products to provide ventilation, space and water heating for North American homes. Based on new partnerships between government and industry, within industry, within government and across a stakeholder consortium, five manufacturers will be able to commercialize a high-performance product that efficiently performs all three base functions. This means we will be moving market expectations from traditional best practice to fully integrated systems.

Canada's electricity infrastructure – NRCan performs S&T to improve the economics and efficiency of conversion of renewable and non-renewable energy to electricity including related storage, hybrid, and systems technologies ($7.1 million annually). A good example of this, which also relates to carbon dioxide management, is an initiative to develop closed cycle combustion for zero emissions. Initially, this development will be

aimed at retrofit applications to an existing infrastructure of coal-fired power generation plants, and will be funded at $1 million/year from NRCan, a Canadian utility, the Alberta government and an internationally supported research consortium. As opposed to the conventional approach to pollution control in direct combustion systems, this new approach will improve the overall capture process, reduce the overall quantity of wastes generated, or treat the wastes in such a way that they can be used as chemical feedstock to other processes.

Energy S&T management and capacity – Research and development lead to technological innovations and increased knowledge that are essential to the achievement of sustainable development through the environmentally responsible growth of knowledge-intensive, value-added resource-based industries in Canada. S&T achievements have resulted in new knowledge and technologies that lead to reductions in energy use, increases in energy efficiency, and reduced emissions and waste.

Energy S&T activities are increasingly carried out in partnership with other federal S&T organizations or outside the federal government with provincial, territorial and international agencies, companies, experts and academics. Collaborative, interdepartmental S&T is, and will continue to be, essential for many multi-disciplinary research programs. This year, the Department will negotiate a revised Memorandum of Understanding with twelve federal departments and agencies in the Program of Energy Research and Development (PERD) community, incorporating updated accountability provisions and systematic performance measurement practices. Implementation of results-based performance management will lead to closer monitoring of results produced by NRCan's S&T investments, an approach which has been lauded by central agencies (PERD budget: $57 million/year) http://nrcan.gc.ca/es/oerd/aboutperd.html

Effective design and delivery of S&T calls for a forward-looking plan to achieve a sustainable energy future for Canada. The Department will by Fall 2001, develop an S&T Forward Plan to provide long-term guidance regarding S&T directions and a context for annual planning and evaluation; ensure alignment with departmental priorities; and guide the planning of the capital investments and skills required in the future. The Forward Plan will contain an environmental scan of emerging trends, will articulate a model for the appropriate role of government in S&T, and will set out a range of priorities for future investments. The plan will be guided by a vision for a sustainable energy future, developed through a series of workshops across Canada to obtain input from stakeholders ($375,000 in 2001-02).

Success in achieving effective delivery of the Department's S&T objectives depends critically on the degree to which our capacity in equipment, facilities and human resources is suitably matched to ever evolving challenges. A strategic review of NRCan's S&T goals and requirements over the next five to ten years will be completed as a basis for guiding investments in capital equipment and skills to meet the needs (see page 45 for more details).

Promoting Canada as an international model for sustainable development in minerals and metals – Canada's mining and metals industries operate in a truly global environment that brings with it both opportunities for growth and diversification, and challenges such as intense competitive pressures, market uncertainties, and vulnerability to international trade rules and the fiscal policies of other countries. As a

result, Canada must remain a strong and active player on the international scene – helping to ensure that Canadian companies are treated fairly and equitably in other countries, and sharing Canadian experience, skills and values to enhance the industry's practices worldwide in support of sustainable development.

NRCan will continue to advance Canadian approaches to the sustainable development of minerals and metals globally. It will demonstrate Canada's technical and policy expertise in sustainable development to other countries, and seek support for integrating sustainable development into decisions affecting minerals and metals in international fora.

To this end, a key NRCan activity will be to promote environmental stewardship in minerals and metals internationally. Through partnerships with the Canadian International Development Agency (CIDA), NRCan will transfer to less-developed countries, Canadian technical expertise in both mine rehabilitation and environmental management related to minerals and metals (e.g., projects in Brazil, Guyana and Zambia worth $5.6 million over the next four years). In collaboration with CIDA, NRCan will also share its expertise in the reduction of GHG emissions associated with the production of cement for concrete (project in India worth $4.5 million over four years).

Establishing a framework for measuring progress toward sustainable development is a necessary component of sound stewardship practices as it provides timely feedback to help decision-makers make informed choices regarding stewardship activities. In the *Minerals and Metals Policy of the Government of Canada*, the Government recognised that criteria and indicators are essential to measuring progress. It also acknowledged that criteria and indicators should be a collaborative undertaking involving all stakeholders.

Over the past eighteen months, NRCan has led a process bringing together 26 Canadians representing a broad range of interests, including Aboriginal groups, academia, industry, environmental and social non-governmental organizations, and the Government of Canada, as part of a Technical Working Group on Values and Indicators for Minerals and Metals. The group developed a value-based framework for the establishment of sustainable development indicators. A web site outlining the progress to date, the framework and next steps is being developed to facilitate the next phase of work to identify sustainable development indicators.

Interest in sharing information related to this activity has been expressed both domestically and internationally by groups such as the Consultative Forum of the three international metal study groups, CIDA's partners in key developing countries, the World Bank, the United Nations Environmental Program, and the World Business Council for Sustainable Development through its Mining and Sustainable Development project.

Towards a national recycling strategy

NRCan considers that some materials historically viewed as wastes are valuable resources yielding substantial economic, health, environmental, and social benefits. In addition, domestic and global demand for recycling and recycled products has been growing at a significant pace, while recent studies have indicated that resource recovery rates from post-consumer, institutional and industrial sources can be significantly increased. For example, Statistics Canada's

1998 Waste Management Survey reported that on average Canada's waste diversion rate is only 30 percent. Although some progress has been made since this survey, opportunities still exist for significant improvement in recovery rates for a broad range of materials.

To capitalize on these opportunities, Canada needs a coordinated approach to increase the efficiency of materials and energy recovery and recycling across the country. To this end, NRCan will lead the development of a Canadian Resource Recovery Strategy to promote the recycling and reuse of materials and products domestically and internationally. To date, $3.4 million has been committed to enhance technologies for recycling minerals and metals over the next five years under the strategy.

Understanding metals in the environment – Government and industry require geoscience knowledge to develop national and international policies concerning metals and their release into the environment, and to formulate regulations for Canada. Only by understanding the spatial and temporal effects of mining and metal use, within the context of the natural cycling of metals in the environment, can regulatory policy be made on a rational basis.

Over the planning period, NRCan will be publishing comprehensive results of the five-year Metals in the Environment initiative and the results of research projects to address the validity of historical records of metal accumulation in sediments and biota, the transportation of mercury to bio-available forms, and the modelling of metals deposition around the Rouyn-Noranda smelter. This geoscience knowledge will assist responsible agencies in their risk assessments that permit to properly evaluate environmental assessments submitted for review. This knowledge will also contribute to effective decision-making on risk management options ($500,000 in 2001-02).

Asian long-horned beetle

Conserving and protecting Canada's forest ecosystems while enhancing timber supply – As a signatory to the United Nations Convention on Biological Diversity, Canada affirmed its commitment to manage and use its forest resources in a sustainable manner, to conserve biodiversity, and to maintain the productivity and resilience of its forests.

Over 2001-03, NRCan will increase Canada's knowledge of the effects of human and natural disturbances on forest ecosystem productivity while enhancing timber supply. This will be pursued through a variety of venues including: biotechnology research into genetically improved and modified trees; the development and transfer of timber supply models to forest managers across Canada; and the implementation of management techniques for enhanced timber production in primary, second-growth, and plantation forests.

To better protect Canada's forests from the threat of wildfire, NRCan will provide the operational requirements, decision support

tools, and systems required for improving Canada's fire management strategy.
To better protect Canada's forests from diseases caused by various viruses or fungi, NRCan's S&T assessment for use in forest pathogen control will continue, as will its strategy development for introducing new and improving existing biological alternatives to chemical pesticides. For example, national data to support the commercialization of the biological herbicide *Chondrostereum pupureum* is expected in 2002, while data and silvicultural methodologies for the control of forest defoliators, shoot-destroying insects, bark beetles and forest pathogens will be delivered in 2002-03. To protect Canada's forests from exotic forest pests, NRCan will develop and transfer pest management strategies and forest health monitoring technologies for use by forest managers across Canada. An estimated total of 57 percent of NRCan's forest S&T resources, or $30.5 million, has been earmarked for S&T initiatives that support forest conservation and protection, timber enhancement, and forest biotechnology research over the planning period.

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Goal 4 - To provide Canadians with safety and security in the natural resources sector.

Forecast Spending 2000-01: $36.5M
Planned Spending 2001-02: $37.6M
Planned Spending 2002-03: $36.9M
Planned Spending 2003-04: $36.9M

As demonstrated by: (short to medium-term objectives)	Performance Indicators	Departmental Priorities Over the Planning Period	Government Priorities
Canadians safeguarded from natural hazards. A national framework for spatial positioning, mapping and boundary maintenance. Safe use of explosives and pyrotechnics. Enhanced safety and security in Canada's natural resources sector.	Impact of NRCan's S&T on the identification, mitigation and response to natural hazards. User satisfaction with aeronautical charts, the Canada Lands Survey System and the Canadian Spatial Reference System. Accident and incident rate in the explosives and pyrotechnic industries in Canada.* ımpact of regulatory frameworks for energy transmission, offshore development, and Canada's uranium and nuclear industry.	Knowledge • public health and safety • Global Explosives Regulatory Module Resource Stewardship and Environmental Responsibility • Port Hope clean-up • federal oversight for long-term management of nuclear fuel waste • natural hazards and emergencies Adaptable and Sustainable Communities • *Explosives Act* amendments	Creating Opportunity • innovation • skills and learning Sharing Opportunity • strong and safe communities

* Performance information on the above indicator will be provided in the Departmental Performance Report for the period ending March 31, 2002.

What we aim to achieve

Natural hazards – Natural hazards cannot be completely controlled but their effects can, to a degree, be mitigated. Large earthquakes, landslides, floods, wildfires, ice storms, volcanic eruptions, magnetic storms, and naturally occurring toxins present a threat to life, infrastructure, and economic resources. Inevitably, significant financial losses will be borne by taxpayers.

In addition to health and economic concerns, Canada's transportation and utilities infrastructure is also at risk with growing demands for development in areas prone to natural hazards, and an aging infrastructure.

NRCan is working towards improved monitoring and understanding of earth sciences that will help in the prediction of such hazards. New geoscience and geomatics technologies, concepts and information dissemination methods will permit NRCan to provide reliable hazard information more quickly to mitigate the potential consequences to human safety and damage to buildings and service infrastructures. For example, by 2002-03, new products and services will be available to Canadians such as: the publication of new seismic hazard maps and information for Canada; the availability of client-tailored, on-line, magnetic forecasts; the publication of a national landslide database and

hazard map; and the provision of geomatics information such as aeronautical charts, topographic maps and satellite imagery in response to emergency situations.

NRCan is committed to its longer term monitoring and research on natural hazards and providing real-time information to protect the lives and property of Canadian citizens, and to evaluate conditions in the aftermath of such disasters. Canadians will long remember the effects of the Quebec-Ontario ice storm, the Red River flood in Manitoba, and the Saguenay flood in Quebec. The provision of geoscience information to assess the recurrence, magnitude and impacts of floods such as those that occurred in the Red River Basin will continue in the planning period (NRCan $67,000 and $150,000 cost-recovered in 2001-02).

Public health and safety – Issues related to water have lately been at the forefront of public and media attention, and will likely continue to be a growing concern. The recent outbreak of *E. coli* in Walkerton, Ontario is only one issue that has polarized public opinion into realizing how our potable water sources are increasingly being threatened by agricultural or other human activities. NRCan is increasingly contributing its scientific, policy and other technical expertise to address growing Canadian water concerns. The Department's participation in the Walkerton inquiry, for example, will include the provision of expert geoscientific information on ground and surface water that will contribute to informed decisions.

In addition to water contamination issues, critical concerns relate to bulk water removals, changing water levels of the Great Lakes and St. Lawrence Basin, and catastrophic floods that have significant implications for all resource sectors (see page 24 for specific deliverables targeted to support federal-provincial-territorial initiatives to bring a better understanding to water resources).

Radioactive waste management – Radioactive waste generated by the nuclear energy option can be grouped into three categories: nuclear fuel waste, low-level radioactive waste, and uranium mine and mill tailings. NRCan works with industry, government officials and other Canadian stakeholders to develop policies to ensure that radioactive waste is managed in a safe, environmentally sound, comprehensive, cost-effective and integrated manner. For the year 2001, much progress is expected on the following two programs.

Clean-up of Port Hope area low-level radioactive waste – A key priority for the Department is the launch of the cleanup of more than one million cubic metres of low-level radioactive waste and contaminated soils in the Port Hope area of southeastern Ontario. The waste resulted from the historic operations of a refinery in the Town of Port Hope that was used to recover radium and later uranium from radioactive ores. The waste is contaminated with uranium, radium and arsenic. It is located on a number of properties as well as in two large storage facilities licensed by the Canadian Nuclear Safety Commission. While the wastes do not represent an urgent health or environmental risk, their current management is inappropriate for the long-term. In 1997, after two decades of searching for a solution for the long-term management of the wastes, the three area communities offered to begin discussions with NRCan on managing the wastes locally in new long-term facilities. NRCan agreed to work with the communities to develop their proposals and to negotiate the terms under which the

Government of Canada would proceed with the cleanup. That process culminated in a legal agreement signed by representatives of all three municipalities in December 2000. Once the agreement is signed by the government, the project will proceed. The first phase of the project will involve further engineering, environmental assessment, and other regulatory reviews. This phase is expected to last five years. The second phase of the project, expected to last five to seven years, will involve the actual cleanup and development of the long-term waste management facilities.

Federal oversight for the long-term management of nuclear fuel waste – Another key departmental priority in radioactive waste management is to resolve the issue of the long-term management of nuclear fuel waste generated in nuclear reactors in Canada. This is an important concern since the management of nuclear fuel waste is a major undertaking that could cost up to $15 billion, over a span of 70 to 100 years.

In its December 1998 Response to the Nuclear Fuel Waste Management and Disposal Concept Environmental Assessment Panel, the Government of Canada indicated that federal government oversight was required to ensure that nuclear fuel waste would be taken care of in a comprehensive, cost-effective and integrated manner, consistent with the 1996 Government of Canada overall policy framework for the management of radioactive waste.

Under this policy framework, the government expects that waste producers and owners set up a waste management organization (WMO) to carry out all long-term nuclear fuel waste management activities; the waste producers and owners set up a segregated fund to finance next steps; and the WMO report to the Government of Canada with options on long-term management approaches, including its preferred one.

Based on NRCan's recommendations, the Government of Canada is expected to announce, in 2001, its decision on a mechanism, such as legislation, for exercising federal oversight and provide more policy direction on how to proceed with next steps.

Public security and explosives – Over the planning period, NRCan will contribute to the fight against the use of explosives in criminal and terrorist acts at home and abroad. In particular, the Department will participate in global counter-terrorism initiatives, and increase public security through enhanced detectability of explosives and through improved protection of occupants of federal buildings judged to be at risk of bombing events.

Momentum is building to do more to combat crime and terrorism throughout the world. The Organization of American States (OAS), the G8 and the United Nations are actively discussing counter-terrorism measures. As a participant in all three arenas, Canada must take the steps necessary to satisfy the growing list of international counter-terrorism obligations. For example, as a signatory to a recent OAS convention against crime and terrorism, Canada must amend its *Explosives Act* to provide for new controls. NRCan, as Canada's national explosives regulatory body, will seek approval of the required amendments. The Department will also continue to provide assistance with respect to explosives to other government departments to support Canada's counter-crime/terrorism efforts in international fora.

NRCan, as a centre of explosives expertise and knowledge, has begun to explore ways to promote and deliver information-based products and services over the Internet. Through its web-based information and communications tool known as ExploNet, NRCan will build an application called the Global Explosives Regulatory Module (GERM). GERM will enhance secure communication between international explosives regulators, promoting increased control over items, such as detonators and plastic explosives, which are used by terrorists. GERM will also allow members of the international group of Chief Inspectors of Explosives to share information on best regulatory practices, emerging technology, and trends in crime and terrorism while building the capacity to collaborate on accident investigation.

Test for blast resistance of windows mounted in structures at right.

As part of the fight against terrorism, NRCan will also apply its S&T expertise to develop explosives detection technologies to prevent terrorist bombings. The International Civil Aviation Organization initiated a project to improve the detectability of explosives in airports after the bombings of Pan Am flight 103 and Air India flight 182. Canada was a major contributor to the technical elements of the resulting *International Convention on the Marking of Plastic Explosives*, including the development of a preferred marking agent. NRCan was a key player in the effort and will perform further research on technologies to enhance detection of explosives under the Canada/U.S. Counter-Terrorism R&D Program. Over the next three years, NRCan will spend $250,000 to address shelf-life issues of the marking agent.

To enhance protection of occupants of federal buildings deemed to be at risk of bombings, NRCan will work with industry to study the effectiveness of advanced composite materials in increasing the blast resistance of windows and concrete building elements in existing buildings ($300,000 over three years). NRCan will also provide S&T support to assist other government departments in addressing safety concerns arising from possible bombings.

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Goal 5 - To provide Canadians with a department that is efficiently and effectively managed.

Forecast Spending 2000-01: $46.7M
Planned Spending 2001-02: $43.9M
Planned Spending 2002-03: $43.3M
Planned Spending 2003-04: $43.8M

As demonstrated by: (short and medium term objectives)	Performance Indicators	Departmental Priorities Over the Planning Period	Government Priorities
Responsible use of approved resources. Continuous improvements of NRCan products, services and operations. Sustainable development in NRCan operations.	Employee satisfaction with NRCan management practices. Progress towards maintaining and enhancing NRCan's program integrity. Savings realized from streamlining administrative processes, innovative service delivery, electronic commerce, improved facilities management, and information technology bulk purchasing and contracts. Implementation of recommendations from audits, evaluations and other studies of NRCan management and operations. Progress of the Department's Environmental Management System towards the implementation of ISO 14000 series of standards. Progress towards the implementation of environmental health and safety audits and environmental assessment evaluation of NRCan operations. Amount of solid non-hazardous waste from NRCan operations per capita per year.* Portion of fleet converted to alternative fuels.* Rate of purchasing by NRCan of green power.	Advancing modern management in NRCan through: • Modern Comptrollership • Financial Information Strategy • Government-on-Line • Citizen-centered delivery • Excellence NRCan 2001-04 • Recruitment, learning and work place well-being (3R Strategy) IM/IT Infrastructure Strengthen S&T Capacity Implement Occupational Health and Safety Plan Implement departmental environmental policy	<u>Sharing Opportunity</u> • clean environment <u>Celebrating Canadian Citizenship</u> • public service

* Performance information on the above indicators will be provided in the Departmental Performance Report for the period ending March 31, 2002.

What we aim to achieve

To deliver on NRCan's mandate, implement its priorities and respond to the government's policy and management agendas, requires management investments that maximize the Department's efforts. To meet the many demands on the Department requires that the appropriate infrastructure – human, physical, financial, technological and informational – is in place and functioning efficiently. Specific initiatives are identified in the paragraphs below.

Moving toward modern management – Modern comptrollership is about using sound management practices to make better program and resource decisions. Under this umbrella, NRCan will refine its strategic management direction and priorities to ensure better integration of various departmental management initiatives, and to make the best use of limited resources. This involves the development of a priority setting process for integrating initiatives, assessing the compounding effects of multiple priorities, the reasonableness of deadlines and time frames and the impact on employees. A parallel effort involves the refinement of the departmental planning system and resource allocation processes. The implementation of risk management and values and ethics programs and other modern comptrollership initiatives will greatly assist in the cultural evolution towards achieving the goals set out in *Results for Canadians, A Management Framework for the Government of Canada*.

In addition, NRCan will implement its Excellence Long-Term Plan 2001-04, which will focus on the development, implementation and promotion of quality management principles, methods and tools, including external certification of services, products and programs ($250,000 direct costs in 2001-02).

Providing Canadians with information to make balanced decisions regarding natural resources is one of the key goals of the Department. In support of this, client focus and service standards continue to be part of the departmental quality management initiative. The Department will continue to hold learning events to share best practices in client service and satisfaction measurement, including measuring client satisfaction with on-line services.

Consistent with the Treasury Board Service Improvement Initiative, NRCan has developed an action plan for addressing client service satisfaction measurement. The Department will continue to work closely with the Treasury Board Secretariat and other government departments to share lessons and implementation strategies. Work in this area will be aligned with NRCan On-Line (NOL), in terms of the identification of services, clients and service standards (see page 16).

Recruitment, learning and workplace well-being – Human resources are vitally important to NRCan's ability to achieve its mandate. In terms of advancing the federal agenda on recruitment, learning and workplace well-being, NRCan leads a number of initiatives with science-based departments and agencies, to improve HR management in the federal S&T community. As part of its 3R Strategy (recruitment, rejuvenation and retention), the Department will focus on the provision of tools and training to support managers in exercising their staffing and recruitment responsibilities, over the planning

period. Specifically, the Department will put in place programs to enhance the recruitment and retention of employment equity target groups, will develop a learning strategy, and will implement the Universal Classification Standard and improve the interfaces between science advice and policy development. These, and other actions in the human resources field, are intended to make NRCan a workplace of choice ($3 million in 2001-02).

For example, in 2001, seven new recruits (for a total of fourteen) will receive training in various geomatics disciplines on a four-month rotational basis under NRCan's Geomatics Professional Development Program; this departmental recruitment and learning initiative will increase their knowledge, skills and proficiency. This cost-sharing program continues to be successful in the preparation for job opportunities in Canada (NRCan $520,000 and $50,000 cost-recovered).

Strengthening our S&T capacity – As a science and knowledge-based economic department, one of NRCan's primary concerns is its ongoing capacity to deliver the science, knowledge and technology required by its legislated mandate. An extensive strategic review ($25,000 in 2001-02) of NRCan's current and anticipated S&T gaps over the next five years will lead to the development of a long-term strategy to address the gaps and will be aligned to other departmental initiatives, such as NRCan On-Line, the Real Property Custodial Framework, the Information Management/Information Technology Strategy and the Long-Term Capital Plan (LTCP). Further information on S&T at NRCan can be found at: http://www.nrcan.gc.ca/dmo/scitech

Real property infrastructure – In terms of the supporting real property infrastructure required to deliver on the Department's mandate and objectives, NRCan is advancing its Custodial Real Property Framework. This framework will provide the foundation for asset management plans which will be completed for all NRCan-owned facilities in the National Capital Region (NCR), as well as for key regional facilities ($49 million over 2000-05). These plans provide the basis of real property input to the Department's LTCP. Over the next four years, NRCan will conduct a series of health and safety upgrades to facilities in the NCR as part of a Health and Safety Special Effort initiative. In addition, the Department will assess progress of the framework with selective, timed audit interventions throughout its development and will assess the effectiveness of the process and the project management.

Understanding the needs of science in relation to real property infrastructure.

Information management / information technology (IM/IT) – In recognition of the key role that enabling technology and quality information plays in support of NRCan's domestic and international role, the Department will continue to evolve the required IM/IT infrastructure and related investment framework ($270,000 over the planning period). Specifically, the Department will expand and integrate discrete IM and IT frameworks – within existing departmental resources – and plans with a view to

establishing a longer term integrated strategy with supporting management frameworks, enabling architectures and manageable activity plans. This strategy will be an essential pillar of NRCan's LTCP and of the NOL knowledge generation and integration initiative (see page 16).

Over the planning period, NRCan will conduct a preliminary survey of IT governance to identify risk exposures and areas where additional audit work is required.

Sustainable development in NRCan operations – In addition to playing a lead role in the federal House-in-Order initiative (see page 32), NRCan will implement its new departmental Environmental Policy over the planning period. An area of focus will be the improvement of NRCan's environmental information base to support planning and reporting. Up-to-date guides, manuals, and training sessions will be produced and delivered to raise the level of awareness of staff about environmental compliance. NRCan will also conduct specific environmental compliance reviews of departmental operations and apply corrective measures as required ($500,000 over the planning period).

The Department will implement its new Occupational Safety and Health Management (OSH) Policy. In line with this, the new Departmental Joint OSH Committee will be established. In addition, departmental managers and members of joint OSH committees across the Department will be made aware of their roles and responsibilities under the new *Canada Labor Code, Part II;* existing departmental OSH operational policy modules will be upgraded to provide managers and staff with appropriate guidance ($140,000 over the planning period).

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IV Consolidation of Reports

A. Sustainable Development Strategy - Now and for the Future

NRCan's *Sustainable Development Strategy (SDS) - Now and for the Future* is based on ongoing stakeholder engagement and is grounded in the Department's policy and S&T expertise, and legislated mandate to *"have regard to the sustainable development of Canada's natural resources and the integrated management thereof."* The strategy presents a framework for advancing a vision for a sustainable future which includes a departmental commitment to develop and report on national SD indicators.

In developing the strategy, NRCan integrated its long-term goals and departmental priorities over the planning period with that of the SDS, establishing sustainable development as the overarching umbrella for planned results. As such, key commitments found in Section III of this report correspond to SDS strategic actions. Based on public consultation, the SDS, however, provides more information on 30 strategic actions and presents the issues/problems to be addressed, the Department's leadership and partnership approach to addressing issues, time-bound and measurable targets, and anticipated outcomes in the context of advancing sustainable development.

Over the next three years, NRCan will advance the Department's sustainability agenda by holding itself accountable to Canadians. The Department will continue to engage stakeholders in the implementation of the SDS, develop and use performance indicators to measure and report on results, and prepare an annual progress report to be reviewed by senior management and published on the Department's web site. More information on NRCan's *SDS - Now and for the Future* can be obtained at the following web site: http://www.nrcan.gc.ca/dmo/susdev/

B. Collective Initiatives

In an effort to present a "whole-of-government" view of our key planned results to the reader, and given that most of these are delivered with partners, the Department integrates its collective initiatives information as part of Section III of this report. Please refer to the pages below to find more information on NRCan's key collective initiatives, partners and anticipated costs, as applicable.

Goal 1 - To provide Canadians with information to make balanced decisions regarding natural resources.	Page #
The power of creating and sharing knowledge	16
Meeting Canada's geospatial challenge	17
Improving the Department's capacity to report on Canada's forests	17
A new vision for Canada's forest sector: Forest 2020	18

V Financial Information

The following tables display information by departmental goals which results in a better integration of textual and financial information for a more complete planning picture. Planned spending by organizational structure and departmental spending information can be found on pages 12 and 14.

5.1 Summary of Transfer Payments*

Grants and contributions make up 19.7 percent of the total budgetary planned spending of the Department (2001-02 Main Estimates). The figures below summarize all grants and contributions planned spending.

($ millions)	Forecast Spending 2000-01	**Planned Spending 2001-02**	Planned Spending 2002-03	Planned Spending 2003-04
GRANTS				
Information Dissemination and Consensus Building	0.2	**0.2**	0.2	0.2
Economic and Social Benefits	0.2	**0.2**	0.2	0.2
Environmental Protection and Mitigation	0.0	**0.0**	0.0	0.0
Safety and Security of Canadians	0.0	**0.0**	0.0	0.0
Sound Departmental Management	0.1	**0.1**	0.1	0.1
Total Grants	**0.5**	**0.5**	**0.5**	**0.5**
CONTRIBUTIONS				
Information Dissemination and Consensus Building	15.7	**12.8**	13.1	13.9
Economic and Social Benefits	51.8	**77.6**	70.1	59.4
Environmental Protection and Mitigation	41.3	**30.6**	10.2	10.2
Safety and Security of Canadians	3.7	**4.3**	4.3	4.3
Sound Departmental Management	0.0	**0.0**	0.0	0.0
Total Contributions	112.5	**125.3**	97.7	87.8
Sub-Total Grants and Contributions	113.0	**125.8**	98.2	88.3
Plus: Adjustments to Planned Spending				
Grants	30.0	50.0	0.0	0.0
Contributions	(14.9)	44.0	73.2	81.3
Total Planned Grants and Contributions	**128.1**	**219.8**	**171.4**	**169.6**

* Over the planning period, NRCan will develop results-based management and accountability frameworks and risk-based audit frameworks for departmental transfer payment programs in keeping with the Treasury Board *Transfer Payment Policy*. NRCan will also develop an annual plan for the conduct of internal audits and evaluations of transfer payment programs.

5.2 Details on Transfer Payment Programs for which total payments, by goal, exceed $5 million in 2001-02

Information Dissemination and Consensus Building

Objectives: (i) 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; (ii) greater national and international cooperation and consensus on sustainable development issues, policies, goals and actions; and (iii) fiscal, regulatory and voluntary approaches that encourage the sustainable development of natural resources.

Planned Results	Milestones
Many Canadian communities depend on the forest environment for their social, cultural, and economic well-being. Canada's Model Forest Program is widely recognized for developing ongoing effective approaches to sustainable forest management ($7.7 million in 2001-02).	• The Department will lead in the renewal and/or extension of Canada's Model Forest Program (CMFP) which expires on March 31st, 2002. • An evaluation of the CMFP will be undertaken to assess how well each individual model forest, as well as the program, is meeting required objectives. This independent evaluation is one component of an overall assessment of the program to be undertaken by NRCan. This information will assist the Department in preparing plans for the CMFP future. These plans are expected to be completed by the fall of 2001, approximately six months prior to the end of the current phase. • Over the summer of 2001, NRCan will be engaged in broad consultations as part of the overall assessment of the program (an estimated $40 million over five years plus associated full-time equivalents from the Canadian Forest Service's A-base). More information can be found at http://mf.ncr.forestry.ca/
The sharing of information through the implementation of GeoConnections, a national partnership program to develop the geographic lane of the information highway ($4.0 million in 2001-02).	• See Section III, Meeting Canada's geospatial challenge, page 17 or visit the following web site: http://cgdi.gc.ca • A performance framework will form the basis for an ongoing evaluation.

Economic and Social Benefits

Objectives: (i) greater economic opportunities and encouraging investment in innovative and higher-value uses of natural resources; (ii) expanded access to international markets for Canadian resource-based products, knowledge, technologies and services; and (iii) increased capacity of Aboriginal, rural and northern communities to generate sustainable economic activity based on natural resources.

Planned Results	Milestones
The exploration, development, production or transportation of oil and gas in the offshore area of Nova Scotia ($6.6 million in 2001-02).	Statutory payments to: • pay to Nova Scotia an amount equal to various offshore revenues, including consumption tax, insurance premium tax, royalties rentals, forfeitures, fees and provincial income tax through the Nova Scotia Offshore Revenue Account ($6.2 million); and • compensate the province for part of its losses in fiscal equalization entitlements as a result of offshore revenues included in the equalization program, through the Nova Scotia Revenue Fiscal Equalization Offset payment (0.4 million).

Planned Results	Milestones
Increase investment in energy development and infrastructure, while creating jobs and protecting the environment ($49 million in 2001-02).	• Hibernia Interest Assistance ($49 million), as a repayable contribution to assist the owners in meeting current project interest payments on the guaranteed loans, if current oil prices for the oil produced by the project fall below U.S. $25 per barrel (in 1987 dollars).
Improve economic conditions of First Nation communities across Canada; maintain and advance Canada's competitive position in wood products trade through applied R&D; expand R&D targeted at producing value-added wood products; support tree planting programs across Canada ($7.6 million in 2001-02).	• First Nation Forestry Program (see page 28). • Forest Engineering Research Institute of Canada's (FERIC) mission is to provide its members with knowledge and technology to conduct cost competitive, quality operations that respect the forest environment. NRCan contributes $1.67 million/year to FERIC for forest S&T research and technology transfer initiatives targeted towards S&T initiatives. • NRCan's Value-added program with Forintek is a four-year $4 million partnership designed to expand forest research targeted at producing value-added products. It is coupled with an expanded technology partnership with Forintek, British Columbia, and Quebec to expand technology transfer to small and medium producers of wood products. • Community level tree planting programs across Canada.
Provide funding assistance to Québec and Ontario woodlot owners since they play an important role in the provinces' forest industry and rural economy ($5 million in 2001-02).	• A results-based framework and a risk-based audit framework are being developed. <u>Québec</u> • The 1998 ice storm damaged approximately 17,000 square kilometres of Québec wooded lands, of which 6,000 square kilometres have been severely affected. • The governments of Canada and Québec had agreed to a one-time contribution of $17 million each (allocated over four years) to assist private woodlot owners in Québec whose primary income is not derived from forestry or agricultural activities. • This agreement complements the Disaster Financial Assistance Arrangements, under which the federal government is committed to reimbursing the province for up to 90 percent of the total eligible costs of provincial programs for woodlot owners whose primary income is derived from forestry and agricultural activities. • The funds are being used for silvicultural rehabilitation work, training of forest advisors, providing advice related to ice storm damage and carrying out an inventory of woodlots. The contribution is being administered through Québec's private development agencies in the regions of Bois-Francs, Chaudière, Estrie, Laurentides, Montérégie and Outaouais. <u>Ontario</u> • In Ontario, the 1998 ice storm damaged an estimated 220,000 hectares of woodlots, owned and operated by approximately 6,500 landowners. • Through the Canada-Ontario agreement, the federal government funds an equal share of Ontario's $3.5 million Forest Recovery Assistance Program to assist woodlot owners in lot assessment as well as in the recovery of woodlot businesses. It complements the Canada-Ontario Agreement for the Ice Storm Economic Recovery Assistance Program signed in March 1998.

Environmental Protection and Mitigation

Objectives: (i) Canada addressing its international Kyoto commitment to reduce greenhouse gases; (ii) scientific research, technologies and stewardship practices that reduce environmental impacts, conserve biodiversity, and increase the efficiency of resource development and use; and (iii) Canada's environment safeguarded from the risks associated with natural resource development and use.

Planned Results	Milestones
Improve energy efficiency and the adoption of alternative sources of energy which contributes to reducing greenhouse gas emissions ($12.2 million in 2001-02).	• Support energy efficiency and alternative energy programs for all end-use sectors of the economy and all significant fuel types, seeking to enhance the effectiveness of energy use through encouraging investments and changing behaviors ($8.3 million). • Support for energy efficiency research and development in the industrial sector ($3.9 million).
Climate Change Action Fund ($20 million in 2001-02) and Action Plan 2000 – part of NRCan's contribution to the federal-provincial-territorial First Business Plan of the National Implementation Strategy on Climate Change ($40.0 million in 2001-02) – to address Canada's Kyoto commitments to reduce greenhouse gas emissions to 6 percent below 1990 levels by the period 2008-12.	• Commencing implementation of the National Implementation Strategy on Climate Change and the First National Business Plan to meet these commitments. • Development of further emission reduction options. • Continued support for early action to reduce greenhouse gas emissions through policy analysis, science, impacts and adaptation research, technology early action measures, and public education and outreach.
Sustainable Development Technology Fund (SDTF) to tackle environment and sustainable development issues including climate change and clean air (NRCan $50 million and Environment Canada $50 million in 2001-02).	• NRCan and Environment Canada, in collaboration with Industry Canada, are establishing an arms-length research foundation to administer the SDTF. • The SDTF's role will be twofold. First, it will support the development of promising new sustainable development technologies, in particular those related to climate change and clean air. These are essential as Canada makes the transition to a more environmentally-benign economy. Second, it will support the demonstration of these technologies so that they may be put to use throughout the economy. • The fund will also foster and encourage innovative collaboration and partnering amongst diverse actors in the private sector and in academic and not-for-profit organizations where there is a clear need to channel and strengthen Canada's capacity in sustainable development.

5.3 Source of Respendable and Non-Respendable Revenues (Excludes the Geomatics Canada Revolving Fund)

Respendable Revenues[1]

($ millions)	Forecast Revenue 2000-01	**Planned Revenue 2001-02**	Planned Revenue 2002-03	Planned Revenue 2003-04
Information Dissemination and Consensus Building	2.6	**2.6**	2.6	2.6
Economic and Social Benefits	10.2	**11.2**	11.2	11.2
Environmental Protection and Mitigation	7.1	**8.1**	8.3	8.4
Safety and Security of Canadians	2.2	**2.2**	2.2	2.2
Sound Departmental Management	0.3	**0.1**	0.1	0.1
Total Respendable Revenues	22.4	**24.2**	24.4	**24.5**

Non-Respendable Revenues[2]

($ millions)	Forecast Revenue 2000-01	**Planned Revenue 2001-02**	Planned Revenue 2002-03	Planned Revenue 2003-04
Information Dissemination and Consensus Building	0.2	**0.1**	0.2	0.2
Economic and Social Benefits	11.4	**11.9**	11.9	11.9
Environmental Protection and Mitigation	0.0	**0.0**	0.0	0.0
Safety and Security of Canadians	0.0	**0.0**	0.0	0.0
Sound Departmental Management	0.1	**0.1**	0.1	0.1
Total Non-respendable Revenues	11.7	**12.1**	12.2	12.2

Total Respendable and Non-respendable Revenues	34.1	**36.3**	36.6	36.7

[1] As per 2001-2002 Annual Reference Level Update.
[2] As per 2001-2002 Annual Reference Level Update.

5.4 Net Cost of Program for the Estimates Year 2001-02

($ millions)	**Total NRCan**
Planned Spending (Budgetary, Non-Budgetary plus adjustments)	
Information Dissemination and Consensus Building	157.3
Economic and Social Benefits	202.4
Environmental Protection and Mitigation	348.4
Safety and Security of Canadians	37.6
Sound Departmental Management	43.9
Sub-Total Planned Spending	**789.6**
Plus: Services Received without Charge	
Accommodation provided by Public Works and Government Services Canada (PWGSC)	10.8
Contributions covering employers' share of employees insurance premiums and expenditures paid by TBS	16.7
Workmen's compensation coverage provided by Human Resources Development Canada	0.4
Salary and associated expenditures of legal services provided by Justice Canada	0.7
Total Services Received without Charge	**28.6**
Less: Non-respendable Revenue	12.1
2001-02 Net Program Cost (Total Planned Spending)	**806.1**

5.5 Geomatics Canada Revolving Fund Statement of Operations and Changes in Financial Position

($ millions)	Forecast Revenue 2000-01	**Planned Revenue 2001-02**	Planned Revenue 2002-03	Planned Revenue 2003-04
Revenues				
Products	12.6	**14.9**	14.9	14.9
Services	3.7	**2.3**	2.3	2.3
Consulting	0.1	**0.1**	0.1	0.1
Total revenues	16.4	**17.3**	17.3	17.3
Expenditures (includes cost of goods sold)	16.2	**16.7**	15.8	15.8
Operating Surplus (deficit)[1]	0.2	**0.6**	1.5	1.5
Changes in Working Capital	1.0	**0.5**	(0.4)	(0.4)
Capital acquisition	(0.4)	**(0.3)**	(0.2)	(0.2)
Other items	0.3	**0.3**	0.2	0.2
Cash requirements	1.1	**1.1**	1.1	1.1

[1] Reflects Accrual Based Accounting.

5.6 Projected Use of Geomatics Canada Revolving Fund Authority

($ millions)	
Authority April 1, 1994	8.0
Drawdown:	
Anticipated Use at end of Fiscal year 2000-01	(0.3)
Estimated Use for 2001-02	(1.1)
Anticipated Authority Balance at the end of fiscal year 2001-02	**9.4**

5.7 Outstanding Loans

($ millions)	Balance April 1st 2001	Receipts and Other Credits	Payments and Other Charges	Balance March 31st 2002
Atomic Energy of Canada Ltd.				
Housing	0.1	0.0	0.0	0.1
Heavy Water Inventory	7.5	(1.0)	0.0	6.5
Hibernia Development Project	73.6	(9.2)	0.0	64.4
Nordion International Inc.	98.0	(4.0)	0.0	94.0

VI Other Information

A. Contacts for further information, Internet Addresses 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/

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/
Climate Change – NRCan	http://www.climatechange.nrcan.gc.ca/
Climate Change Secretariat	http://climatechange.gc.ca/english/html/feature/feature.html
Corporate Services Sector	http://www.nrcan.gc.ca/css/css-pe.html
Earth Sciences Sector	http://www.nrcan.gc.ca/ess
Energy Sector	http://www.nrcan.gc.ca/es
Minerals and Metals Sector	http://www.nrcan.gc.ca/mms
ResSources	http://www.nrcan.gc.ca/ressources
S&T at NRcan	http://www.nrcan.gc.ca/dmo/scitech
Statutes and Regulations	http://www.nrcan.gc.ca/dmo/spcb/regiss_e.html
Sustainable Development	http://www.nrcan.gc.ca/dmo/susdev

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
Costa Rica-Canada Initiative	http://www.nrcan.gc.ca/cfs/crc/
Criteria and Indicators (C&I)	http://www.NRCan.gc.ca:80/cfs/proj/ppiab/ci/
First Nation Forestry Program	http://www.fnfp.gc.ca/
Model Forest Network	http://mf.ncr.forestry.ca/
Montreal Process C&I	http://www.mpci.org/
National Forest Strategy	http://www.nrcan.gc.ca/cfs/nfs/strateg/control_e.html
United Nations Framework Convention on Climate Change	http://www.unfccc.de/

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 Earth Observation Network	http://ceonet.cgdi.gc.ca

Canadian Geoscience Publications Directory	http://ntserv.gis.nrcan.gc.ca

Earth Sciences Sector (continued)

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://www.geoconnections.org
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/lsd
National Air Photo Library	http://airphotos.nrcan.gc.ca
National Atlas of Canada	http://www-nais.ccrs.nrcan.gc.ca
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

Energy Sector Internet Sites:

Auto$mart and EnerGuide for Vehicles	http://autosmart.NRCan.gc.ca/online_E.htm
CANMET Energy Diversification Research Laboratory	http://cedrl.mets.nrcan.gc.ca/
CANMET Energy Technology Branch	http://www.nrcan.gc.ca/es/etb
CANMET Energy Technology Centre	http://nrcan.gc.ca/es/etb/cetc/cetchome.htm
CANMET Information Centre	http://www.nrcan.gc.ca/es/msd/cic/ecichome.htm
CANMET Western Research Centre	http://www.nrcan.gc.ca/es/etb/cwrc/wrcehome.html
EnerGuide for Houses	http://energuide.nrcan.gc.ca/houses/
Energy Policy Branch	http://www.nrcan.gc.ca/es/new/enquir2.htm
Energy Resources Branch	http://www.nrcan.gc.ca/es/erb/erb/index.html
Energy Technology Data Exchange	http://nrcan.gc.ca/es/msd/cic/cdnetde.htm
Energy Technology Futures	http://www.nrcan.gc.ca/es/etf
National Energy Use Database	http://oee.nrcan.gc.ca/neud/
Nuclear energy, uranium and radioactive waste	http://nuclear.nrcan.gc.ca
Office of Energy Efficiency	http://www.oee.nrcan.gc.ca
Office of Energy Research and Development	http://www.nrcan.gc.ca/es/oerd/
Renewable Energy Deployment Initiative	http://www.nrcan.gc.ca/es/erb/reed/redi_e.htm
RETScreen™	http://cedrl.mets.nrcan.gc.ca/e/index_e.html

Minerals and Metals Sector Internet Sites:

Applied Mineralogy	http://www.nrcan.gc.ca/mms/canmet-mtb/mineralogy
Aquatic Effects Program	http://www.nrcan.gc.ca/mets/aete/
Annual Conference of the Mines Ministries of the Americas (CAMMA)	http://www.camma.org
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

Minerals and Metals Sector (continued)

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
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	http://www.nrcan.gc.ca/explonet
Explosives Regulatory Division	http://www.nrcan.gc.ca/mms/explosif/
Ground Control	http://www.nrcan.gc.ca/mms/canmet-mtb/bells/encorpge.htm
Inventory of Mining Industry Practices to Conserve Wildlife and Habitat in Canada	http://mmsd1.mms.nrcan.gc.ca/business/inventory/
MEND 2000	http://mend2000.nrcan.gc.ca
Mines Minister's Conference	http://www.nrcan.gc.ca/mms/mmc/index-e.htm
Minerals and Metals – A World to Discover	http://www.nrcan.gc.ca/mms/school/e_mine.htm
Minerals and Metals Fact Sheets and Information Bulletins	http://www.nrcan.gc.ca/mms/bulletin-e.htm
Minerals and Mining Statistics Division	http://www.nrcan.gc.ca/mms/efab/mmsd/
Mineral Industry Info-Guide	http://www.nrcan.gc.ca/mms/pubs/infoguide-e.pdf
Mining and Mapping MMS Knowledge	http://mmsd1.mms.nrcan.gc.ca/maps/
Mining Taxation World	http://www.nrcan.gc.ca/ms/efab/tmrd/
Recycling Technology Newsletter (R-Net)	http://RNET.nrcan.gc.ca

Subject Index by Goal

Goal 1 - To provide Canadians with information to make balanced decisions regarding natural resources.

Goal 2: To provide Canadians with sustainable economic, social and environmental benefits derived from natural resources for present and future generations.

Goal 3: To provide Canadians with strategies that reduce environmental impacts in the natural resources sector.

Goal 4: To provide Canadians with safety and security in the natural resources sector.

Goal 5: To provide Canadians with a department that is efficiently and effectively managed.