Natural Resources Canada

2014-15

Departmental Performance Report

The Honourable James Gordon Carr, P.C., M.P.
Minister of Natural Resources

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Table of Contents

Minister's Message

I'm delighted to present the 2014-2015 Departmental Performance Report – and to join a department that stands at the intersection of so many of the important issues facing Canadians today. Whether its climate change, engagement of Indigenous peoples, major energy projects, innovation or economic growth, Natural Resources Canada (NRCan) plays a critical role.

Canada, like other countries, is at an important inflection point, a time when our challenge – and opportunity – is to marry environmental responsibility with resource development. To do that, we need to become more innovative, find greener ways to extract and develop our fossil fuels, make greater use of renewables and become more efficient with how we use energy.

For NRCan – and for Canadians – there could be no more exciting opportunity because resource development is really about nation building – laying the foundation for future generations as our predecessors did for us.

To build that future, we must restore Canadians' confidence in the way we evaluate major resource projects. This means a collaborative process, engaging key partners such as Indigenous communities, as well as provinces and territories. And it means proceeding in a way that generates the energy we need while preserving the planet we cherish.

It also means developing a truly national energy strategy – one that protects our energy security, encourages conservation and brings cleaner, renewable energy onto a smarter electricity grid.

Moving forward, we can create greener jobs and sustainable growth. We can foster new industries and modernize older ones. And we can build a nation on a solid, sustainable foundation.

As a science-based department, NRCan has an enormous contribution to make to that future. I look forward to working with all of the talented people of the department and to ensuring that the resource sector remains a source of jobs, prosperity and opportunity for generations to come.

The Honourable James Gordon Carr, M.P.

Minister of Natural Resources

Section I: Organizational Expenditure Overview

Organizational Profile

Minister: The Honourable James Gordon Carr, P.C., M.P.

Deputy head: Bob Hamilton

Ministerial portfolio:

- Atomic Energy of Canada Limited[i] (AECL);
- National Energy Board[ii] (NEB);
- Canadian Nuclear Safety Commission[iii] (CNSC);
- Canada-Newfoundland and Labrador Offshore Petroleum Board[iv] (CNLOPB);
- Canada-Nova Scotia Offshore Petroleum Board[v] (CNSOPB);
- Northern Pipeline Agency[vi] (NPA);
- Sustainable Development Technology Canada[vii] (SDTC); and
- Energy Supplies Allocation Board (ESAB) (inactive).

Year established: 1994

Main legislative authorities:

- *Department of Natural Resources Act*[viii], S.C. 1994, c. 41
- *Forestry Act*[ix], R.S.C., 1985, c. F-30
- *Resources and Technical Surveys Act*[x], R.S.C., 1985, c. R-7

Organizational Context

Raison d'être

Natural Resources Canada (NRCan) works to improve the quality of life of Canadians by ensuring that our resource sector remains a source of jobs, prosperity, and opportunity within the context of a world that increasingly values sustainable practices and low carbon processes.

Responsibilities

The Minister of Natural Resources has responsibilities under more than 30 acts of Parliament. The Minister's core powers, duties and functions are set forth in the *Department of Natural Resources Act*, the *Resources and Technical Surveys Act* and the *Forestry Act*. NRCan also works in areas of shared responsibilities with provinces.

To deliver on its responsibilities, NRCan relies on a number of instruments: policy, programs, regulations, and science and technology. It uses partnerships and international collaboration to help drive progress on natural resource issues that are important to Canadians. More broadly, the Department plays a critical role in Canada's future, contributing to high-paying jobs, business investment and overall economic growth in Canada's natural resource sectors.

NRCan has offices and laboratories across the country. About half of its occupied facilities are in the National Capital Region, with the remainder being distributed from Atlantic Canada, through Quebec and Ontario, to the Western and Pacific Regions and Northern Canada.

Strategic Outcomes and Program Alignment Architecture

Strategic Outcome 1: **Canada's Natural Resource Sectors are Globally Competitive**

- **Program 1.1**: Market Access and Diversification
  - **Sub-Program 1.1.1**: Mineral and Metal Markets Access and Development
  - **Sub-Program 1.1.2**: Forest Products Market Access and Development
  - **Sub-Program 1.1.3**: Energy Market Regulation and Information
- **Program 1.2**: Innovation for New Products and Processes
  - **Sub-Program 1.2.1**: Mining Innovation
  - **Sub-Program 1.2.2**: Forest Sector Innovation
  - **Sub-Program 1.2.3**: Geospatial Innovation
- **Program 1.3**: Investment in Natural Resource Sectors
  - **Sub-Program 1.3.1**: Mineral Investment
  - **Sub-Program 1.3.2**: Targeted Geoscience Initiative
  - **Sub-program 1.3.3**: Geo-Mapping for Energy and Minerals
  - **Sub-program 1.3.4**: New Energy Supply
  - **Sub-program 1.3.5**: Major Projects Management Office Initiative
- **Program 1.4**: Statutory Programs – Atlantic Offshore

Strategic Outcome 2: Natural Resource Sectors and Consumers are Environmentally Responsible

- **Program 2.1**: Energy-Efficient Practices and Lower-Carbon Energy Sources
  - **Sub-Program 2.1.1**: Renewable Energy Deployment
  - **Sub-Program 2.1.2**: Support for Clean Energy Decision-Making
  - **Sub-Program 2.1.3**: Alternative Transportation Fuels
  - **Sub-Program 2.1.4**: Energy Efficiency
- **Program 2.2**: Technology Innovation
  - **Sub-Program 2.2.1**: Materials for Energy
  - **Sub-Program 2.2.2**: Green Mining
  - **Sub-Program 2.2.3**: Clean Energy Science and Technology

Program 2.3: Responsible Natural Resource Management

Sub-Program 2.3.1: Forest Ecosystem Science and Application

Sub-Program 2.3.2: Groundwater Geoscience

Sub-program 2.3.3: Environmental Studies and Assessments

Sub-program 2.3.4: Radioactive Waste Management

Sub-program 2.3.5: Earth Observation for Responsible Resource Development

Strategic Outcome 3: Canadians have Information to Manage their Lands and Natural Resources, and are Protected from Related Risks

Program 3.1: Protection for Canadians and Natural Resources

Sub-Program 3.1.1: Explosives Safety and Security

Sub-Program 3.1.2: Materials and Certification for Safety and Security

Sub-Program 3.1.3: Forest Disturbances Science and Application

Sub-Program 3.1.4: Climate Change Adaptation

Sub-Program 3.1.5: Geohazards and Public Safety

Program 3.2: Landmass Information

Sub-Program 3.2.1: Essential Geographic Information

Sub-Program 3.2.2: Canada's Legal Boundaries

Sub-Program 3.2.3: Polar Continental Shelf Logistics Support

Sub-Program 3.2.4: United Nations Convention on the Law of the Sea

Program 4.1: Internal Services

Organizational Priorities

In 2014-15, NRCan supported key Government of Canada (GC) priorities. The Department played a lead role in:

- Expanding markets and global partnerships;
- Unlocking resource potential through responsible development;
- Leveraging S&T knowledge for safety and security risk management;
- Innovating for competitiveness and environmental performance; and
- Increasing the effectiveness and efficiency of NRCan operations.

Information on how each of these priorities is being delivered is found below under the Summary of Progress.

Organizational Priorities

Priority	Type[1]	Strategic Outcomes
Expand markets and global partnerships	Previously Committed to	SO1 - Canada's Natural Resource Sectors are Globally Competitive SO 2 - Natural Resource Sectors and Consumers are Environmentally Responsible
Summary of Progress		
NRCan worked to expand existing markets, open new markets, address market access barriers, attract investment into Canada and promote Canadian investment abroad, by engaging with key foreign governments, both bilaterally and multilaterally. This included signing a new bilateral Memorandum of Understanding (MOU) with the United States (US) Department of Energy and a trilateral data MOU with the US and Mexico. Canada also engaged with China, Ukraine, Poland, the United Kingdom (UK), Lithuania and Italy on the potential for future Liquefied Natural Gas (LNG) exports. With the US, Canada helped the Ukraine formulate a plan to deal with natural gas supply shortages during the winter of 2014-15. Internationally, the Canada-European Union (EU) High Level Energy Dialogue was relaunched after the Canada-EU summit of September 2014, when leaders committed to renewed collaboration in the field of energy. The Dialogue allows Canada to cooperate with the EU on key energy areas such as oil and gas markets, science and technology (S&T), research and development (R&D), renewables, and in international fora.		

[1] Type is defined as follows: previously committed to – committed to in the first or second fiscal year prior to the subject year of the report; ongoing – committed to at least three fiscal years prior to the subject year of the report; and new – newly committed to in the reporting year of the RPP or DPR. If another type that is specific to the department is introduced, an explanation of its meaning must be provided.

NRCan's recent outreach and engagement on EU's proposed regulations for the Fuel Quality Directive successfully brought about final regulations in February 2015, which should not impact future oil exports to the EU.

The Department provided technical expertise on Canada's natural resource sectors to Foreign Affairs, Trade and Development Canada (DFATD) to support international trade negotiations, including on the recently concluded Canada-Korea Free Trade Agreement and on other international trade negotiations still under way such as the Canada-Japan Economic Partnership Agreement and the Trans-Pacific Partnership. NRCan also provided expertise to DFATD and Environment Canada (EC) in support of three international climate change negotiation sessions.

NRCan continued to advance Canada's international climate change objectives in a range of high-level climate change- and clean energy-related fora. NRCan promoted its energy efficiency and clean energy supply initiatives at the fifth Clean Energy Ministerial in May 2014. The Department became Canada's Focal Point on the Climate Technology Centre and Network (CTCN) of the United Nations Framework Convention on Climate Change (UNFCCC), and will facilitate the deployment of climate-friendly technologies in developing countries, as well as the Clean Technology Initiative (CTI) Private Financing Advisory Network (PFAN).

The Clean Energy Dialogue successfully released the Third Report to Leaders in October 2014, outlining joint Canada-US achievements in working groups focused on Carbon Capture and Storage and Integrating Renewable Power into the Grid, as well as Clean Energy R&D and Energy Efficiency.

In 2014-15, NRCan established the Major Projects Management Office – West (MPMO-West). It provides a single window for First Nations to engage with the GC on issues related to the development of West Coast energy infrastructure. In response to Special Federal Representative Douglas Eyford's recommendations, the MPMO-West team is engaging early and often with First Nations, to build a trusting relationship, to identify and address issues related to west coast energy infrastructure, and to facilitate increased Aboriginal participation in energy projects.

NRCan coordinated many federal-provincial-territorial meetings, including the Energy and Mines Ministers' Conference 2014, which included discussion of collaboration on energy efficiency, regulatory reform, the junior mining sector and mandatory reporting in the extractive sectors.

The Department continued to work collaboratively with wood product associations, provincial governments and the forest industry on a range of market development activities, both in foreign and North American markets. Exports of Canadian forest products increased 10.2% (dollar value) in 2014-15, in part due to these activities. Under the Expanding Market Opportunities program, NRCan provided support to the forest industry including $6.7 million in support of foreign market development initiatives and $2.8 million to increase the use of wood in non-residential and mid-rise applications in Canada and the US.

Promoting Canadian best practices in responsible mineral resource development, NRCan led the Canadian delegation to the 10th annual general meeting of the Intergovernmental Forum on

Mining, Minerals, Metals and Sustainable Development. At events in Brussels and Berlin, the delegation promoted Canadian mining policies and technologies, including the Green Mining Initiative.

In 2014-15, NRCan established the *Extractive Sector Transparency Measures Act* (ESTMA) in response to the Prime Minister's 2013 G8 commitment to deter corruption in the extractives sector through transparency measures. The Act requires the reporting of certain payments made to all levels of governments domestically and abroad. The ESTMA received Royal Assent on December 16, 2014, and came into force on June 1, 2015.

NRCan contributed to the 2014-15 review and renewal of the GC's Corporate Social Responsibility (CSR) Strategy. Through cooperation with the Prospectors and Developers Association of Canada (PDAC), the Mining Association of Canada (MAC), rePlan, Plan Canada and UNICEF, the Department developed a CSR checklist for mining companies working abroad.

Priority	Type	Strategic Outcomes
Unlock resource potential through responsible development	Previously Committed to	SO 1 - Canada's Natural Resource Sectors are Globally Competitive SO 2 - Natural Resource Sectors and Consumers are Environmentally Responsible SO 3 - Canadians have Information to Manage their Lands and Natural Resources, and are Protected from Related Risks

Summary of Progress

NRCan provided federal leadership by working with other federal departments and regulatory agencies to implement the Government's plan for Responsible Resource Development and help protect Canadians. It also disseminated scientific knowledge necessary to understand and identify areas that hold the most resource development potential.

To help bring Canada's LNG resources to market, the Department supported the Governor in Council's decision-making to authorize the National Energy Board (NEB) to issue two export licenses.

NRCan continued to monitor the Lower Churchill hydroelectric projects, including reviewing funding request documentation and independent engineering reports and participating in site visits.

The Department is updating the federal regulatory framework governing energy resources, including:

- Collaborating with Nova Scotia and Newfoundland and Labrador, other federal government departments and regulator partners to amalgamate various offshore and

northern onshore oil and gas regulations into one performance-based regulatory system;

- Working with the NEB on amendments to regulations for pipeline damage prevention and to its Export and Import Regulatory Framework;
- Establishing regulations pursuant to the Nuclear Liability and Compensation Act; and
- Supporting the introduction of the Pipeline Safety Act, which includes authority to regulate liability and minimum financial capacity.

With a view to attracting and increasing investment in Canada's natural resource sector, NRCan:

- Provided expertise and knowledge including the release of new information bulletins, maps and a Minerals and Metals Factbook;
- Developed and implemented proposals for geoscience research through the Geo-Mapping for Energy and Minerals-2 (GEM-2) program, including launching 14 activities, with initial fieldwork completed during the 2014-15 field season;
- continued to advance knowledge of untapped mineral resources though the release of new results on ore deposit science through the Targeted Geoscience Initiative (TGI); and
- Led missions to China, Japan and the US (Washington D.C. and Houston, TX), to attract foreign direct investment.

The Aboriginal Forestry Initiative delivered $2.7 million in funding in 2014-2015, supporting early engagement activities with industry, enhanced community readiness and capacity, and facilitating business development opportunities in Aboriginal communities across Canada.

NRCan continued to synthesize its science-based research to support the forest sector, including projects such as the long-term ecological forest research (35-year study) at Turkey Lakes, Ontario, and 15 years of research results from the Ecosystem Management Emulating Natural Disturbance project which explores the effectiveness of ecosystem-based management in the western boreal forest.

NRCan provided estimates of forest-related carbon and greenhouse gas (GHG) emissions to EC's National Inventory (of GHG emissions); this information will be used in the 2015 National Inventory Report.

NRCan also delivered geoscience support to federal (Transport Canada [TC], Canadian High Arctic Research Station) and territorial governments (Northwest Territories [NWT] Environment and Natural Resources, NWT Department of Transport, Nunavut Department of Economic Development and Transportation, Gwich'in Renewable Resource Board) to increase their understanding of changes to the climate, and how they impact Northern infrastructure that would be required in bringing resources to market.

Priority	Type	Strategic Outcomes
Innovate for competitiveness and environmental performance	Previously Committed to	SO 1 - Canada's Natural Resource Sectors are Globally Competitive SO 2 - Natural Resource Sectors and Consumers are Environmentally Responsible

Summary of Progress

NRCan continued its work to enhance energy efficiency in the residential, commercial and institutional, industrial and transportation sectors, pursue S&T projects on unconventional oil and gas, promote the development and use of innovative energy technology, support the production and use of alternative transportation fuels, and advance innovation in green mining.

The implementation of the Government-owned, Contractor-operated (GoCo) model for AECL's Nuclear laboratory is on track. A key milestone was achieved in November 2014, with the operationalization of Canadian Nuclear Laboratories (CNL).

NRCan supported the forest sector's efforts to develop opportunities in bioenergy, bio-products and next generation of building materials, including the deployment of new cross-laminated timber manufacturing technology at facilities in Western Quebec and British Columbia; state-of-the-art precision forestry informatics through a national equipment manufacturer; commercial production of food-grade biomethanol from a pulp and paper mill; construction of a facility to prefabricate a panelized system for the Passive House Standard (a rigorous, internationally recognized design and building standard), and industrial-scale glue applications for lignin extracted from the pulping process.

Under the ecoENERGY Efficiency program, NRCan continued to support training initiatives for individuals in the housing, buildings, industrial and transportation sectors, and the development of codes and regulations. This program contributes to Canada's long-term goals to reduce greenhouse gas emission while saving Canadian consumers and businesses money, and helping Canadian industry to become more competitive. In 2014-15, key activities included the ENERGY STAR® benchmarking tool for buildings, the SmartWay Transport Partnership (a benchmarking program for the freight transportation industry), and the expansion of the ENERGY STAR® product labelling program.

NRCan's Program of Energy Research and Development, ecoENERGY Innovation Initiative and Clean Energy Fund programs continued to support leading-edge clean energy research, development and demonstration (RD&D) projects.

In its first full year of operation, the NRCan-led Federal Geospatial Platform (FGP) developed a functional test version of an integrated suite of internal and external online tools and technologies. Through this whole-of-government, enterprise-wide approach to geospatial tools and information sharing, the federal government has started to integrate and share more than 141 geospatial data layers, significantly exceeding its original first-year target of 50. The

addition of this new data to Canada's Open Data Portal will facilitate smarter and faster decision making by a multitude of users on a wide range of issues, from environmental and safety, to economic and social issues.

NRCan undertook the Canadian Geomatics Environmental Scan and Value Study representing the most comprehensive assessment to date of the geomatics and geospatial sector in Canada. The study found that in 2013, the use of geospatial information contributed $20.7 billion in productivity improvements to the Canadian economy, or the equivalent of 1.1% of national GDP.

With regard to improving the energy efficiency of vehicles, NRCan's CanmetMATERIALS Lab completed work in successfully integrating spring-back prediction of high-strength steels. This enables Canadian companies, to avoid costly tooling changes and enhances time to market in hydro-formed tubular products used in crash applications in vehicle body structures.

Several materials solutions for key components in the Canadian Generation-IV (GEN-IV) Supercritical Water-cooled Reactor concept were developed in 2014-15. This year, coatings to protect steels from corrosion in high-temperature supercritical water have been evaluated and finalized; and a ceramic insulating material has been developed and tested. Results were provided to the Canadian GEN-IV Review Committee in February 2015.

Priority	Type	Strategic Outcome(s)
Leverage S&T knowledge for safety and security risk management	Previously Committed to	SO 2 - Natural Resource Sectors and Consumers are Environmentally Responsible SO 3 - Canadians have Information to Manage their Lands and Natural Resources, and are Protected from Related Risks

Summary of Progress

Through collaboration with federal, provincial and territorial partners, academia, industry stakeholders and key international organizations, NRCan continued to drive innovation of the Canadian Geospatial Data Infrastructure, ensuring that high-value, open, standards-based geodata, such as topographic and geoscience maps, are available to Canadians. The Department also delivered reusable Open Data applications (e.g., Canadian digital elevation data and GeoGratis) and tools, leading to cost-effectiveness in technology use, and continued to prepare for and manage risks and emergencies as they relate to its mandate.

NRCan continued to disseminate geospatial products and services in support of land and natural resource management, publishing 37 Canadian geoscience maps along with their associated data, and releasing 775 science and technology publications. The Department also produced a new reference map of Canada including updates to the transportation network, populated placed symbols, place names and the position of the North Magnetic Pole. New

features include winter roads, two new national parks and an updated summer sea ice extent based on EC's standard measurement approach.

NRCan's research on an early intervention against the spruce budworm in Eastern Canada produced promising results, including a better understanding of how a spruce budworm outbreak begins and spreads. In October 2014, the Department co-hosted the Third Biennial Wildland Fire Canada Conference with Maritime provincial agencies. The event was a key opportunity to re-engage and strengthen working relationships with Canadian fire management agencies, and transfer knowledge on NRCan fire research and information systems technology to fire management end-users.

Commissioning of the Water Treatment Plants for the Port Hope and Port Grandby remained on track. In September 2014, Public Works and Government Services Canada (PWGSC) put out to tender the contract for the Port Granby Long Term Waste Management Facility.

Under the Nuclear Legacy Liabilities Program (NLLP), NRCan continued its work with AECL and CNL on the transition of nuclear decommissioning and waste responsibilities to the GCo management model.

NRCan regularly participated in the development and revision of GC Emergency Management Plans including the Interagency Volcanic Event Notification Protocol, Atlantic Canada Tsunami Protocol, Earthquake Contingency Plan, Earthquake Response protocol, Flood Plan, and Satellite Imagery Acquisition Plan.

New security provisions under the *Explosives Act* came into force on February 1, 2015, which completed the final step in the implementation of the Explosives Regulations, 2013.

The Adaptation Platform continued to develop effective climate change adaptation actions, notably by bringing more stakeholders on board. Public Safety Canada and the Federation of Canadian Municipalities joined the plenary body, with total Platform membership rising to 370 members.

NRCan met its Northern survey obligations and completed its annual plan for the multi-year First Nations Land Management program. As part of its First Nation Land Management work, NRCan prepared 37 land descriptions, 101 research reports, and annual work plans for Treaty Land Entitlement in Saskatchewan and Manitoba.

Priority	Type	Strategic Outcome
Increase the effectiveness and efficiency in NRCan operations	Previously Committed to	P 4.1 - Internal Services

Summary of Progress

NRCan focused on transforming the way it delivers internal services such as human resources, information management, and capital investments, to increase the efficiency and effectiveness of its operations.

The Department has implemented government-wide transformation initiatives:

- In support of its Blueprint 2020 Action Plan, NRCan created the Natural Resources Economic Analysis Network (NREAN) of experts in economic analysis related to natural resources, launched the NRCan Speakers Series, hosted a Fail Faire for the federal government (providing tools to support learning from intelligent risk taking) and implemented the Upward Feedback pilot project.
- Under Web Renewal, NRCan met all deliverables including supporting each new release of the Canada.ca website.
- The Department implemented GCDOCS, the new document-management system.

NRCan has also made improvements to its operations:

- The Department's Intellectual Property leaders shared best practices for publishing and licensing, and created *A Guide for NRCan Managers*.
- NRCan's first S&T Annual Report was published in January 2015.
- The Department developed tools and resources to complement its Values and Ethics Code, including defining the governance structure to support values and ethics activities within NRCan and developing mandatory conflict of interest training for employees.
- With respect to monitoring financial pressures related to real property assets, NRCan drafted a national accommodation strategy and national portfolio strategy; it also continued to optimize office accommodation through workplace densification, re-location and the termination of leases to improve NRCan's space envelope balance.
- To improve tracking of the efficiency and effectiveness of its programs, NRCan renewed the Department's Integrated Risk Management Policy Framework, drawing on best practices and recommendations from a recent internal audit; developed capacity on the Lean approach to processes and applied it to selected processes.
- NRCan implemented the Treasury Board Performance Management Directive. NRCan had the second highest completion rate amongst large federal departments in 2014-15.

Risk Analysis

NRCan recognizes that a solid understanding of its risk environment is fundamental to achieving its strategic outcomes and maintaining operational efficiency and effectiveness. Within its mandate and the levers at its disposition, NRCan endeavours to respond to uncertainties, including opportunities, in the global and domestic contexts and their potential impact on Canada's natural resource sectors.

Key Risks

Market Access and Investment Climate

Canada's economy relies on the contributions of the natural resource sectors, both in contributing to the Gross Domestic Product (GDP) and in creating jobs. Despite variances in global commodity markets, Canada's resource sectors will continue to play a significant part in Canada's economic future. To continue to expand the natural resource sectors, Canada must maintain an investment climate attractive to resource development, and a sound regulatory system to support responsible resource development and gain Canadians' support.

Risk	Actions taken	Link to PAA
If Canada fails to respond to changing market dynamics such as shifting natural resources demand to new markets, or maintain an appropriate investment climate, natural resource sectors may lose opportunities.	NRCan provided support to several regulatory and legislative initiatives to strengthen energy and mining regulations, pipeline safety, nuclear liability and offshore petroleum regimes. In February 2014, the *Energy Safety and Security Act* received Royal Assent and will enter into force in February 2016. The *Offshore Health and Safety Act* received Royal Assent in June 2014 and entered into force on December 31, 2014. The *Pipeline Safety Act* was introduced in December 2014 and received Royal Assent in June 2015. NRCan continues to work with Quebec on the 2011 Canada-Quebec Gulf of St. Lawrence Petroleum Resources Accord legislation to implement it as early as possible. As well, NRCan contributed to the review of the Metal Mining Effluent Regulations led by EC. To help bring Canada's LNG resources to market, NRCan supported Governor in Council decision-making to authorize the NEB to issue two LNG export licences. In 2014, NRCan established the MPMO-West, providing a single window for First Nations	1.1.2 – Forest Products Market Access and Development 1.1.3 – Energy Market Regulation and Information 1.3.1 – Mineral Investment 1.3.5 – Major Projects Management Office Initiative 2.1.2 – Support for Clean Energy Decision-making 2.2.1 – Materials for Energy 2.3.1 – Forest Ecosystems

	communities to engage with the GC on issues related to West Coast energy infrastructure development. The MPMO-West team is engaging early, often and in collaboration with other federal departments, supporting a range of initiatives to respond to identified community needs building a trusting relationship and facilitating increased Aboriginal participation in energy projects. NRCan managed outreach and engagement on proposed regulations for the EU's Fuel Quality Directive; these efforts successfully brought about final regulations in February 2015, which should not impact future oil exports to the EU. Internationally, NRCan supported projects and engaged with partners to promote Canada as a reliable and responsible resource developer, as well as to promote investment in Canada's natural resource sectors; for example: • NRCan signed an MOU on Enhanced Energy Cooperation with the US Department of Energy (US DOE). • NRCan participated in the first trilateral meeting of North American Energy Ministers in seven years. • NRCan signed an MOU on Nuclear Energy Cooperation with China's National Energy Administration in November 2014. • NRCan signed an Implementing Arrangement with AECL and the US DOE for Collaboration in the Area of Nuclear Energy Research and Development in January 2015. • NRCan facilitated Ministerial trips to China and Japan, and engaged multilaterally to strengthen international energy security through the G7, the International Energy Agency and the Asia-Pacific Economic Cooperation. • NRCan signed an MOU with the Tianjin Binhai New Area in support of the Sino-Canadian Low-Carbon Eco District Demonstration Project, which will feature a variety of Canadian wood frame building systems and wood products, as well as Canadian energy-efficient and renewable energy technologies.	Science and Application

	• NRCan signed a Canada-South Africa MOU concerning Cooperation in Mining and Mineral Development, which will create opportunities to promote green mining technologies. • NRCan signed an Action Plan with Mongolia to formalize cooperation and position Canada as a strategic long-term partner for trade and investment in Mongolia's mining sector. • NRCan has been designated as Canada's National Focal Point for the (CTCN) – an operational arm of the UNFCCC Technology Mechanism. In this capacity, NRCan advanced opportunities for the Canadian private sector to participate in the transfer of clean technologies to developing countries. NRCan continued to conduct research to ensure the safety of our infrastructure and sustainability of our natural resource systems; for example: • Nineteen research projects were initiated related to pipeline integrity and safe operation of pipelines through the use of advanced materials and technology. • NRCan continued to provide knowledge and information on the status, function and integrity of forest ecosystems to support the sustainability of Canada's forests and forest management. • NRCan also continued to provide knowledge, information and analysis on the state of Canada's exploration and mining sector and key commodities found in Canada.	

Hazards and Emergency Management

NRCan is mandated to support the management of natural resource-related emergencies, through prevention, preparedness and response, thereby helping to ensure the safety and security of Canadians.

Risk	Actions taken	Link to PAA
If Canada does not have sufficient safeguards in place, in the event of a natural event or human-driven incident, this may negatively impact Canadians, the security of Canada's natural resource infrastructure as well as Canada's economy.	NRCan and Maritime forest management agencies co-hosted the third biennial Wildland Fire Canada Conference in October 2014, helping to re-engage and strengthen working relationships among the Canadian fire management agencies and to transfer knowledge on NRCan fire research and information systems technology to fire management end-users. NRCan and the Privy Council Office led the development of geomatics in support of the federal Departmental Security Officer (DSO) Community with the support of Defence Research and Development Canada. The project included two components: (1) to document the requirements of the DSO community in the preservation of information and physical infrastructure; (2) to bring together the DSO community to extract detailed functional requirements for the FGP based on commonly accepted user-centred engineering methods. NRCan updated the Risk and Control Assessment Report for the NLLP to confirm that adequate controls were in place to mitigate potential impacts on health, safety and the environment from incidents that could occur during implementation of the NLLP. NRCan participated in the development and revision of GC Emergency Management Plans including the Interagency Volcanic Event Notification Protocol, Atlantic Canada Tsunami Protocol, Earthquake Contingency Plan, Earthquake Response Protocol, Flood Plan, and Satellite Imagery Acquisition Plan. In addition, NRCan collaborated on the development of, and participation in, a Full-Scale Exercise (FSX) Unified Response, to test the recently redrafted Federal Nuclear Emergency Plan with a field	1.2.3 – Geospatial Innovation 2.3.4 – Radioactive Waste Management 2.3.5 – Earth Observation for Responsible Resource Development 3.1.2 – Materials and Certification for Safety and Security 3.1.3 – Forest Disturbances Science and Application 3.1.5 – Geohazards and Public Safety 3.2.1 – Essential Geographic Information 4.1 – Internal Services

	deployment of federal and provincial assets. Lessons learned from these exercises are being used to improve a variety of NRCan emergency management protocols. The Department also developed and disseminated knowledge about hazards to Government and industry clients through 24/7 monitoring and alerting, and emergency geomatics services. In 2014-15, NRCan implemented an $17 million 'Enhanced Earthquake Monitoring' initiative to refresh Canada's earthquake monitoring and alerting capability. NRCan also continues its work in mapping and interpretation of floods and ice break-up during emergency situations. The Emergency Geomatics Service, which supports emergency response activities in Canada, also continues to produce and disseminate satellite-based information products to a large community of emergency responders.	

Actual Expenditures

Budgetary Financial Resources (dollars)

2014-15 Main Estimates	2014-15 Planned Spending	2014-15 Total Authorities Available for Use	2014-15 Actual Spending (authorities used)	Difference (actual minus planned)
2,534,650,611	2,534,650,611	2,282,358,631	2,049,418,787	(485,231,824)

Human Resources (Full-Time Equivalents [FTEs])

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
3,902	3,913	11

Budgetary Performance Summary for Strategic Outcomes and Programs (dollars)

Strategic Outcome(s), Program(s) and Internal Services	2014-15 Main Estimates	2014-15 Planned Spending	2015-16 Planned Spending	2016-17 Planned Spending	2014-15 Total Authorities Available for Use	2014-15 Actual Spending (authorities used)	2013-14 Actual Spending (authorities used)	2012–13 Actual Spending (authorities used)
Strategic Outcome: 1. Canada's Natural Resource Sectors are Globally Competitive								
Market Access and Diversification	56,085,530	56,085,530	48,685,006	46,583,308	64,507,366	61,566,240	59,733,334	55,420,361
Innovation for New Products and Processes	67,598,586	67,598,586	83,438,001	95,060,475	71,742,031	71,707,214	94,093,063	93,948,144
Investment in Natural Resource Sectors	55,641,175	55,641,175	54,230,114	54,864,751	61,525,666	60,589,504	65,333,593	73,319,149
Statutory Programs-Atlantic Offshore	1,293,425,000	1,293,425,000	1,181,938,140	1,108,579,456	837,746,067	837,746,067	795,884,721	684,964,769
Subtotal	**1,472,750,291**	**1,472,750,291**	**1,368,291,261**	**1,305,087,990**	**1,035,521,130**	**1,031,609,025**	**1,015,044,711**	**907,652,423**
Strategic Outcome: 2. Natural Resource Sectors and Consumers are Environmentally Responsible								
Energy-Efficient Practices and Lower-Carbon Energy Sources	464,018,045	464,018,045	253,978,461	187,217,607	370,539,168	291,745,439	314,652,883	342,424,547
Technology Innovation	150,090,774	150,090,774	126,472,078	112,852,111	163,911,547	151,832,220	155,738,548	152,200,348
Responsible Natural Resource Management	179,373,009	179,373,009	193,117,981	165,816,726	387,092,977	267,570,932	282,047,031	236,874,939
Subtotal	**793,481,827**	**793,481,827**	**573,568,520**	**465,886,444**	**921,543,692**	**711,148,591**	**752,438,462**	**731,499,834**
Strategic Outcome: 3. Canadians have information to Manage their Lands and Natural Resources, and are Protected from Related Risks								
Protection for Canadians and Natural Resources	55,878,528	55,878,528	58,672,639	59,053,121	66,173,756	65,692,439	65,535,095	55,604,146
Landmass Information	53,620,414	53,620,414	71,155,143	51,472,071	89,926,292	78,469,116	73,828,231	90,961,341
Subtotal	**109,498,941**	**109,498,941**	**129,827,782**	**110,525,192**	**156,100,048**	**144,161,555**	**139,363,326**	**146,565,487**
Internal Services Subtotal	158,919,551	158,919,551	142,789,148	128,635,058	169,193,761	162,499,616	184,198,094	181,093,220
Total	**2,534,650,611**	**2,534,650,611**	**2,214,476,711**	**2,010,134,684**	**2,282,358,631**	**2,049,418,787**	**2,091,044,593**	**1,966,810,964**

The overall $485 million difference between Planned Spending and Actual Spending is attributed to a $252 million reduction in authorities and lapse of $233 million. The reduction in authorities and the lapse are explained below.

NRCan's planned spending of $2.535 billion was adjusted during the year to $2.282 billion to reflect changes in authorities granted in Budget 2014 and adjustments to statutory items. The reduction of $252 million is explained by a combination of increases and decreases.

Increases included funding for the extension of the NLLP and the United Nations Convention on the Law of the Sea (UNCLOS); the renewal of the Investments in Forest Industry Transformation Program; the facilitation of Aboriginal Participation in West Coast Energy Development; the Genomics Research and Development Initiative, as well as comprehensive claims and self-government negotiations across Canada. Increases were also a result of transfers from the Department of National Defence for the Canadian Forces Arctic Training Centre and for the support and advice for responding to the GC's public safety and security policy imperatives; a transfer from Aboriginal Affairs and Northern Development Canada (AANDC) to enable the delivery of cost-effective, safe and efficient field logistics for the Canadian High Arctic Research Station Science and Technology program; the operating budget and capital budget carry forward, and collective bargaining for amounts before the implementation of the two year operating budget freeze.

Decreases included transfers to other departments, and reduced statutory payments to the Newfoundland Offshore Petroleum Resource Revenue Fund (which were lower than initially forecasted due to lower oil prices), Nova Scotia Crown Share Adjustment Payments (due to reduced natural gas prices along with lower production), payments to Newfoundland and Labrador and Nova Scotia Offshore Petroleum Boards as a result of voluntary remittances received from both boards and provinces.

NRCan's actual spending of $2.049 billion compared to total authorities of $2.282 billion resulted in a lapse of $233 million, primarily due to funding being re-profiled into future years for the Port Hope Area Initiative, the Grant to Sustainable Development Technology Canada for the Technology Fund, UNCLOS, and the Gunnar mine, as well as funding for the Grant to Sustainable Development Technology Canada Next Generation Biofuels Fund, which was not provided to Sustainable Development Technology Canada. In addition, a lapse in the Grants and Contributions vote pertaining to the ecoENERGY for Biofuels program (due to funds not committed to any contribution agreements and under-production by biofuel companies) and the ecoENERGY Renewable Power program (due to lower incentive payouts based on lower production levels) contributed to the reduction in spending.

Alignment of Spending With the Whole-of-Government Framework

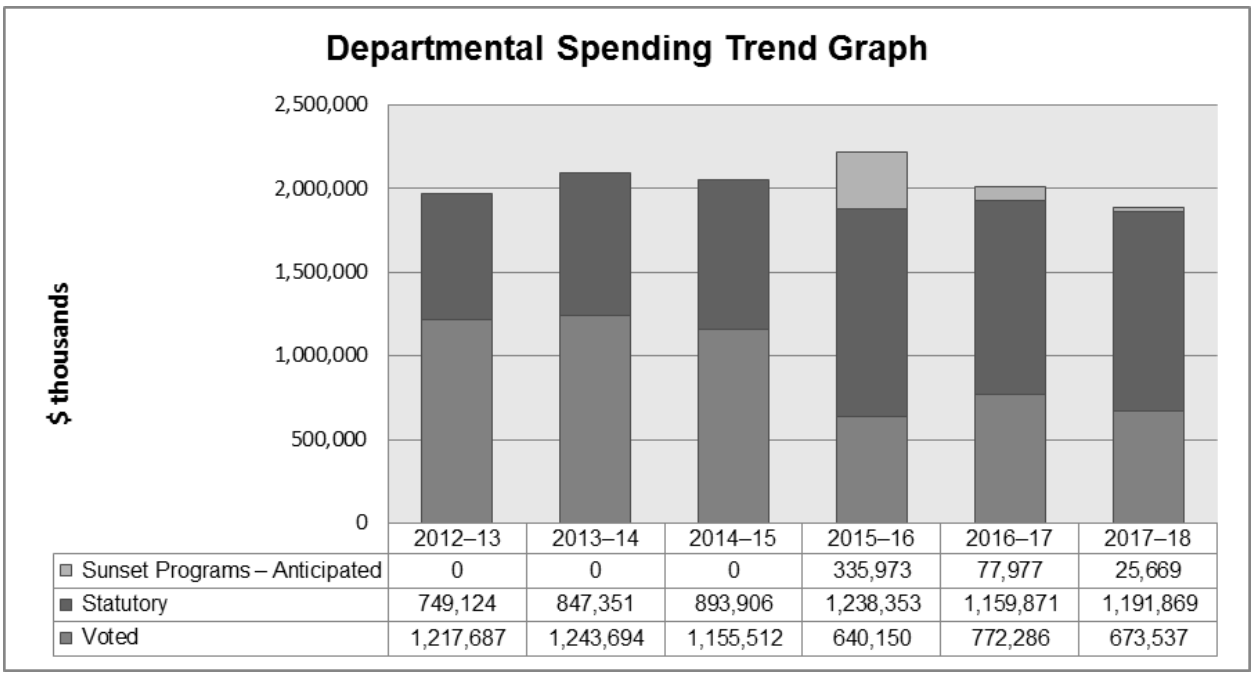
Alignment of 2014–15 Actual Spending With the Whole-of-Government Framework[xi] (dollars)

Strategic Outcome	Program	Spending Area	Government of Canada Outcome	2014-15 Actual Spending
1 Canada's Natural Resource Sectors are Globally Competitive	1.1 Market Access and Diversification	Economic Affairs	Strong Economic Growth	61,566,240
	1.2 Innovation for New Products and Processes	Economic Affairs	Strong Economic Growth	71,707,214
	1.3 Investment in Natural Resource Sectors	Economic Affairs	Strong Economic Growth	60,589,504
	1.4 Statutory Programs- Atlantic Offshore	Economic Affairs	Strong Economic Growth	837,746,067
2 Natural Resource Sectors and Consumers are Environmentally Responsible	2.1 Energy-Efficient Practices and Lower-Carbon Energy Sources	Economic Affairs	A Clean and Healthy Environment	291,745,439
	2.2 Technology Innovation	Economic Affairs	A Clean and Healthy Environment	151,832,220
	2.3 Responsible Natural Resource Management	Economic Affairs	A Clean and Healthy Environment	267,570,932
3 Canadians have information to Manage their Lands and Natural Resources, and are Protected from Related Risks	3.1 Protection for Canadians and Natural Resources	Social Affairs	A Safe and Secure Canada	65,692,439
	3.2 Landmass Information	Social Affairs	A Safe and Secure Canada	78,469,116

Total Spending by Spending Area (dollars)

Spending Area	Total Planned Spending	Total Actual Spending
Economic affairs	2,266,232,118	1,742,757,616
Social affairs	109,498,941	144,161,555
International affairs		
Government affairs		

Departmental Spending Trend



	2012–13	2013–14	2014–15	2015–16	2016–17	2017–18
Sunset Programs – Anticipated	0	0	0	335,973	77,977	25,669
Statutory	749,124	847,351	893,906	1,238,353	1,159,871	1,191,869
Voted	1,217,687	1,243,694	1,155,512	640,150	772,286	673,537

For fiscal years 2012-13, 2013-14 and 2014-15, the figures represent the actual expenditures as reported in the Public Accounts. NRCan's spending profile remains steady over the period 2012-13 to 2014-15.

For the periods 2015-16 to 2017-18, the figures represent the total planned spending for the fiscal year, which reflects approved funding by Treasury Board to support the departmental strategic outcomes. The sunset amounts represent programs that are set to expire in that fiscal year, for which no government decision on the program's future has been made. In 2015-16, a significant portion ($231.3 million) of the sunsetting programs is related to the NLLP. Planned spending from 2015-16 to 2017-18 is declining in both Voted and Statutory authorities.

Major initiatives sunsetting in 2015-16 include:

- Nuclear Legacy Liabilities Program;
- ecoENERGY Innovation Initiative; and
- ecoENERGY Efficiency Program.

Major initiatives sunsetting in 2016-17 include:

- Federal Infrastructure Initiative;
- ecoENERGY for Biofuels; and
- Wind Power Production Incentive.

Major initiatives sunsetting in 2017-18 include:

- Investments in Forest Industry Transformation Program; and
- Forest Innovation and Expanding Market Opportunities programs, which were extended to 2017-18 in Budget 2015 for which the funding has not yet been included in planned spending for 2017-18.

Estimates by Vote

For information on NRCan's organizational Votes and statutory expenditures, consult the *Public Accounts of Canada 2014* on the Public Works and Government Services Canada website.[xii]

Section II: Analysis of Programs by Strategic Outcome

This section provides information on programs that are critical to the realization of Natural Resources Canada's (NRCan) strategic outcomes and priorities for 2014-15.

More information about these programs and initiatives, as well as supporting evidence from internal evaluations and audit reports, can be found on NRCan's website.

Strategic Outcome 1: Canada's Natural Resource Sectors are Globally Competitive

Description

Canada is a major producer and exporter of natural resources. Being competitive in Canadian and foreign markets is imperative to the nation's economic growth. The objective of this Strategic Outcome is to help Canada's natural resource sectors become more globally competitive by adapting to the continuously changing conditions of success. This will be achieved by supporting the natural resource sectors to expand and diversify their markets to respond to the high demand from emerging economies, and diversify their product offerings to remain innovative and competitive.

Program 1.1: Market Access and Diversification

Description

Canada's natural resource sectors face two key barriers to market access and diversification: 1) trade and policy barriers, and 2) lack of awareness of Canada's natural resource products. The objectives of this Program are to break down those barriers and support the development and expansion of markets for Canadian natural resource products by making information available to Canadians, supporting negotiations to reduce trade barriers, and ensuring that regulations are up to date. This helps maintain natural resource sectors' access to existing markets and increases their access to new market segments.

Budgetary Financial Resources (dollars)

2014-15 Main Estimates	2014-15 Planned Spending	2014-15 Total Authorities Available for Use	2014-15 Actual Spending (authorities used)	2014-15 Difference (actual minus planned)
56,085,530	56,085,530	64,507,366	61,566,240	5,480,710

The difference between Planned Spending and Actual Spending is mainly attributed to the funding received for Aboriginal Participation in West Coast Energy Development and a transfer from the Department of National Defence for public security initiatives. In addition, expenditures that were originally planned for program 2.1 Energy-Efficient Practices and Lower-Carbon Energy Sources were subsequently spent in program 1.1. Furthermore, funding received from the operating budget carry forward and costs recoverable from Treasury Board[2] have allowed for increased actual spending. Slightly offsetting these increases is funding transferred to other departments related to staff located at missions abroad, a surplus in the Stakeholder Outreach and Engagement program, as the initiative did not spend all of its resources, and expenditures that were originally planned for program 1.1 that were subsequently spent in program 1.3 Investment in Natural Resource Sectors and in Internal Services.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
246	250	4

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Natural resource sectors have increased access to existing markets.	Natural resource sectors have access to markets as defined by exports of energy products, mineral and metal products and forest products	Meet or exceed baseline percentage of market access (10-year [2005-2014] baseline average of **23.6%**)	**Results: 26.3%** In 2014, Canada's share of American natural resource imports was 26.3%, above the 10-year (2005-2014) baseline average of 23.6%. The overall value of US natural resource imports from Canada in 2014 was $199.8 billion, above the 2005 figure of $159.1 billion.

[2] Costs recoverable from Treasury Board include parental benefits, severance pay, and vacation credits payable upon termination. As authority is provided to the Department to make these payments during the year, they are not included in the planned spending.

Natural resource sectors have increased access to new market segments.	Natural resource sectors have access to new market segments as defined by exports of energy products, mineral and metal products and forest products.	Meet or exceed baseline percentage of access to new market segments (10-year [2005-2014] baseline average of **1.7%**)	**Results: 1.5%** In 2014, Canada's share of Chinese natural resources imports was 1.5%, close to the 10-year (2005-2014) baseline average of 1.7%. The overall value of Chinese natural resource imports from Canada in 2014 was $11.9 billion, above the 2005 figure of $4.3 billion.

Performance Analysis and Lessons Learned

Individual sub-programs provide specific details on performance analysis and lessons learned.

Sub-Program 1.1.1: Mineral and Metal Markets Access and Development

Description

Canadian producers of minerals and metals require access to export markets since domestic production exceeds domestic demand for many commodities. However, tariffs and non-tariff barriers can constrain exports, as can policies and measures that reduce demand for minerals, metals and products containing metals, and certification schemes that discriminate against Canadian producers. Through this Sub-program, NRCan administers the Export and Import of Rough Diamonds Act and regulations that implement Canada's international obligations under the Kimberley Process Certification Scheme, ensuring market access for Canadian diamond producers and users. Also through this Sub-program, NRCan provides expertise to assist with the establishment of global partnerships to advance the competitive position of Canada's minerals and metals sector as a responsible source of supply.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
1,953,676	1,340,323	(613,353)

The difference between Planned Spending and Actual Spending is mainly attributed to non-salary expenditures that were originally planned for sub-program 1.1.1 that were subsequently spent in sub-program 1.3.1 Mineral Investment.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
4	9	5

The difference between Planned FTEs and Actual FTEs is due to FTEs that were originally planned for 1.3.1 Mineral Investment that were subsequently moved under 1.1.1 to align with the planned and actual salary spending of 1.1.1.

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Rough diamond market access is supported through the efficient implementation of Canada's international obligations under the Kimberley Process Certification Scheme	Percentage of Kimberley Process export certificates issued within one business day of the receipt of a completed and valid application	**97%**	**Results: 99%** NRCan's Kimberley Process Office has issued 99% of the requested export certificates within one business day.

Performance Analysis and Lessons Learned

In 2014-15, NRCan continued to issue Kimberley Process certificates, helping ensure Canada's mining industry can access international markets. There was an increase in the number of certificates requested, marking an improvement in the state of activity in the Canadian diamond industry. The Department improved the speed and reliability of issuing Canadian Kimberly process export certificates through implementing a new Information Technology (IT) platform and more efficient internal processes.

NRCan has helped enable the Canadian diamond industry to reach international markets and reap economic benefits for all Canadians. The Department continued to engage at the international level to share best practices, maintain positive working relationships with other countries, and ensure continued excellence in program delivery to an international standard.

Sub-Program 1.1.2: Forest Products Market Access and Development

Description

Canada's forest sector has traditionally relied heavily on exports of wood for residential construction in the United States. To maximize value from its resource, Canada must develop new forest products and end-uses in existing markets, and diversify its geographical markets. To do so, it must reduce barriers to market access posed by trade restrictions, tariffs, regulations and misconceptions of the environmental record of Canada's forest sector and its products. Through this Sub-program, NRCan provides financial contributions to Canadian forest industry associations to support initiatives to expand exports to international markets and increase the use

of wood in North American non-residential construction. It also provides financial contributions and science-based information to industry partners to support the development and dissemination of information products that promote the environmental reputation of Canada's forest sector in international markets. Also, it provides expertise to other federal departments in support of Canada's international negotiating positions on trade and environmental issues.

This Sub-program includes two programs: Expanding Market Opportunities and Implementation of the International Climate Change Strategy and continued engagement and alignment with the US, including the Clean Energy Dialogue.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
21,919,975	22,158,583	238,608

The difference between Planned Spending and Actual Spending is mainly attributed to costs recoverable from Treasury Board. Offsetting this increase is funding transferred to other departments related to staff located at missions abroad.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
73	76	3

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Forest industry has increased sales of Canadian wood products in international markets	Diversity of markets for Canadian wood products Measure: Using the change in the values of the Herfindahl Index to measure Canada's success in diversifying its wood product exports away from one core market (i.e., the United States) and towards offshore markets over time	Favourable yearly average against 2011 base value of **0.397** The closer the value is to 0, the more a country (i.e. Canada) diversified its exports away from dependency on one key market	**Results: 0.509** The Herfindahl index value for 2014 is 0.509, which suggests that markets were less diversified than they were in 2011. This result is due to a combination of economic changes in global markets – the most important being the recovery of the US economy, which resulted in this market taking a larger share of Canadian exports relative to offshore destinations.

	Dollar value of wood product sales in targeted offshore markets (China, Korea, Japan and Europe (EU 27)) and other new emerging markets (e.g., India, Middle East)	**10%** increase over 2011 base year value of $3.1 billion for targeted offshore markets and $99.3 million for new emerging markets	**Results:** **19.4% (existing markets)** **-27.5% (new emerging markets)** In 2014, wood product exports to **existing markets** such as China, Korea, Japan and EU-27 totalled $3.7 billion, representing an increase of 19.4% above the 2011 base value of $3.1 billion. The value of wood product exports to **new emerging markets**, such as India and the Middle East, saw a continued decline in 2014. Exports totalled $72.1 million, a $27.2 million decline (or 27.5% decrease) from the 2011 base year value of $99.3 million. Factors for this decline include the depreciation of the Indian rupee (versus the US$) and political instability in the Middle East.
Forest industry has increased sales of Canadian wood products in new market segments	Dollar value of wood products used in non-residential construction projects built with wood as opposed to traditional means (Canada and US)	**10%** increase over 2011 base year value of $130.3 million	**Results: 64.7% increase** Use of wood products in non-residential construction projects in Canada and the US totaled $214.6 million in 2014, representing a 64.7% increase over the 2011 base year value of $130.3 million.
Stakeholders in targeted international markets have positive perception of Canadian forest practices and products	Percentage of targeted stakeholders who have a positive perception of Canadian forest practices and products	Majority (**51%**) of targeted stakeholders have positive perceptions	**Results: Achieved** A 2014 third party study revealed that: • **71%** of international stakeholders contacted felt Canada's environmental practices were better than average; and • **75%** agreed Canada (and products produced) had a strong forest management reputation. The next study is slated for 2016.

Performance Analysis and Lessons Learned

NRCan is helping to create a more competitive Canadian forest sector by supporting programs and activities that help develop, diversify and maintain markets for Canadian forest products. Combined, these activities help to:

- Shape the perception of wood as an environmentally sustainable and structurally sound choice of building material;
- Address market and trade barriers;
- Act as a bridge between those who manufacture wood products and those who design, engineer and build with wood; and
- Share information needed to train practitioners to specify and use wood.

This multi-pronged approach contributed, at least in part, to a 10.2% rise in dollar value of Canadian wood product exports in 2014. It also helped Canada continue to make in-roads in targeted new emerging offshore markets by supporting market studies for South East Asia, Europe and the remanufacturing sector in China and by the hiring of a new Trade Commissioner that will help promote Canadian wood products in the countries that make up the Gulf Cooperation Council.

The Department also continued to use science-based evidence to promote Canada's strong credentials in forest sustainability and supported the implementation of the Canadian Boreal Forest Agreement through the sharing of science on Canada's boreal forest. And it has provided technical and forestry-related expertise to Foreign Affairs and International Trade Canada (DFATD) to support international trade negotiations, including the Canada-Korea Free Trade Agreement (concluded in 2014) and on negotiations related to other international trade agreements still under way (Canada-Japan Economic Partnership Agreement, Trans Pacific Partnership).

Finally, a draft evaluation report of the Clean Air Agenda International Actions Theme concluded that progress is being made in achieving the expected outcomes of the Theme as they relate to forests and international climate change discussions, mitigation and greenhouse gas estimates. It also concluded that there have been noted successes in NRCan leadership and expertise related to work on forests.

Sub-Program 1.1.3: Energy Market Regulation and Information

Description

Canada realizes many benefits as a result of robust energy markets and strong trade in energy resources. Ensuring these benefits continue to contribute to the broader economy requires regular assessment, analysis and monitoring of Canadian energy resources, including infrastructure and regulations. Through this Sub-program, NRCan aims to foster a competitive Canadian energy sector by working with provinces and territories, and internationally, to articulate Canada's approach to the management of energy resources. It assesses and updates (when necessary) federal energy regulations and policies relating to such areas as offshore oil and gas, pipelines, and nuclear; engages domestically and internationally on energy issues; and provides Canadians with information on energy markets.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
32,211,879	38,067,334	5,855,455

The difference between Planned Spending and Actual Spending is mainly attributed to the funding received for Aboriginal Participation in West Coast Energy Development and a transfer from the Department of National Defence for public security initiatives. In addition, expenditures that were originally planned for sub-program 2.1.4 Energy Efficiency were subsequently spent in sub-program 1.1.3. Furthermore, funding received from the operating budget carry forward and costs recoverable from Treasury Board have allowed for increased actual spending. Slightly offsetting these increases is a surplus in the Stakeholder Outreach and Engagement program, as the initiative did not spend all of its resources.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
169	165	(4)

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Collaboration between federal, provincial territorial governments on energy issues	Percentage of priorities, as identified by Energy Ministers, completed on time	**100%**	**Results: 100%**
The Government of Canada's regulatory framework governing Canada's energy resources (e.g., pipelines, frontier lands and offshore oil and gas) is renewed and continuously improved	Number of assessments and/or updates to energy regulations and/or Canada's energy regulatory framework	**1** per year	**Results: Achieved** NRCan provided policy support related to updates to **3** energy regulations, and worked to strengthen the pipeline safety regime, the national nuclear liability regime and offshore regulatory initiatives.

Performance Analysis and Lessons Learned

The annual Energy and Mines Ministers' Conference (EMMC) has fostered a strong framework for collective action among Canada's federal, provincial and territorial governments on key energy priorities. At EMMC 2014, Ministers agreed that significant progress has been made to enhance environmental protection while growing the economy. In particular, Ministers emphasized the importance of advancing energy infrastructure projects, ensuring world-class safety for energy transportation, promoting energy efficiency, and improving energy technology innovation. Three energy reports and a web portal on pipeline safety regimes were released at this meeting.

NRCan continued to work on updates to the GC regulatory framework governing energy resources, including the following activities:

- To modernize the framework for offshore and northern onshore oil and gas activities, NRCan collaborated with Nova Scotia and Newfoundland and Labrador, other federal government departments and regulator partners to amalgamate various regulations into one performance-based regulatory system. The *Offshore Health and Safety Act* entered into force on December 31, 2014. Transitional regulations related to occupational health and safety and offshore petroleum diving entered into force with the Act, and provided an interim regulatory framework for five years while permanent regulations are being developed. NRCan is working closely with its partners to develop permanent regulations within the legislated five-year time frame.
- In collaboration with Nova Scotia and Newfoundland and Labrador, NRCan began developing three draft regulations for the *Energy Safety and Security Act* and intends to launch official consultation in early 2015-16. Technical working groups and a project team were established in 2014-15 to support the ongoing development of these regulations in order to have them in place by the time the Act enters into force in February 2016.
- Following public consultations, the National Energy Board (NEB) proposed amendments to its Export and Import Regulatory Framework. Ministerial review and consideration by the Governor in Council is expected for 2015-16.
- Work continued in 2014-15 to establish regulations pursuant to the *Nuclear Liability and Compensation Act* (NLCA). Pre-consultations with nuclear operators were completed and proposed regulations have been drafted by the Department of Justice, in consultations with NRCan and the CNSC.
- The Government introduced the *Pipeline Safety Act* in December 2014, which includes authority to regulate liability and minimum financial capacity. NRCan has done preliminary work to develop draft regulations with a view to launching official consultation in 2015-16, only once the Act receives Royal Assent.

In 2014, NRCan established the MPMO-West. The office provides a single window for First Nations communities and industry to engage with the GC on issues related to West Coast energy infrastructure development. In response to Special Federal Representative Douglas Eyford's recommendations, the MPMO-West team is engaging early and often with Aboriginal communities. Since its inception, MPMO-West has met with more than 70 key Aboriginal community and regional leaders, industry representatives, government officials, and other leaders to identify First Nation interests related to developing energy infrastructure. It is responding to the expressed needs of these communities, including through coordination of

Strategic Partnerships Initiative (SPI) West Coast Energy project funding (with AANDC providing support to projects such as:

- Fish habitat restoration with seven British Columbia (BC) First Nations organizations, representing 26 First Nations in the lower mainland, BC Interior and North Coast areas (with Fisheries and Oceans Canada [DFO]);
- Community-led events and sessions on marine and pipeline safety, natural gas and LNG, and marine risk reduction, safety and readiness; and
- Business Development and Training initiatives such as the Navigators Initiative to support LNG sector-related skills development, and energy sector skills training by the Prince George Nechako Aboriginal Employment and Training Association.

MPMO-West worked with Environment Canada (EC), in collaboration with First Nations, to develop monitoring pilot projects in three regions of BC (Prince Rupert, Burrard Inlet, and North-East) to help assess the cumulative effects of multiple major resource developments.

NRCan managed the regulatory process to authorize the NEB to issue two LNG export licences. NRCan provided advice on LNG development and markets. In February 2015, the GC announced proposed changes to temporarily increase the Capital Cost Allowance rate for LNG facilities.

NRCan supported the regulatory process with regard to the issuance by the NEB of new Certificates of Public Convenience and Necessity for proposed pipelines, as well as to the modification of current certificates to allow proposed changes to existing pipelines. Such decisions included the Order in Council approving the Northern Gateway project, which was issued on June 17, 2014.

In 2014-15, NRCan, in collaboration with PWGSC, significantly advanced the procurement process to implement a Government-owned, Contractor-operated (GoCo) model for AECL nuclear laboratories. A Request for Response Evaluation was launched in early 2014, followed by the issuance of a Request for Proposal to qualified suppliers; the process is on track. In 2014, as part of the restructuring of AECL, CNL became the operator of the AECL's nuclear laboratories.

NRCan continued to engage with its energy partners, including deepening North American energy integration with the US and Mexico. This was accomplished via the first trilateral meeting of North American Energy Ministers in seven years, an NRCan-US Department of Energy (US DOE) MOU on Enhanced Energy Cooperation, and multiple ministerial visits to Washington and New York.

Beyond North America, NRCan was instrumental in promoting Canada as a responsible resource developer across Asia, with Ministerial trips to China and Japan to advance Canada's energy market diversification objectives. NRCan continued to engage multilaterally to strengthen international energy security through the G7, the International Energy Agency and the Asia-Pacific Economic Cooperation, and supported Ukraine in its efforts to increase its energy independence.

NRCan's outreach and engagement on the EU's proposed regulations for the Fuel Quality Directive successfully brought about the release of regulations in October 2014 which should not impact future oil exports to the EU.

Program 1.2: Innovation for New Products and Processes

Description

Optimizing the use of Canada's natural resources and the processes by which they are developed would improve the productivity and competitiveness of natural resource sectors. The objective of this Program is to maximize productivity and competitiveness by encouraging the adoption of new technologies and processes and the development of new products. These objectives are achieved by conducting and supporting research and development and by delivering frameworks and policies for, and demonstrations of, new applications, technologies, processes, and products.

Budgetary Financial Resources (dollars)

2014-15 Main Estimates	2014-15 Planned Spending	2014-15 Total Authorities Available for Use	2014-15 Actual Spending (authorities used)	2014-15 Difference (actual minus planned)
67,598,586	67,598,586	71,742,031	71,707,214	4,108,628

The difference between Planned Spending and Actual Spending is mainly attributed to the funding received for the Investments in Forest Industry Transformation Program and Genomics Research and Development Initiative. In addition, costs recoverable from Treasury Board have increased actual spending. Slightly offsetting these increases were delays in planned staffing and expenditures that were originally planned for program 1.2 that were subsequently spent in programs 2.3 Responsible Natural Resource Management and 3.1 Protection for Canadians and Natural Resources due to a change in management priorities, as well as transfers to Internal Services.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
303	296	(7)

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Natural resource sectors increase production of new products and processes	Number of new products and processes resulting from NRCan information	**5** annually[3]	**Results: 2 products/processes** One new product and one new process were developed based on NRCan information, namely: • A GHG calculator for a variety of forest bioenergy deployment scenarios in Canada for use within the bioenergy community; and • A new process for the handling and storage of woody biomass to reduce moisture uptake and risk of decomposition and combustion of large biomass storage piles.
	Research and development (R&D) expenditures in natural resource sectors, specifically total intramural R&D expenditures in energy, mining and forest sectors	Favourable 10-year trend (10-year baseline average of **12.0%**)	**Results: 13.3%** Business enterprise research and development expenses intentions in 2014 in the natural resource sectors were $2.1 billion, above the 2005 figure of $1.4 billion. Natural resource sector intentions accounted for 13.3% of total business enterprise research and development spending, slightly above the 10-year baseline average of 12.0%. Note that only the natural resource industries for which the R&D expenses were available for the entire 2005-2014 period, or for which they could be estimated using available information, have been included in the analysis (i.e., natural resource industries for which estimates have been suppressed for confidentially or data quality reasons for one or more years have been excluded from the analysis).
Public and private sector organizations' business and program decision-making is improved as a result of geospatial innovation	Number of public or private sector organizations related to natural resource development citing improved decision-making resulting from NRCan's innovative geospatial systems, applications or frameworks	**5** annually	**Results: 5** Five organizations (ASG Mapping, 4DM, SensorUp Inc., TecTerra Inc. and the Yukon Water Board) improved capacity for decision-making through improved models, interoperability and content dissemination as a result of support from NRCan's GeoConnections program.

Performance Analysis and Lessons Learned

Individual sub-programs provide specific details on performance analysis and lessons learned.

[3] Originally both Earth Sciences Sector (ESS) and the Canadian Forest Service (CFS) reported against this target. In 2013-14, ESS created a separate suite of performance metrics to better capture the use of geospatial information. The original shared target was mistakenly not adjusted down from 5 to 2. The Actual Results provide for this target for 2014-15 pertain to the Canadian Forest Service only.

Sub-Program 1.2.1: Mining Innovation

Description

Increased innovation is needed to improve the productivity and competitiveness of Canadian mines. However, declining university enrolment in mining-related fields and changes in the industry are affecting Canada's capacity for mining innovation. Through this Sub-program, NRCan encourages mining innovation by using a collaborative approach to reduce financial risks for industry partners, and ensuring that program priorities are aligned with business needs. NRCan also conducts coordinated research to address priorities identified by stakeholders, such as technologies to safely and profitably develop and operate deeper mines, and to process ores, concentrates and recyclable materials that cannot be processed with commercially available technologies. As well, it creates opportunities to develop the next generation of professionals, and supplies certified reference materials to service providers and industry analytical laboratories, which rely on such reference materials to ensure the quality of data that inform mineral investment decisions, determine product value, drive process improvement, and improve confidence in environmental monitoring.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
3,387,585	2,293,566	(1,094,019)

The difference between Planned Spending and Actual Spending is mainly attributed to delays in planned staffing which resulted in lower than expected salary expenditures.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
38	28	(10)

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Technology developers increase demonstration of innovative mining and processing technologies	Number of demonstration projects	**2** over 5 years, by March 31, 2017	**Results: On Track** One demonstration project was completed on the monitoring of hoisting cable. Two additional projects are planned or under way related to hoisting and to the processing and separation of rare earth elements.

Performance Analysis and Lessons Learned

NRCan focussed on developing innovative new processing and extraction technologies to promote productivity and competitiveness within the mining industry. The demonstration project for the Contiscan real-time, full-speed wire rope monitoring technology was completed in 2013-14. This technology allows mines to access deeper ore bodies while meeting stringent regulatory requirements. Current R&D efforts are being deployed to replace heavy steel hoist ropes with lighter and stronger synthetic ropes, which allow mines to hoist larger amounts of ore from deeper depths safely and faster.

In underground mining, backfilling mined-out areas is an important part of good ground control practice to promote safety and ground stability. In 2014-15, NRCan continued progress towards developing a new alternative to Portland cement binder technology in back-fill for underground mine openings using mining waste by-products. Work is under way in partnership with a major mining company in Sudbury, including a cost-benefit analysis and design of a pilot plant, and will continue over the next year and into 2017.

Sub-Program 1.2.2: Forest Sector Innovation

Description

Canada's forest sector has experienced a decrease in its market share as a result of changing global and regional demand and increasing competition. To regain its competitive position and compete profitably in a wider array of markets, the sector must focus on innovation (i.e., RD&D) and move towards a more diversified and innovative mix of higher-value specialized products, processes and technologies. Through a forest sector innovation system sector partners can align and pursue common innovation priorities. Through this Sub-program, NRCan brings together various players in the forest sector innovation system – governments, industry, communities (Aboriginal and non-Aboriginal), and research institutions – to focus on collectively identifying, funding and delivering on the innovation priorities of the sector. NRCan also conducts research with, and provides financial contributions to, FPInnovations, other forest sector research partners, and eligible forest product companies to research, develop and deploy new products, processes and technologies. This Sub-program includes the Forest Innovation Program, Forest Research Institutes Initiative, and Canadian Regulatory System for Biotechnology.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
53,286,840	57,751,515	4,464,675

The difference between Planned Spending and Actual Spending is mainly attributed to the funding received for to the Investments in Forest Industry Transformation Program and Genomics Research & Development Initiative. In addition, costs recoverable from Treasury Board have increased actual spending. Slightly offsetting these increases are expenditures that were originally planned for sub-program 1.2.2 that were subsequently spent into sub-programs 2.3.1 Forest Ecosystem Science and Application and 3.1.3 Forest Disturbances Science and Application due to a change in management priorities.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
188	191	3

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Forest sector innovation is accelerated by the endorsement of an annual research plan by the forest sector innovation system	Annual research plan endorsed by the FPInnovations National Research Advisory Committee (NRAC)	**1** endorsed research plan	**Results: 1 endorsed research plan** The FPInnovations research plan for 2014-15 was approved by the organisation's National Research Advisory Committee in February 2014.
NRCan, industry, provinces and academia develop higher-value Canadian forest products and processes which lead to new technologies to create a better competitive position for the Canadian forest sector	Number of new higher-value Canadian forest products or processes that lead to new technologies produced	**10** by March 31, 2017	**Results: On Track** NRCan is on track to meet this target through contributing, with stakeholders in the forest sector, to the development of next-generation buildings products, cellulosic nanomaterials and advanced logistics and decision-support tools. NRCan is tracking more than 10 technologies currently under development with a target completion date on or before March 31, 2017. Some examples of these include passive house technology, next generation cross-laminated timber applications, applications for cellulose fibrils and for cellulose nano-crystals, forest operation decision support tools, tree genetic markers for improved wood attributes and LiDAR and analytical tools for enhanced forest inventory.

Performance Analysis and Lessons Learned

The commitment of having annually endorsed research plans contributes to the development of products that are responding to needs and supporting overall competitiveness of the forest sector. The Forest Innovation Program (FIP) and Investments in Forest Industry Transformation's (IFIT) funding and the expertise of NRCan's Canadian Wood Fibre Centre (CWFC) helped industry to develop and commercialize innovative processes, technologies and products.

FPInnovations and the IFIT program results led to important progress towards the research, development and deployment of new technologies. These include:

- New cross-laminated timber manufacturing facilities in Western Quebec and British Columbia;
- On-going negotiations for deployment of state of the art precision forestry informatics through a national equipment manufacturer;
- Commercial production of industrial-grade biomethanol from a pulp and paper mill;
- Construction of a facility to prefabricate a panelized system for the Passive House Standard; and
- Industrial-scale glue applications for lignin extracted from the pulping process. The CWFC contributions to an Enhanced Forest Inventory provided extensive information on forest attributes, which was used in detailed forest planning.

The programs also continued to be responsive to evaluation recommendations. For example, as FIP progresses through years four and five, funding will be increasingly directed toward work that moves technologies closer to commercialization or industrial applications. Similarly, IFIT responded to the 2013-2014 program evaluation by conducting a study to assess the potential replication of the various technologies it funded through the program's first iteration. Results will be reviewed and disseminated more broadly to industry and stakeholders to inform and encourage the deployment of innovative technologies.

Efforts to increase active participation of Aboriginal communities in major resource projects will serve to strengthen the forest sector innovation system. Through the efforts of the Aboriginal Forestry Initiative, with additional funding from the AANDC-led Strategic Partnerships Initiative, Aboriginal communities are developing the capacity needed to be active players in major resource projects, providing forest-related business opportunities and fostering collaborations that support early engagement with industry.

Sub-Program 1.2.3: Geospatial Innovation

Description

Natural resource sectors, like other public and private sectors, rely on location-based information to make production and business decisions. This Sub-program supports federal, provincial, territorial, and private sector partnerships and collaboration to deliver cost-effective geospatial science, technology, data, policy and applications solutions that are built once and used many times across economic, social and environmental sectors. This Sub-program includes the GeoConnections program.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
10,924,161	11,662,133	737,972

The difference between Planned Spending and Actual Spending is mainly attributed to costs recoverable from Treasury Board increasing actual spending.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
77	77	0

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Interoperability of geospatial data	Number of public or private sector organizations adopting recognizable standards, policies, tools and frameworks in value-added applications to support their business objectives	**10** federal departments and **3** large private sector companies	**Results: Achieved** The Federal Geospatial Platform's 10 contributing departments adopted a new Harmonized North America Profile for metadata (HNAP) v2.3, the Open Geospatial Data Metadata Element Set (OGDMES) v1.0 and the FGP Data Management and Stewardship Policies and Procedures v1.0. Through its work with the Open Geospatial Consortium and the Canadian Advisory Committee on the International Organization for Standardization's Technical Committee on Geographic Information/Geomatics (CAC-ISO/TC 211), NRCan helped develop interoperable geospatial standards, which have been adopted by many large private sector organizations, including ESRI Canada, Fujitsu and Bentley Systems Inc.

Performance Analysis and Lessons Learned

Geospatial information – information tied to a specific geographical location – facilitates effective management of Canada's lands and natural assets. NRCan has been at the forefront of using and developing geospatial information and technologies to inform decision-making about the country's natural resource assets.

NRCan is the lead department in the development of the FGP Initiative – a collaborative online environment consisting of authoritative geospatial data, services, and applications. Built on a shared infrastructure, the FGP will enable the Government's most relevant information to be housed and managed collaboratively, and analyzed and displayed on an accessible electronic platform.

In year one, a functional test version of internal and external online tools and technologies was developed. When published, it will enable citizens, business, academia, and government employees to view, overlay, and analyze a comprehensive collection of accurate and authoritative geospatial information, including socioeconomic and environmental data, in a spatial context.

Additional first year FGP achievements include:

- Working collaboratively with 10 federal departments to develop and adopt the Harmonized North America Profile for metadata (HNAP) v 3.0, the open geospatial metadata element set, and the FGP data management and stewardship policies and procedures v 1.0;
- Promoting the adoption of interoperable geospatial standards at the Open Geospatial Consortium;
- Preparing 143 data sets for inclusion in the first releases of the FGP; and
- Expanding federal participation in the FGP Initiative and encouraging other departments to actively collaborate to achieve a whole-of-government approach for managing geospatial data assets.

The FGP Initiative will continue to make more data available, enhance existing functionality, deploy additional applications to support interoperability across federal systems, and increase efficiencies and productivity gains. It will support the Government's ongoing commitment to Open Data and its accessibility to all Canadians, including private industry and geospatial stakeholders. The FGP is on track to be completed by the end of 2016-17.

NRCan's GeoConnections program brings together all orders of government, industry and academia under the Canadian Geospatial Data Infrastructure to ensure that our collective geospatial data fits together and is available for use and re-use.

The GeoConnections program also supported the completion of the Canadian Geomatics Environmental Scan and Value Study, which identified the benefits of using geospatial information.

The Study represents the most comprehensive assessment of geomatics and geospatial information in Canada to date. It found that productivity benefits from the use of geospatial information generate economic benefits on the order of $20.7 billion annually to the Canadian economy, 1.1% of Gross Domestic Product (GDP).

The Study quantified the contributions of Canada's geomatics sector to the economy in terms of GDP and employment, and captured benefits to Canada's economy, society and environment. The productivity benefits that come from using geospatial information are of particular significance, not only for innovation within Canadian industry, but also for federal, provincial and territorial governments.

The results of the Study will be used to help establish shared federal, provincial, territorial and non-governmental sector investments in geospatial activities, to ensure Canada and Canadians benefit from geospatial activities and information.

Program 1.3: Investment in Natural Resource Sectors

Description

Investing in the development of natural resources is costly and risky due to inherent uncertainties in the potential economic viability of natural resource projects. Many factors must be considered when deciding whether to develop a natural resource project. In some cases, limited information may make it difficult for investors and/or companies to assess potential opportunities. The objective of this Program is to encourage investment in the natural resource sectors by increasing industry's knowledge of opportunities, regulations and obligations. This ensures that a more accurate assessment of the expected benefits of an investment can be made and subsequently compared to its costs and risks, thereby allowing for a more comprehensive investment decision. This objective is achieved by providing funding and information on the factors that determine the potential economic viability of natural resource projects.

Budgetary Financial Resources (dollars)

2014-15 Main Estimates	2014-15 Planned Spending	2014-15 Total Authorities Available for Use	2014-15 Actual Spending (authorities used)	2014-15 Difference (actual minus planned)
55,641,175	55,641,175	61,525,666	60,589,504	4,948,329

The difference between Planned Spending and Actual Spending is mainly attributed to costs recoverable from Treasury Board increasing actual spending. In addition, expenditures that were originally planned for 2.2 Technology Innovation were subsequently spent in program 1.3 related to the Program of Energy Research and Development and the ecoENERGY Innovation Initiative. In addition, expenditures that were originally planned for programs 1.1 Market Access and Diversification and Internal Services were subsequently spent in program 1.3. Slightly offsetting these increases is spending originally planned for program 1.3 being subsequently spent in Internal Services.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
402	398	(4)

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Natural resource sectors have increased investment	Growth of capital expenditures in the energy sector (average of past 5 years) compared to growth in overall capital expenditures in Canada (average of past 5 years)	The average 5-year growth rate of capital expenditures in the energy sector is equal to or higher than the average 5-year growth rate in capital expenditures in Canada ([2009-2014] average annual growth of 6.6%)	**Results: 15% average annual growth** Capital expenditures in 2014 in the energy sector were $108.3 billion. Over the past five years (2009-2014), capital expenditures in the energy sector grew by an average annual rate of 15.0%. This compares to an average annual growth of 6.6% in the Canadian economy as a whole.
	Growth of capital expenditures in the forest sector (average of past 5 years) compared to growth in overall capital expenditures in Canada (average of past 5 years)	The average 5-year growth rate of capital expenditures in the forest sector is equal to or higher than the average 5-year growth rate in capital expenditures in Canada ([2009-2014] average annual growth of 6.6%)	**Results: 20% average annual growth** Capital expenditures in 2014 in the forest sector were $2.6 billion. Over the past five years (2009-2014), capital expenditures in the forest sector grew by an average annual rate of 20.0%. This compares to an average annual growth of 6.6% in the Canadian economy as a whole.

	Growth of capital expenditures in the minerals and metals sector (average of past 5 years) compared to growth in overall capital expenditures in Canada (average of past 5 years)	The average 5-year growth rate of capital expenditures in the minerals and metals sector is equal to or higher than the average 5-year growth rate in capital expenditures in Canada ([2009-2014] average annual growth of 6.6%)	**Results: 12.1% average annual growth** Capital expenditures in 2014 in the minerals and metals sector were $15.0 billion. Over the past five years (2009-2014), capital expenditures in the minerals and metals sector grew by an average annual rate of 12.1%. This compares to an average annual growth of 6.6% in the Canadian economy as a whole.

Performance Analysis and Lessons Learned

Individual sub-programs provide specific details on performance analysis and lessons learned.

Sub-Program 1.3.1: Mineral Investment

Description

Canada must compete for mineral investment because capital is mobile and flows to countries that offer attractive, risk-adjusted returns for investors. Mineral exploration creates opportunities for Canadians and can lead to increasing investments and revenue from resources over the medium term. Governments need specific information on mineral exploration and mine development to manage policies that affect mineral investment. Through this Sub-program, NRCan collects socioeconomic data on mineral exploration, deposit appraisal and mine complex development expenditures, physical output from production facilities, and the value of mineral production and trade. NRCan prepares tax rulings for provisions of the *Income Tax Act* administered by the Minister, and provides expertise, analysis and support to other departments with a lead responsibility for tax and investment policies.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
9,894,495	10,890,716	996,221

The difference between Planned Spending and Actual Spending is mainly attributed to the costs recoverable from Treasury Board increasing actual spending, as well as funding received from other sub-programs related to trade data. In addition, expenditures that were originally planned for sub-program 1.1.1 Mineral and Metal Markets Access and Development and Internal Services were subsequently spent in sub-program 1.3.1.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
105	90	(15)

The difference between Planned FTEs and Actual FTEs is mainly due to delays in planned staffing and unforeseen departures, as well as FTEs that were originally planned for 1.3.1 that were subsequently moved under 1.1.1 Mineral and Metal Markets Access and Development.

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Industry decision-makers and potential investors are provided with timely information on mineral socio-economic data	Number of data sets released	**5** by March 31, 2017	**Results: 4** On-track: 80% of the target has been achieved for 2014-15 through release of four data sets: 1. Production of Canada's Leading Minerals 2. Mineral Production Statistics (Preliminary) 3. Mineral Exploration Statistics (Preliminary) 4. Mineral Trade Statistics The fifth data set (Mineral Productions Statistics – Annual) is planned for release in October 2016.

Performance Analysis and Lessons Learned

NRCan disseminates information and analytical insight about the state, evolution and contributions of the exploration, mining and mineral processing industries. These data products highlight key indicators that are crucial to assess the health of these industries, and identify challenges and opportunities facing different industry segments, such as exploration, and their contributions to the Canadian economy. In 2014-15, the information products produced highlighted Canada's positive investment climate for mineral exploration and production. NRCan continued to foster partnerships and support knowledge dissemination through events such as participation in the Prospectors and Developers Association of Canada (PDAC) Conference and Tradeshow. This has helped attract interest from global partners and helped support advancing Canadian trade and international objectives.

NRCan also provides information and best practices on Canadian approaches to resource development internationally, to promote Corporate Social Responsibility (CSR) in support of Canadian mining companies operating abroad and to provide information on Canada's governance model and mining expertise. NRCan continued to leverage international events such

as the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development, Mining Indaba (Africa) and China Mining. In 2014-15, NRCan actively participated in the review of the CSR Strategy and the launch and implementation of Canada's enhanced CSR Strategy *Doing Business the Canadian Way*. NRCan also developed and published the *CSR Checklist for Canadian Mining Companies Working Abroad* and the *CSR Catalogue.* This work reinforces Canada's commitment to work with host countries to enhance economic development and benefits to communities from responsible natural resource management.

Sub-Program 1.3.2: Targeted Geoscience Initiative 4 (TGI4)

Description

Mineral resources are one of the principal economic drivers in many rural and remote Canadian communities. Known reserves are declining and new geoscience knowledge and techniques are required to help industry explore more effectively for undiscovered mineral resources in existing and emerging mining areas. Through this Sub-program, NRCan develops an understanding of entire mineral systems and provides industry with innovative ways for deep exploration, thereby maximizing yield. It targets selected mineral districts across Canada to provide the best examples of Canada's major ore systems, and to develop optimal predictive models and techniques for deep exploration. This helps natural resource sectors access viable investment opportunities. This Sub-program includes the Targeted Geoscience Initiative 4 program.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
8,022,725	8,515,678	492,953

The difference between Planned Spending and Actual Spending is mainly attributed to costs recoverable from Treasury Board increasing actual spending.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
56	57	1

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Industry applies NRCan knowledge and/or techniques, enabling more effective exploration for as-yet undiscovered resources	Number of attributions of use of NRCan's geoscience knowledge and techniques in exploration strategies resulting in greater exploration effectiveness	**5** annually	**Results: 7** NRCan successfully confirmed evidence from at least 7 companies indicating they have incorporated TGI4 generated knowledge and methods into their standard exploration protocols.

Performance Analysis and Lessons Learned

NRCan's Targeted Geoscience Initiative 4 (TGI4) program has demonstrably influenced mineral exploration across Canada, in adapting and creating approaches for the discovery of new mineral deposits as outlined in a survey of key industry exploration managers. For 2014-2015 alone, at least 7 new attributions by the industry were documented, coupled with independent evidence that the exploration industry is currently using at least 45 TGI-4 innovations within their mineral exploration programs. The fourth phase of TGI has released over 725 geoscience knowledge publications, including six ore system synthesis publications that hold key findings that are important to industry; the program has also provided training to over 130 students, at the Masters level or above.

Heightened engagement with industry through workshops co-organized with the PDAC, as well as at industry conferences, aided the program in improving its production of thematic geoscience knowledge to foster improved effectiveness of exploration for buried mineral deposits.

Sub-Program 1.3.3: Geo-Mapping for Energy and Minerals

Description

Public geoscience information stimulates industry investment, which might not otherwise occur given the level of uncertainty about exploration opportunities. Through this Sub-program, NRCan provides modern geological knowledge of the northern landmass to the private sector to guide exploration investment in the North. It focuses on characterizing the regional geological context to establish whether areas have a high or low likelihood of resource potential. In addition to reducing risk and stimulating exploration investments by industry, this same geological knowledge also informs Northerners' land-use decisions so that they can undertake responsible resource development that does not compromise conservation efforts or other land-use considerations. Through this Sub-program, NRCan promotes exploration and long-term sustainable development for vast and untapped resources in the North. This Sub-program includes the Geo-Mapping for Energy and Minerals program.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
28,618,359	30,851,601	2,233,242

The difference between Planned Spending and Actual Spending is mainly attributed to costs recoverable from Treasury Board increasing actual spending. In addition, expenditures originally planned for sub-program 2.2.3 Clean Energy Science and Technology were subsequently spent in sub-program 1.3.3 related to the Program of Energy Research and Development and the ecoENERGY Innovation Initiative.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
179	188	9

The difference between Planned FTEs and Actual FTEs is attributed to the staffing of casual employees needed to deliver the program.

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Governments and industry have increased geoscience information on Canada's North to help guide development decisions	Number of unique NRCan products accessed (e.g., downloaded) annually on Northern geoscience information	**50** annually	**Results: 104** 104 new data and knowledge products were publically accessed via GEOSCAN. These publications include a series of activity reports to ensure rapid delivery of initial results.

Performance Analysis and Lessons Learned

The Geo-Mapping for Energy and Minerals-2 (GEM-2) program was renewed in 2013-14, with funding of $100 million over 7 years (2103-2020). GEM-2 aims to advance geoscience knowledge of Canada’s Northern region to support increased exploration for natural resources and to inform decision-making on land use that balances conservation and responsible resource development.

GEM-2 research applies a customized suite of tools, including field observations, remote sensing, airborne geophysics, laboratory analyses and customized techniques to produce new geoscience knowledge that is publicly accessible. The high-quality geoscience knowledge produced by GEM-2 informs decision-making on land-use and helps to attract investments in the North that could benefit local communities through enhanced economic opportunities.

In 2014-15, NRCan launched its Advisory Group of Northerners (AGN), to provide advice on maximizing benefits to Northerners resulting from GEM-2 knowledge products. AGN members represent a large group of stakeholders from the three territories and northern parts of the provinces; the group includes all levels of government, First Nations, local communities, industry and academia. Following extensive engagement and consultations with Northern communities, provinces and territories, NRCan launched 14 new research projects within six priority areas, which included bedrock and surficial mapping.

The GEM-2 program has exceeded its stated targets for 2014-15, and will continue to improve public understanding of the resource potential in the North through the regular release of new geological knowledge over the next five years. NRCan also released a series of reports through GEOSCAN, its bibliographic database of scientific publications on earth sciences that ensures timely delivery of results of GEM-2 projects.

Sub-Program 1.3.4: New Energy Supply

Description

Given increased energy use and global decline in conventional energy resources, the development of new sources of energy is important in addressing Canada's long-term energy requirements. These new sources will support the energy supply mix, which is an important part of sustainable long-term economic growth in Canada. However, Canada's private sector currently lacks geoscience information to enable it to make the best investment decisions. Through this Sub-program, NRCan provides the public and private energy sector with strategic assessments, methodologies and information required to make investment decisions on unconventional (shale oil and shale gas) and northern and offshore energy resources, which could increase natural resource investment and support a sustainable energy mix to meet Canada’s future energy demands.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
5,323,906	6,249,170	925,264

The difference between Planned Spending and Actual Spending is mainly attributed to the underestimation of the budget required to support the Geoscience for New Energy Supply Program, as additional funding was needed to partially support operating costs of the Calgary facility; enhance the knowledge base in the areas of Canadian shale petroleum/shale gas resources; deliver Program of Energy Research and Development and ecoENERGY Efficiency Initiative-based offshore basin resource assessment projects; and to support the necessary ongoing work to establish the framework for the fledgling Energy Geoscience and Geo-Engineering – Collaborative Open Innovation Network Initiative. In addition, costs recoverable from Treasury Board increased actual spending.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
38	38	0

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Public and private sectors access knowledge products supporting assessment and investment decision-making on new energy exploration basins	Number of unique reports, such as strategic assessments, accessed (e.g., downloaded) annually by stakeholders	**25** annually	**Results: 35** ○ 23 new science publications were released in 2014-15. Of these,17 unique maps and Open Files were accessed online and downloaded through GEOSCAN; and ○ Unique products in the form of new data or new interpretive materials were presented at 18 conferences in 2014-15.

Performance Analysis and Lessons Learned

NRCan's Geoscience for New Energy Supply (GNES) program supports long-term investment decisions in Canada's energy sector at the federal, provincial and territorial level. GNES releases peer-reviewed, journal publications, which ensures that results and methods can be disseminated beyond the life of the program.

GNES research influenced and informed energy decisions through strategic assessments, presentations, briefings and reports provided to agencies and firms. Some examples include:

- NRCan's identification of a new, potentially significant shale source rock in the Liard Basin resulted in British Columbia Oil and Gas refocusing its 2015 research and development strategies.

- Following the 2014 release of two new GNES energy resource assessments and subsequent technical briefings to Quebec and Yukon energy agencies, the Quebec Oil and Gas Association invited NRCan to present this information its members.
- In support of efforts to define Canada's outer Arctic continental shelf, GNES completed Year 1 of a planned two year resource assessment of Canada Basin, using data and analyses acquired by the UNCLOS.
- GNES tested a new unconventional resource assessment methodology on the Bakken Shale and results compared favorably with an independent NEB assessment. This supports plans for a merged, shared national methodology.
- GNES tested new laboratory methods for tight gas reservoir evaluation in the first phase of Montney tight gas characterization completed and adopted by Encana in Cutbank Ridge. The new methods led to a new NRCan MOU with Japan Oil, Gas and Metals National Corporation (JOGMEC) for technical collaboration on tight oil and shale gas.
- In eastern Canada, new GNES studies demonstrated bedrock conditions provide a suitable cap rock that insulated the deep oil and gas-bearing units from the shallow groundwater zone.
- GNES delivered a series of national workshops, with support from the Natural Sciences and Engineering Research Council of Canada (NSERC) and the University of Calgary, to identify national research needs and collaboration models for tight oil and shale gas research (under the Energy Geoscience and Geoengineering Collaborative Innovation Network). Findings were presented to an interdepartmental workshop in Ottawa in March for consideration in future funding initiatives.

Sub-Program 1.3.5: Major Projects Management Office Initiative

Description

Major resource projects represent significant economic investments, creating thousands of jobs and providing important economic development opportunities for communities across Canada. Efficient and effective federal project reviews facilitate these investments and capitalize on the potential to stimulate jobs and growth through responsible resource development, while also maintaining strong environmental protection. The objective of the Major Projects Management Office Initiative is to support timely and effective project reviews and to lead government-wide efforts to modernize the regulatory system for major projects. This includes efforts to ensure effective and meaningful consultation with Aboriginal people and improve the alignment of federal and provincial regulatory processes.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
3,781,689	4,082,339	300,650

The difference between Planned Spending and Actual Spending is mainly attributed to costs recoverable from Treasury Board and funding received from the operating budget carry forward, which have allowed for increased spending.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
24	25	1

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Regulatory reviews of major projects are completed in a predictable and timely manner	Timeliness: Average review time of completed MPMO projects	**<24** months	**Results: 17 months** As of March 31, 2015, all 37 projects that completed the environment assessment process under the MPMO Initiative met the target. The average federal time to complete an environmental assessment was 17 months.
System-wide improvement of the federal regulatory process for major project reviews	Legislative, regulatory and policy improvements advanced through the MPMO Initiative	Continuous improvement	**Results: On Track** MPMO continued to lead ongoing system-wide regulatory reforms (e.g., implementation of Responsible Resource Development, and commitment to develop a Forward Policy Agenda for the identification of priority project-related issues (e.g., enhanced consultations with Aboriginal peoples, and strengthened environmental protection).

Performance Analysis and Lessons Learned

The MPMO Initiative and the changes made through the Responsible Resource Development plan have improved the review process for major resource projects. As of March 31, 2015, all projects with a completed federal environmental assessment (EA) fell well within the 2-year target for a review. The MPMO and Strategic Projects Secretariat continued to provide whole-of-government coordination on the review process and Crown consultation for complex energy projects, including the Trans Mountain Expansion and Energy East Pipeline projects.

The MPMO's activities have enhanced market access and the investment climate for Canada's natural resource sectors while strengthening environmental protection and enhancing Aboriginal engagement and consultation. The MPMO will continue to work with partners to advance policy items for continued system-wide improvements.

Program 1.4: Statutory Programs – Atlantic Offshore

Description

Through this Program, NRCan monitors and facilitates payment disbursal agreements and transfer payments under the Atlantic Offshore Accord Acts. The Program includes the following programs: Canada Newfoundland and Labrador Offshore Petroleum Board; Payments to the Newfoundland and Labrador Offshore Petroleum Resource Revenue Fund; Payments to the Nova Scotia Offshore Revenue Account; Nova Scotia Crown Share Adjustment Payment; and Canada-Nova Scotia Offshore Petroleum Board.

Budgetary Financial Resources (dollars)

2014-15 Main Estimates	2014-15 Planned Spending	2014-15 Total Authorities Available for Use	2014-15 Actual Spending (authorities used)	2014-15 Difference (actual minus planned)
1,293,425,000	1,293,425,000	837,746,067	837,746,067	(455,678,933)

The difference between Planned Spending and Actual Spending is mainly attributable to: lower royalties than had been forecasted for the Newfoundland and Labrador Offshore Petroleum Resource Revenue Fund and lower oil prices in the second part of the year; lower than anticipated Nova Scotia Crown Share Adjustment Payments due to reduced natural gas prices along with lower production; and cost recovery remittances received from the Canada-Newfoundland and Labrador Offshore Petroleum Board and the Nova Scotia Offshore Petroleum Board. The difference was slightly offset by higher than anticipated payments to the Nova Scotia Offshore Revenue Account which was mainly attributable to a lower Canadian dollar to US dollar exchange rate.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
0	0	0

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Statutory requirements relating to offshore petroleum payments in Nova Scotia and Newfoundland and Labrador are managed in a timely manner	Percentage of offshore payments processed in a timely manner	**100%**	**Results: 100%** NRCan anticipated and pro-actively prepared the necessary materials for 100% of payments to be processed in a timely manner.

Statutory requirements relating to offshore petroleum payments in Nova Scotia and Newfoundland and Labrador are managed in an accurate manner	Percentage of offshore payments processed in an accurate manner	**100%**	**Results: 100%** NRCan anticipated and pro-actively prepared the necessary materials for 100% of payments to be processed in an accurate manner.

Performance Analysis and Lessons Learned

The *Canada-Newfoundland and Labrador Atlantic Accord Implementation Act* and the *Canada-Nova Scotia Canada-Nova Scotia Offshore Petroleum Accord Implementation Act* provide that the benefits of revenues from the Canada-Newfoundland and Labrador and the Canada-Nova Scotia offshore areas flow to the provinces as if the resources were on land.

NRCan collects royalties, interests and penalties arising from production in the Canada-Newfoundland and Labrador offshore area and the Canada-Nova Scotia offshore area and transfers equivalent sums as well as corporate income taxes and other required payments to the two provincial governments pursuant to the *Canada-Newfoundland and Labrador Atlantic Accord Implementation Act* and the *Canada-Nova Scotia Offshore Petroleum Accord Implementation Act*.

NRCan also administers the federal contributions to the operating budgets of the Canada-Newfoundland and Labrador Offshore Petroleum Board and the Canada-Nova Scotia Offshore Petroleum Board. Finally, with its provincial and federal partners, NRCan manages the country's regulatory system for offshore petroleum exploration and production.

NRCan met its target relating to the timeliness and accuracy of offshore payments in 2014-15. The Department anticipated and prepared the necessary materials for payments to be processed within a 48-hour period to both Nova Scotia and Newfoundland and Labrador as required under the *Canada-Newfoundland and Labrador Atlantic Accord Implementation Act* and the *Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Acts*. As a result, 100% of payments were made on time.

Strategic Outcome 2: Natural resource sectors and consumers are environmentally responsible

Description

Energy use and natural resource development can have negative impacts on the land, water, and air, which can affect the standard of living of current and future generations. The objective of this Strategic Outcome is to encourage natural resource consumers and sectors to lessen and prevent environmental impacts. NRCan contributes to the achievement of this outcome by:

- Encouraging the adoption of technologies, products, practices and services that improve efficiency and environmental performance;
- Fostering innovative solutions to environmental challenges associated with natural resource development and use; and
- Enabling the management of potential impacts on the environment.

Program 2.1: Energy-Efficient Practices and Lower-Carbon Energy Sources

Description

Canada's energy markets are defined by the decisions of consumers and producers who do not necessarily make choices that minimize their impact on the environment. Multiple barriers exist, including a lack of awareness of available options and their benefits, insufficient capacity for adoption (e.g., regulatory frameworks, codes and standards), and financial risk. The objectives of this Program are to address these barriers by encouraging and enabling energy consumers and producers to adopt cleaner and more efficient technologies, products, services and practices. These objectives are achieved through education and outreach activities, targeted incentives, and regulatory interventions that keep pace with technological changes.

Budgetary Financial Resources (dollars)

2014-15 Main Estimates	2014-15 Planned Spending	2014-15 Total Authorities Available for Use	2014-15 Actual Spending (authorities used)	2014-15 Difference (actual minus planned)
464,018,045	464,018,045	370,539,168	291,745,439	(172,272,606)

The difference between Planned Spending and Actual Spending is mainly attributed to the Sustainable Development Technology Canada Next Generation Biofuels fund, for which the funding allocated was not required in 2014-15, as Sustainable Development Technology Canada was able to meet their expenditure requirements with funding provided in previous fiscal years. In addition, the ecoENERGY for Biofuels program and ecoENERGY Renewable Power program, where the contribution programs are based on production levels, had lapses as a result of proponents producing less, therefore claiming less than the maximum allowable under their contribution agreement. Due to market challenges, several producers were unable to meet their contractual terms and their agreements were terminated. Other factors contributing to the variance include reduced legal service costs and unexpected delays in contracting services. In addition, expenditures that were originally planned for program 2.1 were subsequently spent in program 1.1 Market Access and Diversification and Internal Services. Slightly offsetting these reductions are funding received from the operating budget carry forward and costs recoverable from Treasury Board, which have allowed for increased actual spending.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
291	278	(13)

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Energy consumers and producers adopt environmentally responsible products and practices related to energy use and production	Biofuel production in Canada	Favourable 5-year trend, as per 2007 baseline of 786.1 million litres of ethanol and 92.8 million litres of biodiesel	**Results: Achieved** The production capacity of biofuels has increased steadily since 2007. In 2014-15, NRCan programs contributed to achieving production of 1,739 million litres of ethanol and 128 million litres of biodiesel. The level of biofuels production has risen to meet Canadian and US mandates for renewable content in the fuel pool. Increased production of renewable fuels diversifies the energy mix in Canada.

	Canada's total annual energy savings due to efficiency (difference between energy use without energy efficiency improvements and energy use with energy efficiency improvements; the units are petajoules (PJ))	Favourable 5-year trend in PJ saved, as per 2008 baseline	**Results: Achieved** From 2008 to 2012, energy savings due to energy efficiency in Canada showed a favorable trend. Over this time period, energy efficiency improvements reduced energy use by 353 PJ. From 1990 to 2012, energy efficiency in Canada improved 24.2% a significant increase in energy savings which reduced energy use by 1,642.8 PJ, saved Canadians $37.4 billion and decreased GHG emissions by 86.6Mt in 2012. More details on energy efficiency improvement as well as information on trends in energy use and energy efficiency in the residential, commercial, institutional, industrial, and transportation sectors can be found in the report Energy Efficiency Trends in Canada 1990-2012.
	Renewable electricity generation capacity in megawatts (MW)	Favourable 5-year trend in MW, as per 2007 baseline of 6,753 MW of installed capacity (excluding large hydro)	**Results: On Track** Existing data suggest this favourable 5-year trend is on track as renewable electricity generation capacity increased from 9,261 MW in 2010 to 14,301 MW in 2013, including 50 MW of small hydro. (Data source: Stats Canada - CANSIM)

Performance Analysis and Lessons Learned

Individual sub-programs provide specific details on performance analysis and lessons learned.

Sub-Program 2.1.1: Renewable Energy Deployment

Description

Canada has abundant renewable energy resources. Deployment of renewable energy technologies will diversify Canada’s energy mix and, in the long term, decrease Canada’s greenhouse gas emissions. Through this Sub-program, NRCan is developing a supportive policy framework for administering marine renewable energy measures in the federal offshore through the Marine Renewable Energy Enabling Measures program. NRCan also supports production from renewable energy projects already deployed through the ecoENERGY for Renewable Power and Wind Power Production Incentive programs.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
162,155,190	150,914,782	(11,240,408)

The difference between Planned Spending and Actual Spending is mainly attributed to the ecoENERGY Renewable Power program where the contribution program is based on production levels and some projects produced less than the maximum allowable under the terms and conditions of their contribution agreements.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
8	7	(1)

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Renewable electricity is produced by the projects supported by NRCan programs	Number of terawatt-hours (TWh) of clean electricity produced annually	**15.7 TWh by March 31, 2015**	**Results: On Track** The ecoENERGY for Renewable Power Program and the Wind Power Production Incentive provide incentives for electricity production from 126 qualifying renewable energy projects for period of up to 10 years. The 15.7 TWh target is based on the maximum amount of electricity production that can be paid for from these 126 projects. As of the end of 2014-15, 11 of the 126 projects had concluded their contribution agreements and ceased receiving the incentive. These projects continue to produce electricity, but that electricity production is not tracked by the program. Electricity produced from projects continuing to receive the incentive totalled 15 TWh in 2014-15. This figure exceeds the maximum amount of electricity production that could be paid for by the program because several projects produced more electricity than anticipated. Total electricity production from all projects that have received, or that continue to receive the incentive very likely exceeded the target
Stakeholders have timely access to information on policy options for developing a regulatory framework for the development of marine renewable energy in the federal offshore	Policy paper advancing knowledge of policy options for administering marine renewable energy in Canada's federal offshore is produced on time	**1** policy paper	**Results: 1** A policy paper was completed on time and shared with provinces and territories; electricity industry associations; federal departments and agencies and the offshore oil and gas boards.

Performance Analysis and Lessons Learned

The ecoENERGY for Renewable Power Program and the Wind Power Production Incentive are supporting up to 15.7 tWh of renewable electricity. The ecoENERGY for Renewable Power Program has led to the installation of 4,458 MW of renewable capacity, exceeding its 4,000 MW target.

The Marine Renewable Energy Enabling Measures program produced a policy paper entitled *Developing a Policy Framework for Administering Marine Renewable Energy in the Federal Offshore*, which advanced key aspects related to the development of policy options for administering marine renewable energy in Canada's federal offshore. This work improved stakeholders knowledge of existing federal laws in the context of marine renewable energy and approaches of other countries' marine renewable energy regulatory regimes. This paper also provided stakeholders with policy considerations for administering marine renewable energy in the federal offshore.

Sub-Program 2.1.2: Support for Clean Energy Decision-Making

Description

Canada requires an understanding of how clean energy production options can fit within the broader energy system. Public and federal government decision-makers need information to evaluate the effectiveness of solutions to the domestic and international environmental impacts of energy development. Through this Sub-program, NRCan provides tools, information and analysis to federal decision-makers and the Canadian public regarding energy-related environmental issues (particularly climate change) and clean energy technologies, and supports Canada's international climate change negotiators. This Sub-program includes activities under three Clean Air Agenda programs: the Clean Energy Policy program, the International Negotiations program, and the Clean Energy Dialogue.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
3,818,625	2,839,466	(979,159)

The difference between Planned Spending and Actual Spending is mainly attributed to reduced legal service costs and unexpected delays in contracting services.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
20	21	1

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Canadian international climate change objectives are advanced in international meetings	Percentage of Canadian objectives reflected each year in the outcomes of relevant international meetings (e.g., UNFCCC)	**80%**	**Results: +80%** At least 80% of Canadian objectives were reflected in the outcomes of relevant international meetings and all outcomes were within the parameters of the limits and priorities of Canadian positions.
The public and federal government decision-makers have access to information that supports decisions on climate change and clean energy issues	Number of new or updated information products available to the public that aim to advance knowledge of Canada's energy resources and environmental impacts	**10**	**Results: 17** NRCan updated 11 oilsands fact sheets and 6 new pipeline fact sheets that have been made available to the public.
	Provision of information products (e.g., advice and analysis) to federal decision-makers regarding clean energy and environmental issues in response to requests	**95%** of requests fulfilled	**Results: 95%** 95% of requests for information and analysis were fulfilled with accuracy and timeliness. In addition to requests, information and analysis on priority issues are provided proactively and future needs are continuously assessed and anticipated.

Performance Analysis and Lessons Learned

In 2014-15, NRCan provided analysis and advice to the federal government to support decision-making on clean energy and environmental issues, particularly climate change, and worked with federal and international partners toward GHG emissions reductions in the energy sector.

NRCan continued to provide analysis to federal decision-makers regarding Canada's GHG emissions, as reported in various publications including Canadian submissions to the United Nations Framework Convention on Climate Change (UNFCCC) and the International Energy Agency’s (IEA) World Energy Outlook, including international comparisons. NRCan also provided information to the public on topics such as oil sands and shale gas.

The Department helped reduce GHG emissions through ongoing efforts at various international fora to advance Canada's interests relating to clean energy technology. NRCan represented Canada on technology issues in negotiations at the UNFCCC, which led to the adoption of decisions aligned with Canada's interests at the November 2014 Conference of the Parties to the Convention. The Department represented Canada in the US-led Clean Energy Ministerial, showcasing Canada as a leader in clean energy and energy efficiency, and worked collaboratively with other major economies to advance the development and deployment of clean energy technologies.

NRCan promoted Canada's carbon capture and sequestration (CCS) leadership, industry, and expertise in multilateral forums, including a presentation at a UNFCCC Technical Expert Meeting on CCS. NRCan advanced collaboration on CCS by co-leading with Norway a Carbon Sequestration Leadership Forum task force on next generation technologies, as well as hosting bilateral conferences on CCS with the US DOE, and working with counterparts in the United Kingdom to renew a CCS Joint Statement.

Sub-Program 2.1.3: Alternative Transportation Fuels

Description

Alternative fuels (e.g., natural gas, ethanol and biodiesel) have a lower carbon content and thus emit fewer greenhouse gases than conventional transportation fuels, such as gasoline and diesel. However, fuel producers and users, vehicle and equipment manufacturers, and policy makers face barriers to the production and use of alternative transportation fuels. These barriers include lack of market capacity to produce alternative fuels; lack of familiarity by end-users and other stakeholders of the benefits of alternative fuel use; and lack of codes and standards governing alternative vehicles and infrastructure. Through this Sub-program, NRCan is addressing these barriers by increasing production capacity, designing and developing education and outreach materials, and facilitating the design, development and updating of codes and standards. This Sub-program includes the following programs: ecoENERGY for Biofuels and ecoENERGY for Alternative Fuels.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
254,504,480	97,134,985	(157,369,495)

The difference between Planned Spending and Actual Spending is mainly attributed to the Sustainable Development Technology Canada Next Generation Biofuels fund, for which the funding allocated was not required in 2014-15, as Sustainable Development Technology Canada was able to meet their expenditure requirements with funding provided in previous fiscal years. In addition, the ecoENERGY for Biofuels program, where the contribution program is based on production levels, had a lapse as a result of uncommitted funds, unused funds from terminated projects, and proponents producing less, therefore claiming less than the maximum allowable under their contribution agreement. Due to market challenges, several producers were unable to meet their contractual terms and their agreements were terminated.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
27	23	(4)

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Fuel producers have the capacity to produce renewable alternatives to gasoline and diesel	Number of litres of renewable alternatives to gasoline and diesel that industry has the capacity to produce	Sustain the built production capacity level of December 2012: **1,881 million litres** of renewable alternative to gasoline and **555 million litres** of renewable to diesel	**Results: Off Track** Prior to 2012, the ecoENERGY for Biofuels program had negotiated agreements with producers that would have exceeded these targets (2.032 billion litres per year of ethanol, and 660 million litres per year of biodiesel). However, due to market challenges, several producers were unable to meet their contractual terms and their agreements were terminated. As a result, the December 2012 built production capacity level has not been maintained.
Stakeholders (policy makers, end-users, alternative and conventional fuel producers, and vehicle and equipment manufacturers) have increased knowledge of alternative fuel pathways	Percentage of survey respondents reporting increased knowledge of alternative fuel pathways	**80%**	**Results: 90%** The ecoENERGY for Alternative Fuels Program held 9 workshops in 2014-15 attended by 367 participants. Participant feedback (based on exit workshop surveys) was very positive. Over 90% of respondents reported an increase in knowledge of alternative fuel pathways.

Standards community has increased ability to develop and update codes and standards related to alternative transportation fuels	Number of codes and standards committees actively working on developing and updating the codes and standards	**2** until March 31, 2016	**Results: 4** The ecoENERGY for Alternative Fuels Program has exceeded this target by supporting 4 technical committees: • 2 committees working on natural gas code revisions for compressed natural gas refuelling stations and on-board vehicles; and • 2 committees developing binational standards for LNG use in transportation for refuelling nozzles and on-board vehicle storage containers. This resulted in 2 codes being published in 2014-15, and 2 new binational standards to be published in 2015-16.

Performance Analysis and Lessons Learned

The ecoENERGY for Biofuels Program initially signed 37 contribution agreements (16 ethanol, 21 biodiesel), which would have resulted in built production capacity of 2.032 billion litres per year of ethanol, and 660 million litres per year of biodiesel in support of the Renewable Fuels Regulations. By December 2012, the program had a built production capacity of 1,881 million litres of ethanol and 555 million litres of biodiesel. However, due to market challenges, several producers were unable to meet their contractual terms and their agreements were terminated. In 2014-2015, the program had 21 active contribution agreements (14 ethanol, 7 biodiesel) representing a production capacity of 1,818 million litres of ethanol and 217 million litres of biodiesel. In March 2015, 12 contribution agreements successfully ended their seven year term. The nine remaining contribution agreements will end over the remaining two years of the Program.

As the Program winds down, NRCan will continue to diligently manage existing contribution agreements and monitor industry performance as we enter a post-incentive environment.

The ecoENERGY for Alternative Fuels Program exceeded its target by supporting 4 technical committees that are updating and developing codes and standards related to natural gas vehicles and infrastructure. These codes and standards facilitate the deployment of natural gas vehicles, and infrastructure, by lowering delays in certification, as well as ensuring a common set of codes and standards exist in both Canada and the US This Program also exceeded its additional target to support the establishment of 2 local support networks, which act as information centres for natural gas end-users such as fleets and other key stakeholders. Three centres were established in Ottawa, Montréal, and Vancouver and have already delivered 9 workshops with total attendance

of 367 participants. An additional 9 workshops are planned in 2015-16, situating the program to exceed the original target of 500 participants.

In 2014-15, activities within the ecoENERGY for Alternative Fuels Program also led to two major Canada-US agreements. Greater collaboration with the US on natural gas vehicle deployment through the Regulatory Cooperation Council, and the NRCan-US DOE MOU on Enhanced Collaboration will enable the greater use of natural gas vehicles in a seamless North American transportation system.

Sub-Program 2.1.4: Energy Efficiency

Description

Increasing energy efficiency reduces greenhouse gas emissions. Many Canadian energy users are unaware of the benefits of adopting energy-efficient technologies and practices. As well, regulations, codes and standards require ongoing stringency improvements because the energy efficiency of housing, buildings, and energy-using products is continually improving. Through this Sub-program, NRCan encourages the adoption of energy-efficient technologies and practices through labelling, information and training, and by making the stock of housing, buildings and energy-using products more efficient through regulation, codes, standards and energy benchmarking activities. It also makes industrial and vehicle operations more energy efficient through energy management standards, practices and training. This Sub-program includes the ecoENERGY Efficiency program.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
43,539,750	40,856,206	(2,683,544)

The difference between Planned Spending and Actual Spending is mainly attributed to expenditures that were originally planned for sub-program 2.1.4 that were subsequently spent in sub-program 1.1.3 Energy Market Regulation and Information. Slightly offsetting these reductions are funding received from the operating budget carry forward and costs recoverable from Treasury Board which have allowed for increased actual spending.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
236	227	(9)

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Canadians adopt NRCan-targeted energy efficient products and practices	Number of jurisdictions adopting the 2011 National Energy Code for Buildings (NECB)	**4-6** provinces and territories adopting NECB or equivalent	**Results:** **5 provinces and 1 charter city** In 2014-15, through the ecoENERGY Efficiency program, NRCan has encouraged 6 jurisdictions (5 provinces + 1 charter city) to adopt the 2011 National Energy Code of Canada for Buildings (Ontario Manitoba, Nova Scotia, British Columbia, Alberta and the City of Vancouver).This year the code was adopted by Alberta and the City of Vancouver.
	Number of provincial, territorial and/or utility programs using NRCan-developed housing standards and systems	**12** regional programs using NRCan-developed housing standards and systems by March 31, 2016	**Results: 50** Over 50 provincial, territorial, municipal, utility and industry programs use NRCan's EnerGuide Home Rating System and NRCan-developed housing standards (e.g., ENERGY STAR for New Homes) in home energy programs and regulations.
Increased energy efficiency resulting from NRCan programs	Petajoules of energy saved through energy efficiency programming	**36-44** petajoules by March 31, 2016	**Results: 36 petajoules** In year four of the five-year ecoENERGY Efficiency program, we have already surpassed the lower-end energy savings target by achieving over 36 petajoules of energy savings as a result of higher than initially anticipated program activity uptake. For example, building managers are using the ENERGY STAR Benchmarking tool to track over 5 times the floorspace originally targeted for the overall 5-year program (overall target: 20-27 million square-metres). Also, the SmartWay fuel efficient fleet certification program has over 30,000 Canadian fleet vehicles participating in the program --more than double its initial target for the entire program.

Performance Analysis and Lessons Learned

NRCan is working to support energy efficiency in Canada through measures, such as training for individuals in the housing, buildings, industrial and transportation sectors, and the development of codes and regulations. This contributes to Canada's long-term greenhouse gas emission reduction goals while saving Canadian consumers and businesses money, and helping Canadian industry to become more competitive. In 2014-15, activities under the ecoENERGY Efficiency program contributed to:

- The ENERGY STAR® product labelling program exceeding its energy savings targets due to a 5% increase in the market penetration of certified products and the introduction of 8 new product types available for certification. The ENERGY STAR® label helps

consumers save money on energy costs by identifying the best energy performers among appliances and equipment in over 65 product categories.

- Over 10,000 Canadian buildings (representing 140 million square metres) tracking their energy use using the ENERGY STAR Benchmarking tool for buildings. This is well ahead of the 5-year program target of 9,000 buildings to be achieved in 2015-16. It is estimated that the Benchmarking tool captures over 17% of total commercial floor space in Canada, helping Canadian businesses save money and reduce energy use.
- Over 32,000 trucks (representing over 25% of all on-road freight activity in Canada) are reducing their energy use by participating in the SmartWay Transport Partnership, a benchmarking program for the freight transport industry. Participation in SmartWay, which is increasingly requested by manufacturers and retailers, helps Canadian trucking companies reduce fuel costs and transport goods in the most efficient way possible while gaining access to business from over 255 North American companies (e.g., Walmart, Fiat, Chrysler and Nike) who require the fleets they hire to participate in SmartWay to maximize efficiency in their supply chains.
- Leveraging NRCan's national housing tools to be used in more than 50 provincial, territorial, municipal, utility, and industry home energy programs and regulations. This enables consumers to improve the energy performance of their home and benefit from various regional initiatives through a single home evaluation. It also helps to avoid costly and duplicative efforts for partners and enables alignment between initiatives that simplifies the process for participants, and helps saves consumers money on their home energy costs.

Program 2.2: Technology Innovation

Description

S&T is key to overcoming challenges confronted by natural resource sectors in pursuing responsible development. Through this Program, NRCan encourages academia, industry and the public sector to research, develop and demonstrate innovative solutions. This objective is achieved through the generation and dissemination of scientific knowledge, and the development and demonstration of new technologies.

Budgetary Financial Resources (dollars)

2014-15 Main Estimates	2014-15 Planned Spending	2014-15 Total Authorities Available for Use	2014-15 Actual Spending (authorities used)	2014-15 Difference (actual minus planned)
150,090,774	150,090,774	163,911,547	151,832,220	1,741,446

The difference between Planned Spending and Actual Spending is mainly attributed to funding received from the operating budget carry forward and capital budget carry forward which have allowed for increased spending, less than expected vote net revenue collections as compared to the planned collections, and costs recoverable from Treasury Board. Offsetting these increases are funding which was not required by Sustainable Development Technology Canada for the Technology Fund in 2014-15, but which will be required in future years, being moved into future years. In addition, expenditures that were originally planned for program 2.2 were subsequently spent in program 1.3 Investment in Natural Resource Sectors related to the Program of Energy Research and Development and the ecoENERGY Innovation Initiative. Furthermore, expenditures that were originally planned for program 2.2 were subsequently spent in Internal Services.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
591	635	44

The difference between Planned FTEs and Actual FTEs is mainly due to the staffing of students, which were not accounted for in the Planned FTEs.

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Stakeholders invest in S&T to address environmental challenges	Dollar value of stakeholder investments in S&T to address environmental challenges	**5%** increase over previous 5 years	**Results: 11%** The target was achieved with an 11% average growth over the previous 5 years period.

Performance Analysis and Lessons Learned

Individual sub-programs provide specific details on performance analysis and lessons learned.

Sub-Program 2.2.1: Materials for Energy

Description

Opportunities exist to increase the energy efficiency of Canadian industry through the use of innovative materials technology in such applications as clean power generation, reliable transportation of fossil fuels, and fuel-efficient vehicles. Through this Sub-program, NRCan performs applied research and development that delivers materials and materials-processing innovations, enabling clean energy production, safe and reliable energy distribution, and more efficient use of energy in areas such as transportation, buildings and industry.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
4,122,968	11,088,923	6,965,955

The difference between Planned Spending and Actual Spending is mainly attributed to in-year transfers from sub-program 2.2.3 Clean Energy Science and Technology related to the Program of Energy Research and Development and ecoENERGY Innovation Initiative that are not accounted for in the planned spending. In addition, the operating budget carry forward, capital budget carry forward, less than expected vote net revenue collections as compared to the planned collections, and costs recoverable from Treasury Board have allowed for increased actual spending.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
83	85	2

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Advanced materials technologies for new energy efficient vehicle designs are developed for industry.	Number of advanced materials technologies to which NRCan contributed that are identified by industry stakeholders for implementation in new energy efficient vehicles to be produced in North America	**2** over 3 years	**Results: 2** Many materials technologies to which NRCan has contributed have been identified by industry stakeholders for implementation, including: 1) Successful integration of **aluminum spot welding** for vehicle body structures through the development of a novel sheet test method (issued as ASTM standard B831-14) that enabled computational design of lightweight vehicle structures. The shear performance data has been incorporated in computational design models predicting strength and durability. 2) The development of a **nine-speed transmission valve housing**. Nine-speed transmissions provide better fuel economy than the more common six-speed transmissions. This was industry's first nine-speed transmission valve body that has multiple intricate passageways to facilitate complex hydraulic shift events. CanmetMATERIALS provides much-needed access to pilot-scale facilities, thus reducing downtime of its industry partners' production equipment, and increasing the ability to demonstrate process viability and perform research and development needed to reduce long-term production risks.

New materials technologies in clean power generation, safe and reliable energy distribution and energy efficient end-use are developed for industry	Number of innovative materials technologies developed, contributed to, or validated by NRCan for use in power generation systems powered by nuclear, gas, coal or renewable energy	**3** over 5 years	**Results: On Track** Progress has been made on several materials technologies for use in nuclear reactor designs, including: 1) **Three modules** have been integrated in development of a database of properties for Generation IV Super Critical Water Reactor (SCWR) candidate alloys. A web version has been developed. 2) **Stainless steel alloys** identified as promising candidate alloys for Gen IV SCWR fuel cladding have been modified, and testing of the modified microstructures has commenced. 3) **Coatings to protect steels from corrosion** in high-temperature supercritical water have been evaluated by CanmetMATERIALS and its partners, and finalized. A spin-off cost-recovery project has been signed with a major Canadian nuclear supplier to investigate their use; promising results have been delivered and a follow-up study to scale-up results is now being considered.
New materials technology to transport fossil fuels effectively (safely and efficiently) are developed for industry	Number of proposed projects to transport fossil fuels more effectively (safely and efficiently) using new materials technologies developed or validated by NRCan.	**3** over 5 years	**Results: On Track** Ongoing key projects include: 1) A **draft standard** outlining the testing procedure for measurement of fracture resistance of pipe steels (CTOA-crack tip opening angle); which was prepared and submitted to the American Society for Testing and Materials (ASTM) Technical Committee for review and balloting. 2) The **evaluation of high-productivity welding technologies** for joining X80 steel pipes has been advanced through a detailed assessment of pipeline girth welds. The standardization of test methods for assessment of pipeline girth welds is progressing through participation in an international round-robin testing program. 3) **Small-scale stress corrosion cracking testing experiments** to study crack initiation in X80 and X100 pipe steels have been completed, and a draft paper has been prepared for publication. In addition, full-scale testing of an X70 steel pipe was undertaken to study the influence of static and cyclic loading on crack propagation, which was successfully re-established. 4) A new **CSA 245.30-14 Field Applied External Coating for Pipe Systems standard** was released in October 2014. The current experimental work is focused on the effects that pipe surface roughness has on coating performance.

Performance Analysis and Lessons Learned

Advancements in materials technology is a key enabler of energy efficiency in all sectors. New and improved materials can drive down costs and improve performance of energy production systems and can support the efficient use of energy in a wide range of applications.

Throughout 2014-15, NRCan continued to engage industrial and academic partners in applied research and development, moving materials innovations further up the technology readiness scale and closer to commercialization and deployment in Canada. With staffing and commissioning of major capital investments now complete at NRCan's CanmetMATERIALS laboratory in Hamilton, Ontario, NRCan is positioned to build on and advance activities that positively impact on the competitiveness and environmental performance of industry.

The Hamilton lab provides much-needed access to pilot-scale facilities, thus reducing downtime of its industry partners' production equipment, and increasing the ability to demonstrate process viability and perform research and development needed to reduce long-term production risks.

Technologies under development focus on energy efficiency, clean energy supply and the safe and efficient transport of oil and gas. The end goal is to have materials knowledge deployed in decision-making, design and fabrication processes within industry - impact comes throughout the innovation cycle through high volume production, cleaner energy sources and safer pipelines, but these end goals may not be realized for many years after research projects are complete.

Sub-Program 2.2.2: Green Mining

Description

The development and commercialization of technologies to reduce the environmental impacts of mining and processing entail significant financial, market and technical risk. Through this Sub-program, NRCan develops and demonstrates innovative mining technologies and practices that eliminate or reduce environmental impacts and financial risks. These technologies and practices also expand domestic and international business opportunities for mining companies, technology developers and consultants. NRCan identifies business needs, technology gaps and priorities with input from the Canada Mining Innovation Council and an advisory committee. Applied research aims to reduce land disturbance; water, energy and hazardous chemical use; waste volumes; and releases to the environment; and to accelerate site restoration. In addition, findings contribute to the scientific, technological and socioeconomic basis for updating federal, provincial and territorial mining and environmental regulations and policies, and inform policy priorities in other countries that drive demand for technologies and services.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
6,767,028	9,543,533	2,776,505

The difference between Planned Spending and Actual Spending is mainly attributed to in-year transfers from sub-program 2.2.3 Clean Energy Science and Technology related to the Program of Energy Research and Development and ecoENERGY Innovation Initiative that are not accounted for in the planned spending. In addition, less than expected vote net revenue collections as compared to the planned collections, as well as costs recoverable from Treasury Board have increased actual spending.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
86	80	(6)

The difference between Planned FTEs and Actual FTEs is due to delays in planned staffing.

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Technology developers increase demonstration of environmental technologies	Number of demonstration projects	**2** over 5 years (by March 31, 2017)	**Results: On Track** A demonstration project on the Ventilation on Demand technology was completed in 2012-13 at a Sudbury operations site. Work is under way for demonstration projects on energy-efficient rock fragmentation and the in-situ membrane treatment of water in oil sand production. Further projects such as a contamination control technology project and the passive treatment of water in in-situ oil sand production are expected to be completed by the 2017 target date.

Performance Analysis and Lessons Learned

Partnerships help to inform R&D and to promote innovative new technologies to reduce energy consumption and the environmental footprint of mining activities. Under the Green Mining Initiative (GMI), NRCan continued to work with industry on underground mining projects. Ventilation on Demand (VOD) follow-up projects with the Centre for Excellence in Mining Innovation continued with the aim of having more operations converted to automated ventilation systems and gauging the impact on operations and improved mining regulations. In addition, NRCan led a pilot project for a green mining technology to seek certification. VOD systems originally tested were able to obtain EC's Environmental Technology Verification certificate,

demonstrating its ability to reduce energy costs by a minimum of 20 percent in a section of a working mine.

Furthermore, previous field demonstrations through NRCan's Green Mines Green Energy (GMGE) Initiative produced measureable benefits with respect to the use of organic materials for mine reclamation. One major mining company used GMGE results to undertake a multi-year program using municipal biosolids to cover 50-100 hectares of their tailings with municipal biosolids from southern Ontario; another major mining company worked with the City of Greater Sudbury to use its municipal biosolids from a new water treatment plant for mine reclamation purposes. These activities can be directly attributed to NRCan's GMGE Initiative.

In 2013-14, the Audit Branch at NRCan conducted an audit of the management of the laboratory and its revenue generation. GMI received positive feedback on its best practices on the management of science based-operations. This year, NRCan conducted an evaluation of the GMI that encompassed case studies, documentation review and interviews with internal and external stakeholders. The evaluation highlighted the continued need for the GMI, noting that the program is instrumental in addressing a range of economic, social and environmental needs associated with green mining. CanmetMINING is using recommendations from the evaluation to improve the GMI, particularly to more clearly define the program’s outcomes and performance evaluation.

Sub-Program 2.2.3: Clean Energy Science and Technology

Description

New technologies help improve the environmental impacts of energy production and use. Through this Sub-program, NRCan collaborates with academia, industry and the public sector to research, develop and demonstrate innovative solutions to environmental challenges in the energy sector. The objective is for academia, industry, and the public sector to lay the foundation for the next generation of clean energy technologies and practices to have fewer negative impacts on Canada's air, land and water. Through this Sub-program, NRCan funds, creates and advances new energy knowledge and technologies. This Sub-program includes the following programs: Clean Energy Fund, ecoENERGY Innovation Initiative and Isotope Technology Acceleration Program.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
139,200,779	131,199,764	(8,001,015)

The difference between Planned Spending and Actual Spending is mainly attributed to the movement of funding for the Sustainable Development Technology Canada Technology Fund out of 2014-15 and into future years. In addition, there were in-year transfers to sub-program 1.3.3 Geo-Mapping for Energy and Minerals, 2.2.1 Materials for Energy, and 2.2.2 Green Mining that were not accounted for in the Planned Spending related to the Program of Energy Research and Development and the ecoENERGY Innovation Initiative. Furthermore, expenditures that were originally planned for this sub-program were subsequently spent in Internal Services. Offsetting the decrease is funding received for the operating budget carry forward and spending related to costs recoverable from Treasury Board, which have allowed for increased spending.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
422	470	48

The difference between Planned FTEs and Actual FTEs is mainly due to the staffing of students, which were not accounted for in the Planned FTEs.

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Academia, industry and the public sector pursue clean energy S&T that has fewer negative environmental impacts	Ratio of NRCan program investments in clean energy S&T to leveraged funding from partners	**1:1** ratio	**Results: Achieved** In 2014-15, for every dollar spent by NRCan on investments in clean energy S&T, **$2.90** was leveraged from partners.

Performance Analysis and Lessons Learned

In 2014-15, NRCan continued to support RD&D of clean energy projects to address environmental impacts that arise from the production of traditional forms of energy. Work undertaken spanned energy production, conversion and end use, including fundamental research, technology development and demonstration, policy and regulatory support, and development of safety, product and installation standards.

Through the Program of Energy Research and Development (PERD), NRCan funded approximately 185 clean energy R&D projects on a range of issues in energy supply, distribution and end use. Through the ecoENERGY Innovation Initiative, NRCan undertook 124 RD&D projects in five strategic priority areas: energy efficiency, clean energy and renewable fuels, bioenergy, electrification of transportation, and unconventional oil and gas. Through the Clean Energy Fund, it funded 7 small-scale demonstration projects that supported the development of new energy technologies to contribute to the reduction of GHG and other air emissions

associated with energy production, transmission, distribution and use, and create new opportunities as Canada transitions toward a greener global economy.

Through these strategic investments, NRCan has been the catalyst to propel RD&D into key areas of the Canadian economy. A $108 million NRCan investment has spurred a $315 million investment from industry, academic and other government partners. In addition, these programs have helped to reduce our partners' innovation risks, so that they can make further advances in accelerating clean Canadian energy technologies.

Project results have advanced the sustainable and clean development of Canada's energy resources by providing expert scientific, technological and economic knowledge in support of policy development and regulatory initiatives. Results achieved include the creation of new materials, devices, products and processes, and improvements to existing ones. Funding provided to the private sector for later stage technology development and demonstration has accelerated the commercialization and market uptake of these new technologies. Combined results of these projects are leading to improved environmental performance and responsible resource development, along with increased competitiveness, productivity and safety.

NRCan's Isotope Technology Acceleration Program is investing in projects led by TRIUMF, University of Alberta and Prairie Isotope Production Enterprise to further develop commercial alternatives to existing reactor-based medical isotope technologies. Consistent with the GC's medical isotope strategy, the anticipated commercialization of these technologies are expected to put Canadian production of isotopes on sound commercial footing and move towards a fully market-based supply chain, while reducing the generation of radioactive waste and supporting nuclear non-proliferation.

These projects have demonstrated isotope production from alternative technologies and have obtained the necessary regulatory licences from the CNSC for the completed infrastructure and equipment upgrades to produce at commercial volumes. Spin-off companies from the TRIUMF and University of Alberta projects have been created to promote market uptake. Projects continue to build evidence to support health regulatory approvals, with the first announcement made by the University of Alberta from their clinical trials demonstrating the same quality of image as a medical isotope produced with a reactor.

Program 2.3: Responsible Natural Resource Management

Description

Greater knowledge of environmental risks and environmentally responsible practices help prevent and reduce the environmental impacts of past, present and future natural resource development. The objectives of this Program are to enable government departments, regulatory bodies and industry to assess these impacts, and to develop, monitor and maintain resources or clean up wastes responsibly. These objectives are achieved through the provision of assessments and knowledge rooted in sound science, and through waste management efforts that are undertaken in collaboration with provinces, federal agencies and municipalities.

Budgetary Financial Resources (dollars)

2014-15 Main Estimates	2014-15 Planned Spending	2014-15 Total Authorities Available for Use	2014-15 Actual Spending (authorities used)	2014-15 Difference (actual minus planned)
179,373,009	179,373,009	387,092,977	267,570,932	88,197,923

The difference between Planned Spending and Actual Spending is mainly attributed to the funding received for the NLLP. In addition, transfers from program 1.2 Innovation for New Products and Processes due to a change in management priorities, funding received from the operating budget carry forward, and costs recoverable from Treasury Board allowed for increased actual spending. Offsetting these increases was unspent funding for the Port Hope Area Initiative, which experienced delays as a result of a later than anticipated approval date of implementation and due to the need to reflect approval timelines and the internal review of procurement, as well as the movement of funding for the Gunnar Mine out of 2014-15 and into future years. In addition, expenditures originally planned for program 2.3 were subsequently spent in program 3.1 Protection for Canadians and Natural Resources and Internal Services.

Human Resources (Full-Time Equivalents [FTEs])

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
230	247	17

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Federal government implements waste management practices that meet modern standards for safety and environmental protection	Number of contaminated sites where the environmental impacts are reduced	**7** sites by March 31, 2016 (specifically environmental impacts reduced at Whiteshell and Chalk River Laboratories, Glace Bay, Port Granby and Welcome waste management facilities, Port Hope and Northern Transportation Route sites)	**Results: 7** Under the NLLP, progress has been made on reducing environmental impacts. • Decommissioning activities have removed more than 15,000 m^2 of building floor area at **Chalk River Laboratories** and **Whiteshell Laboratories** and more than 7,000 m^2 at the site of the former heavy water production plant in **Glace Bay**, Nova Scotia. New facilities have been established to characterize, process and store legacy waste. During 2014-15, decommissioning and remediation activities at the Underground Research Laboratory at Whiteshell were completed, allowing for the return of the lands to the Province of Manitoba in 2015-16. • Under the **Port Hope Area Initiative**, construction of the two Waste Water Treatment Plants was completed for the **Port Granby** and **Port Hope** new long-term waste management facilities. Full commissioning is expected 2015-16. • The Low-Level Radioactive Waste Management Office completed the submission of a "Draft Remedial Options Assessment for the Uranium Ore Impacted Sites along the Great Bear River, Northwest Territories. This Remedial Options Assessment is scheduled to be finalized in the first quarter of 2015-16 and will inform a large portion of the comprehensive **Northern Transportation Routes** Initiative strategy. NRCan will use the comprehensive strategy to determine a final disposal location for the northern waste and to determine substantive estimates for the remediation.
Public and private sectors establish practices to mitigate the environmental impacts to natural resources	Number of public and private sector new or updated policies, regulations or other decision-making tools completed annually	**3** annually	**Results: 4** 1. NRCan's Canadian Forest Service updated its operational-scale version of **Carbon Budget Model of the Canadian Forest Sector** (CBM-CFS3) and provided it to stakeholders. 2. A synthesis of 15 years of scientific information from the **Ecosystem Management Emulating Natural Disturbance (EMEND)** experiment is nearing completion. EMEND's research focuses on the effectiveness of ecosystem-based management in the western boreal. Lessons learned from this research are being applied to improve management practices on the surrounding operational landscape, and to inform development of Alberta's provincial forest policies, especially concerning ecosystem health, productivity, and biodiversity. The EMEND science management model is recognized nationally and internationally as a best practice for implementing integrated science in an adaptive management framework to improve natural resource management. 3. NRCan and provincial partners contributed to hold the first **groundwater knowledge transfer workshop** in Montérégie East, Quebec, which is providing decision-making tools to groundwater decision-makers. 4. The **Environmental Geoscience Program** played a critical role in Nova Scotia by providing guidelines to remediate gold mine tailings, which allowed the province to update its policies. In addition, three scientists from the Environmental Geoscience Program were requested to testify before the *Bureau d'audiences publiques sur l'environnement* (BAPE) on the development of shale gas in Quebec, thus contributing to policy decision-making in the province on that unconventional resource.

Performance Analysis and Lessons Learned

Individual sub-programs provide specific details on performance analysis and lessons learned.

Sub-Program 2.3.1: Forest Ecosystems Science and Application

Description

Forests are susceptible to climate-related changes, natural (disease) and man-made influences (harvesting, land-use changes). Sustainable development of Canada's forests requires the understanding, monitoring and assessment of forest ecosystems and their health. Science and knowledge of changing forest dynamics influence decision-making, professional practice, Canada's international reputation and market access to forest-related products. The objective of this Sub-program is to increase the overall scientific knowledge of forest ecosystems and to support knowledge-based sustainable forest management policies and practices. Through this Sub-program, NRCan conducts research, national assessments and monitoring to develop scientific knowledge of Canada's forest ecosystems. This knowledge is used by governments, industry, and non-governmental organizations for multiple purposes, including to develop forest management practices and policies, meet reporting obligations, form negotiating positions, and counter misconceptions of Canada's forest practices.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
15,901,157	18,712,884	2,811,727

The difference between Planned Spending and Actual Spending is mainly attributed to costs recoverable from Treasury Board increasing actual spending as well as transfers from sub-program 1.2.2 Forest Sector Innovation due to a change in management priorities.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
128	141	13

The difference between Planned FTEs and Actual FTEs is mainly due to the staffing of students and casual employees, which were not accounted for in the Planned FTEs.

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Governments, industry, non-governmental organizations and other stakeholders are provided with scientific knowledge on forest ecosystems to support knowledge-based sustainable forest management policies and practices	Representation of the Canadian Forest Service (CFS) on advisory boards or committees involving governments, industry and non-governmental organizations in order to provide scientific knowledge on forest ecosystems	Representation on advisory boards and committees stays within **10% of baseline of 128** advisory boards and committees	**Results: 134** CFS representatives participated on 134 committees and boards during 2014-15. They served as subject matter experts, policy advisors, project coordinators and leaders, and editors of national and international peer-reviewed journals.

Performance Analysis and Lessons Learned

Through representation on 134 forest ecosystem advisory boards and committees and publishing peer-reviewed papers, NRCan provides knowledge on environmental impacts that result from forestry practices and expertise on the sustainable management of forests. In 2014-15, NRCan's expertise and knowledge informed a number of key projects. For example:

- Canada-US collaboration involving NRCan enabled the creation of the first North American forest biomass map;
- As part of the North American Carbon Program (CarboNA) committee, NRCan provided advice on constructing a spatially explicit time series of carbon stocks, emissions and removals.
- NRCan participated on the Reclamation Working Group of the Cumulative Environmental Management Association (CEMA) – an Alberta non-governmental organization; the Department provided science-based advice on climate change impacts on reclamation in the oil sands.

NRCan continues to create, synthesize and integrate knowledge to support the forest sector. For example:

- In November 2014, an NRCan-led workshop including approximately 50 participants from Canada and the US from federal and provincial governments, forest industry, and academia provided a platform to showcase the long-term ecological research conducted at Turkey Lakes, Ontario. This 35-year study – an inter-agency collaboration between NRCan, EC and DFO – has provided comprehensive indicators of the functioning of forest ecosystem, as well as atmospheric, terrestrial, hydrological and aquatic ecosystems. Results from the study are being used to develop operational guidelines and policies by the provinces and forest sector to demonstrate sustainable forest management indicators to maintain third party forest certification. Such science-based knowledge products help

maintain market access for the Canadian forest industry, and demonstrate Canada's commitment to environmental leadership.

- NRCan is nearing completion of the synthesis of 15 years of research results from the Ecosystem Management Emulating Natural Disturbance (EMEND) project, exploring the effectiveness of ecosystem-based management in the western boreal. Science lessons from EMEND are being applied to improve management practices on the surrounding operational landscape and to inform development of Alberta provincial forest policies, especially concerning ecosystem health, productivity, and biodiversity. The EMEND science management model is recognized nationally and internationally as a best practice for implementing integrated science in an adaptive management framework to improve natural resource management.
- Eleven papers have been published in the peer-reviewed journal *Environmental Reviews* on the state of science on key issues related to the sustainability of terrestrial and aquatic ecosystems in boreal Canada. The series includes papers on biodiversity, non-native species, biogeochemical cycles, water resources, protected areas, and climate change, and the natural and human-caused drivers of disturbance in boreal ecosystems. Two papers looked specifically at climate change mitigation and adaptation. Another aspect of the papers was an identification of key knowledge gaps, which will help guide decisions around future science programs.

NRCan produced estimates for the contribution of forests to Canada's 2020 GHG emission reduction target, for publication in Canada's domestic *2014 Emissions Trends Report*. The Department also provided input into the international expert review of Canada's GHG inventory, the *1st Biennial Report* and the *6th National Communication* to the UNFCCC. Estimates contributing to EC's National Inventory Report of GHG emissions were also provided to EC and will be used in the *2015 National Inventory Report*. Improvements were made in the methodologies used for estimation of annual forest-related GHG emissions (e.g., Carbon Budget Model of the Canadian Forest Sector), and to deforestation monitoring. These achievements reflected continued implementation of requirements for transparency and accountability.

Sub-Program 2.3.2: Groundwater Geoscience

Description

Groundwater provides up to 80% of rural Canada's drinking water and is an essential component of ecosystem health. In the face of growing pressures on water resources, Canada needs a consistent and coordinated approach to groundwater management. NRCan conducts groundwater mapping and assessment activities on key aquifers to better understand the extent of groundwater systems, their dynamics and vulnerability. NRCan also collaborates with its provincial partners

to ensure data and approaches in different jurisdictions are harmonized. This information is disseminated through a web portal used by other departments and levels of government, planners and land-use professionals for decision-making. Through this Sub-program, NRCan provides comprehensive groundwater information and expertise, which contributes to sustainable land-use decision-making and groundwater management.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
3,566,128	3,679,553	113,425

The difference between Planned Spending and Actual Spending is mainly attributed to costs recoverable from Treasury Board increasing actual spending.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
29	27	(2)

The difference between Planned FTEs and Actual FTEs is a result of FTEs transferred to sub-program 2.3.3 Environmental Studies and Assessments.

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Public and private sectors involved in groundwater management practices incorporate NRCan information into their products	Number of citations from public and/or private sector organizations incorporating NRCan's groundwater maps and assessments into their products (e.g., aquifer maps, plans and reports)	**5** annually	**Results: 7** 7 distinct products cited one or more times (e.g., the Canada's Groundwater Resources book) Various governments, industries, universities and citizens used groundwater atlas (more than 400 downloads) to better understand different components associated to groundwater quantity.

Performance Analysis and Lessons Learned

In 2014-15, as part of the assessment and characterization program of Canada's 30 principle regional aquifers, NRCan completed work on both the Nanaimo, BC, and Milk River, Alberta-Montana aquifers. Work on the Nanaimo aquifer included a three-dimensional model that will help support sustainable groundwater management; the Milk River project included geological,

hydrological and geochemical studies that will give a more complete understanding of the characteristics of this large transboundary aquifer.

During the Third NRCan National Workshop on Groundwater (November 2014), federal, provincial and territorial participants discussed how Groundwater Geoscience products are used by many clients across Canada and internationally. This national workshop, which was part of the management response to the program's evaluation, allowed NRCan to re-affirm its long-standing collaboration with the provinces and territories in the field of groundwater science. Participants reached consensus on five emerging issues (water budget, climate change impacts, surface water - groundwater interactions, characterization of groundwater systems, deep vs shallow groundwater systems) to be addressed in the fourth phase of the program.

NRCan published “Canada’s Groundwater Resources” in 2014. More than 400 downloads of the groundwater atlas suggest that many organizations (public and private) are using these maps to better understand this hidden resource, particularly aquifer systems that were mapped and characterized in the third phase of the Groundwater Geoscience program.

Sub-Program 2.3.3: Environmental Studies and Assessments

Description

Government departments, regulatory bodies and industry require science-based information to guide resource development practices and help reduce related environmental impacts. Through this Sub-program, NRCan provides technical and geoscience information and advice necessary for the completion of environmental assessments conducted under the Canadian Environmental Assessment Act 2012 and northern legislation, and to address the environmental risks of major resource projects like the oil sands. It also informs the process of designating new federal parks and protected areas on federal lands with the identification of mineral and energy resource potential.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
7,547,974	6,968,984	(578,990)

The difference between Planned Spending and Actual Spending is mainly attributed to the overestimation of budget required to support the sub-program and expenditures originally planned for sub-program 2.3.3 that were subsequently spent in sub-program 3.1.5 Geohazards and Public Safety. Partly offsetting these decreases were costs recoverable from Treasury Board.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
44	46	2

The difference between Planned FTEs and Actual FTEs is a result of FTEs transferred from sub-program 2.3.2 Groundwater Geoscience.

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Governments, regulatory bodies, industry and the public access sound environmental geoscience information	Number of citations from public and/or private sector organizations incorporating NRCan's environmental geoscience information into their products	**5** annually	**Results: 11** In 2014-15, NRCan's Environmental Geoscience Program research was cited more than ten times by stakeholders including Bralorne Gold Mines, Dalhousie University, Stantec Consulting and the Canadian Council of Academies.
	Percentage of responses for Earth Sciences Sector and Minerals and Mines Sector scientific and/or technical expertise delivered per Environmental Assessment request	**95%**	**Results: 99%** NRCan provided 99% of the scientific and technical expertise required.

Performance Analysis and Lessons Learned

NRCan's Environmental Assessment Service (EAS) exceeded its target and provided 99% of the scientific and technical expertise required in completing 45 environmental assessment (EA) requests. Twenty-six NRCan experts were involved in EA technical reviews (requiring approximately 2055 hours) and the EAS dealt with 13 new projects and three technical panel reviews.

NRCan experts also responded to two requests from Quebec's *Bureau d'audiences publiques sur l'environnement* (BAPE) and provided comments and expertise at public hearings on issues related to the exploration and exploitation of shale gas in the Utica Shale in the St. Lawrence Lowlands, and to the uranium industry in Quebec.

In 2014-15, NRCan's Environmental Geoscience Program research was cited eleven times by various stakeholders, including:

- In a report to the Government of British Columbia's Ministry of Mines and Energy;
- Dalhousie University and Stantec Consulting, recommending the best approach to reduce environmental and human health risks associated with historic gold mine tailings; and

- Canadian Council of Academies publications, where its data were integrated into a report on environmental impacts of shale gas extraction in Canada – a report that is considered a major research piece on shale gas.

Sub-Program 2.3.4: Radioactive Waste Management

Description

Requirements to protect the environment or human health when managing radioactive waste were less stringent in the past than they are today. In some cases, historic nuclear or uranium mining activities resulted in a legacy of radioactive waste or contaminated lands that pose risks to the environment and the health of Canadians. Through this Sub-program, NRCan develops policy and programs to establish long-term management solutions for radioactive waste in areas where federal intervention is required. Specifically, NRCan is involved in clean-up operations in cases where the wastes were either produced by a Crown corporation, or the original private sector producer no longer exists or cannot be held responsible. NRCan also develops knowledge and innovative technologies in support of responsible radioactive waste management and clean up. This Sub-program includes the following programs: the Nuclear Legacy Liabilities Program, the Property Value Protection Program, the Municipal Tax Revenue Loss Protection Program, the Historic Waste Program, including the Port Hope Area Initiative, and the Gunnar and Lorado program.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
151,251,000	237,191,297	85,940,297

The difference between Planned Spending and Actual Spending is mainly attributed to the funding received for the Nuclear Legacy Liabilities Program. In addition, funding received from the operating budget carry forward partly increased actual spending. Offsetting these increases was unspent funding for the Port Hope Area Initiative, which experienced delays as a result of a later than anticipated approval date of implementation and due to the need to reflect approval timelines and the internal review of procurement, as well as the movement of funding for the Gunnar Mine out of 2014-15 and into future years.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
25	24	(1)

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
The federal government manages (develops and implements) long-term management solutions to clean up radioactive waste	Percentage implementer compliance with applicable CNSC institutional controls and/or licences to carry-out management practices	**100%**	**Results: 100%** Ongoing waste inventories and reviews of compliancy with CNSC regulations were delivered in 2014-15 to ensure programs are meeting regulatory requirements.
	Percentage of radioactive waste management milestones completed under the Nuclear Legacy Liabilities Program	**80%**	**Results: 94%** The NLLP exceeded the 80% milestone completion target in 2014-15. The Program was successful in achieving 94% of the 2014-15 milestones (51 of 54 achieved).
	Percentage of waste management obligations achieved under the Port Hope Legal Agreement for each project	**100%** by March 31, 2022	**Results: On Track** The government continues to meet its obligations under the Port Hope Legal Agreement for both Projects. This indicator is ongoing for the duration of implementation of the clean-up and construction activities.

Performance Analysis and Lessons Learned

In 2014-15 the Port Hope Area Initiative addressed a number of challenges and worked towards the completion of activities that will prepare the Port Hope Area Management Office to initiate major work packages in 2015-16 for both the Port Hope and Port Granby projects. Specifically, the construction of the Waste Water Treatment Plants has been substantially completed, to allow for the commissioning of the plants in 2015-16. The tender for the major remediation work under the Port Granby project was posted, and the contract awarded in early 2015-16.

The realignment of the governance framework in early 2014-15 and subsequent actions by NRCan, AECL and PWGSC to adopt a single accountability structure will provide clearer accountabilities and increased flexibilities for major procurements anticipated in 2015-16 and beyond. Independent third party reviews were completed in 2014-15, supporting decisions to tender key work packages in 2015-16 related to surveys and site preparations. Finally, the review of the Property Value Protection program was substantially completed in 2014-15, allowing AECL to proceed to revise and roll out recommended changes in 2015-16.

In 2014-15, the NLLP completed 94% of its milestones for the year. Notable achievements in reducing Canada's environmental nuclear liability include:

- Completion of the decommissioning and remediation of the Underground Research Laboratory (URL) site, paving the way for the return of the lands to the Province of Manitoba in 2015-16;

- Completion of work to prepare half of the main nuclear research complex (a 17,000 m^2 building that housed nuclear and non-nuclear laboratories and workshops as well as offices) at Whiteshell Laboratories for demolition in 2015-16;
- Advancing the decommissioning of a Chalk River Laboratories building by removing processing equipment and systems and seven associated underground tanks; and
- Significant progress in commissioning the Fuel Packaging and Storage (FPS) facility to permit the retrieval of the first degraded research reactor fuel rod from a below-grade storage structure at Chalk River Laboratories, during the 2015 field season, and its transfer to the FPS facility for repackaging, drying, and interim storage in a new storage block. The FPS project addresses the older, experimental fuels (approximately 10% of all stored research reactor fuel waste at Chalk River Laboratories) until an off-site long-term management facility becomes available.

NRCan received approval to extend the NLLP through 2015-16, including $231.3 million in funding to continue the project and reduce liabilities.

Sub-Program 2.3.5: Earth Observation for Responsible Resource Development

Description

Effective regulatory frameworks depend on environmental monitoring information and tools. Through this Sub-program, NRCan provides Earth Observation and geospatial data and tools on oil and gas-concentrated regions in Canada, such as the North and the Alberta oil sands. It informs the identity of baseline conditions for various environmental components (land, water, vegetation) and the cumulative effect of natural resource development, and can guide decision-making on proposed mitigation options. This increases the capacity for regulation that could help prevent and reduce impacts to the environment in these key areas.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
1,106,750	1,018,214	(88,536)

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
4	9	5

The difference between Planned FTEs and Actual FTEs is a result of FTEs transferred from sub-program 3.2.1 Essential Geographic Information.

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Governments, regulatory compliance monitoring bodies and industry use Earth observation scientific information (i.e., value-added datasets and publications) to support responsible resource development practices	Number of methods, value-added products and/or demonstration products used by government regulatory bodies and/or industry	**5** annually	**Results: 5** The program met its target of 5 methods, value-added products or demonstration products used by government regulatory bodies or industry. Some examples include NRCan's Earth Observation studies, satellite products on ground deformations, land cover change data and new EO-based biophysical parameter maps.

Performance Analysis and Lessons Learned

The Earth Observation (EO) for Responsible Resource Development program has met its target of 5 methods, value-added products or demonstration products used by government regulatory bodies or industry. Some examples include:

- The Alberta Energy Regulator (AER), citing NRCan EO studies, operationalized the EO system for detecting infrastructure and landscape change.
- Satellite products on ground deformation provided to AER were used for the investigation of the Cold Lake bitumen spill, and the value of the technique was cited by the incident review panel.
- EC and Parks Canada used EO project products within their reports on ice break-up and associated flooding in the region.
- NRCan used land cover change data, generated for the region, for the period 1984-2012 in its carbon modelling research.
- New EO-based biophysical parameter maps were used by EC and the Government of Alberta's Ministry of Environment and Sustainable Resource Development to improve air quality models, used to quantify biogenic emissions from the oil sands region.

In 2014-15, NRCan further strengthened the regulatory framework around resource development in Canada's oil sands region and the North, by developing, validating and transferring techniques

that extract environmental information from EO datasets. In early 2015, NRCan and Government of Alberta regulators met, along with industry and academia, to review NRCan science and discuss the regulatory role of EO data in the oil sands and surrounding region.

NRCan demonstrated the significant role satellite imagery can play in improving regulatory efficiency and effectiveness. This automated satellite-based method reduces the costs of compliance monitoring for AER, compared to the traditional method of regular site visits. AER is continuing to transition NRCan EO science into its operations, specifically methods around the use of satellite imagery to cost-effectively monitor oil sands development.

In Canada's North, NRCan contributed new techniques in support of improved monitoring of cumulative effects and related environmental baselines. It provided both industry and regulators with important satellite products and related techniques, capable of mapping changes in vegetation and determining how these changes impact wildlife (e.g., caribou) habitat. This capacity improves the ability of all stakeholders to more efficiently and effectively assess the impact of potential development in the north on the landscape and larger environment.

Strategic Outcome 3: Canadians have information to manage their lands and natural resources, and are protected from related risks

Description

It is through only a deep and expansive understanding of Canada's lands and natural resources so that today's decision-makers can determine the right choices for tomorrow – choices that keep Canada's lands and natural resources properly managed and safeguarded. This deep and expansive understanding requires expertise and technology. The objective of this strategic outcome is achieved by providing this expertise and technology, enabling a) the management of risks to human, natural resource, and infrastructure health and b) the use of landmass knowledge.

Program 3.1: Protection for Canadians and Natural Resources

Description

Natural resource development and changes in the environment pose risks to human, natural resource and infrastructure health. The objective of this Program is to enable other government departments, communities, and the private sector to manage these risks and to ensure the appropriate capacity is in place. NRCan achieves this objective by providing regulation, knowledge, tools and services and by fulfilling legislated responsibilities.

Budgetary Financial Resources (dollars)

2014-15 Main Estimates	2014-15 Planned Spending	2014-15 Total Authorities Available for Use	2014-15 Actual Spending (authorities used)	2014-15 Difference (actual minus planned)
55,878,528	55,878,528	66,173,756	65,692,439	9,813,911

The difference between Planned Spending and Actual Spending is mainly attributed to a transfer from the Department of National Defence for public security initiatives, transfers from program 1.2 Innovation for New Products and Processes due to a change in management priorities, as well as in-year transfers of funding for the Licence Management System. In addition, expenditures originally planned for program 2.3 Responsible Natural Resource Management were subsequently spent in program 3.1. Furthermore, the operating budget carry forward and costs recoverable from Treasury Board have allowed for increased actual spending. Slightly offsetting this increase in spending were higher than expected vote netted revenue collections and expenditures that were originally planned for program 3.1 being subsequently spent in Internal Services.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
443	478	35

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Governments, communities and the private sector manage risks or opportunities to natural resources, infrastructure, and human health	Number of active collaborations with the public and private sector that manage risks or opportunities to human population, natural resources and infrastructure health	**6** collaboration agreements annually	**Results: 6 total** NRCan collaboration with provinces and territories in the area of forest fires and pests continued under the Canadian Council of Forest Ministers. Examples of collaboration agreements include a new governance model for Canadian wildland fire management cooperation, and the publication of two risk analyses informing the management of high-profile exotic pests affecting Canada's forests. Three new collaborations on climate change were established through the Adaptation Platform, the NRCan-led multi-stakeholder forum. For example, a new collaborative project was initiated by the Platform's Energy Working Group to estimate changes in demand for heating and cooling over the next 30 years as a result of projected temperature changes in Canada. The work is being undertaken by NRCan and provincial and territorial governments, energy and electricity agencies and companies. The results will inform energy supply management and planning.
	Number of risk assessments (climate change, hazards, other), policies, standards or guidelines developed using NRCan information or services	**5** annually	**Results: 10** With respect to climate change adaptation, NRCan information was used to develop three new risk assessments and one guideline. The risk assessments delivered through the Adaptation Platform included an assessment of the risks to Prince Edward Island's coastal residences, infrastructure and heritage from rising sea levels and coastal erosion. In addition, NRCan provided geohazard expertise on an ongoing basis in support of environmental assessments for major projects. NRCan provided hazard scenarios and quantitative risk assessments in support of earthquake disaster preparedness studies carried out by the Province of British Columbia NRCan also participated in the development and revision of a number of GC emergency management plans; it also exercised four plans and participated in a full-scale exercise with federal and provincial agencies to test the Federal Nuclear Emergency Plan. Lessons learned from these exercises were used to improve plans.

Performance Analysis and Lessons Learned

Individual sub-programs provide specific details on performance analysis and lessons learned.

Sub-Program 3.1.1: Explosives Safety and Security

Description

Explosives are essential for many economic activities but are inherently dangerous. Strict controls are needed to protect Canadians from incidents that could result in death or serious injury, and economic and environmental harm. Through this Sub-program, NRCan administers and enforces the *Explosives Act* and associated regulations, which govern the manufacture, importation, transportation, sale, distribution and storage of explosives. This includes fireworks and pyrotechnics, and the sale of materials that can be used to produce explosives. Through this Sub-program, NRCan conducts compliance promotion, outreach, inspections, investigations and enforcement of the Act and regulations. It also tests and develops policies, procedures, guidelines, rules and standards, and supplies expertise to other federal government organizations and law enforcement agencies.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
5,176,433	7,390,631	2,214,198

The difference between Planned Spending and Actual Spending is mainly attributed to in-year transfers of funding for the Licence Management System. In addition, the operating budget carry forward and costs recoverable from Treasury Board have allowed for increased actual spending.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
65	57	(8)

The difference between Planned FTEs and Actual FTEs is mainly due to delays in planned staffing.

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Regulated establishments' compliance with regulatory requirements is monitored and enforced to protect Canadians from the dangers of explosives	Number of explosives inspections completed	**600** annually	**Results: 706** 706 inspections were completed in 2014-15.

Performance Analysis and Lessons Learned

The Explosives Program completed 706 inspections during 2014-15 and more than 150 products were tested at the Canadian Explosives Research Laboratory. The program continues to administer high volumes of licences, permits and certificates. As an example, close to 10,000 individuals maintain some form of fireworks certification with the Explosives Branch.

A National Inspection Plan was put in place this year to reduce the amount of time inspectors spend travelling versus conducting inspections. This has allowed the program to increase efficiency, although the overall number of inspections slightly decreased this year due to staff departures. Over the coming years, plans to review and adjust the annual target for inspections will be made based on the number of inspectors working once the program is fully staffed.

Lastly, additional provisions in the Explosives Regulations, 2013, came into force on February 1, 2015. The new Regulations are clearer, reflect modern industrial explosives practices, and make it easier for stakeholders to comply with the Regulations, which will result in improved safety for citizens with respect to explosives.

Sub-Program 3.1.2: Materials and Certification for Safety and Security

Description

Materials are engineered and fabricated for specific applications and environments. Defects in equipment or structures can cause failures that result in death, serious injury, and economic and environmental damage. Non-destructive testing helps to ensure the integrity of safety-critical components in aircraft, boilers and pressure vessels, bridges, buildings, cranes, heavy equipment, nuclear reactors, pipelines and other applications. Several federal regulators and other authorities require non-destructive testing to be performed by inspectors certified according to a national standard. Through this Sub-program, NRCan certifies individuals to this national standard, which is aligned with international standards. NRCan also develops materials solutions to provide increased protection to Canadian Forces personnel and assets, specifically protecting light military vehicles and occupants from the effects of improvised explosive devices, and dismounted soldiers and law enforcement personnel against projectiles and fragmentation devices.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
1,210,754	(353,091)	(1,563,845)

The difference between Planned Spending and Actual Spending is mainly attributed to higher than expected vote netted revenue collections as compared to the planned collections, which, as a result, exceeded the actual spending.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
13	15	2

The difference between Planned FTEs and Actual FTEs is due to the addition of term and casual employees.

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Individuals are certified to perform non-destructive testing to a national standard	Number of valid certifications issued by NRCan (certifications are currently offered in six methods and individuals are typically certified in more than one method and/or sector)	**12,000** annually	**Results: 13,635** 13,635 active certifications were issued by NRCan in 2014-15.

Performance Analysis and Lessons Learned

NRCan manages Canada's Non-Destructive Testing (NDT) Certification Program, a nation-wide program to certify individuals performing non-destructive testing. Federal regulators such as Transport Canada (TC), the NEB, Health Canada and the CNSC mandate that NDT inspections be performed only by individuals certified to the National NDT Standard. Risks to natural resource sectors, infrastructure and human health are safely managed through a nationally implemented and credible certification for the personnel performing safety critical non-destructive inspections. The NDT Certification Program is the only source of certified NDT personnel for all Canadian industries.

The NDT program continues to focus on effective communication with stakeholders. In 2013-14, NRCan established a more formal consultation mechanism with stakeholders. In 2014-15, formal committees were launched to provide recommendations to NRCan on the certification scheme, technical elements of the examination process, and other acceptance and evaluation requirements. The long-term objective of this stakeholder communication strategy is to continue to build positive participation and to address the needs of industry on a national scope.

Other activities under this sub-program support the protection of Canadians through collaboration with the Department of National Defence and Defence Research and Development Canada (DRDC). R&D collaborations with DRDC are leading to new armour materials that are providing enhanced protection of military assets and personnel. NRCan continues to leverage its CanmetMATERIALS laboratory in Hamilton, Ontario, for materials research, leading to improvements in the fabrication, testing and evaluation of advanced materials for safety and security.

Sub-Program 3.1.3: Forest Disturbances Science and Application

Description

Increased scientific knowledge is required in Canada to understand, forecast, mitigate and adapt to natural and human-induced impacts on forest ecosystems. Through this Sub-program, NRCan conducts research and analysis to develop scientific knowledge of forest disturbances (e.g., pests, fire). This scientific knowledge is used by federal, provincial and territorial governments and agencies (both policy makers and regulators) as well as the forest industry to assess risks, forecast impacts and develop mitigation and adaptation strategies related to pests, fire, and climate change. This Sub-program includes the following programs: Invasive Alien Species Strategy for Canada, and Climate Change Adaptation program.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
24,397,656	31,554,128	7,156,472

The difference between Planned Spending and Actual Spending is mainly attributed to transfers from sub-program 1.2.2 Forest Sector Innovation due to a change in management priorities. In addition, costs recoverable from Treasury Board have increased actual spending.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
220	254	34

The difference between Planned FTEs and Actual FTEs is mainly due to the staffing of students, which were not accounted for in the Planned FTEs.

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Governments, agencies and industry are provided with scientific knowledge on forest disturbances to assess risks, and develop mitigation and adaptation strategies	Representation of the Canadian Forest Service on advisory boards or committees involving governments, industry, and non-governmental organizations in order to provide scientific knowledge on forest disturbances	Representation on advisory boards and committees stays within **10% of baseline (baseline = 73)**.	**Results: 74 committees** NRCan representatives sat on 74 committees and boards in 2014-15, as subject matter experts, policy advisors, project coordinators and leaders, and editors of national and international peer-reviewed journals.

Performance Analysis and Lessons Learned

Scientific expertise, knowledge products and national leadership offered by NRCan helps forest sector players assess risks, mitigate the impacts, and adapt to forest disturbances. NRCan disseminated and applied the scientific knowledge it produced on forest disturbances through representation on 74 advisory boards and committees in 2014-15.

Specific examples of include:

- NRCan provided reports on research plans and results to multiple fora and events across Canada, reaching out to key industry and private sector stakeholders, governments, land owners and the public.
- Research on early intervention strategies against the spruce budworm in Eastern Canada, is producing promising results, including a better understanding of how a spruce budworm outbreak develops and spreads. Experimental trials demonstrated that low-density spruce budworm populations could be reduced by employing an early intervention approach. This knowledge will assist forest managers in assessing whether this approach could help to reduce the spread of spruce budworm infestation in future.
- NRCan co-hosted the Wildland Fire Canada Conference 2014, which was instrumental in re-engaging and strengthening working relationships among the Canadian fire management agencies. The conference helped transfer knowledge on NRCan fire research and information systems technology to fire management end-users.
- NRCan researchers also modelled potential impacts of climate change on Canada's forests and the forest sector including changes in climate, forest disturbances (fire, insect, wind storms, drought), productivity and composition, timber supply and the wood fibre supply chain (processing of lumber mill residues into non-lumber forest products). NRCan summarized scientific findings from which it determined policy implications and proposed policy responses and adaptation actions for the federal government.

Sub-Program 3.1.4: Climate Change Adaptation

Description

Developing and sharing of information, as well as cooperation among multiple decision-makers, are required to successfully plan for and manage the risks and opportunities resulting from a changing climate. Through this Sub-program, NRCan delivers an Adaptation Platform, which brings together national industry and professional organizations, federal, provincial and territorial governments, and other organizations to collaborate on shared adaptation priorities. It also delivers scientific analysis on climate change geoscience issues affecting Canada's North (North of 60 latitude) such as resource development and infrastructure. This facilitates the production and exchange of knowledge and tools that help decision-makers understand the implications of a changing climate on their operations, and equips them with the tools and information needed to effectively adapt. This Sub-program includes the Enhancing Competitiveness in a Changing Climate program.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
9,655,336	9,594,548	(60,788)

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
38	39	1

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Key stakeholders across Canada have access to new knowledge on risks and opportunities resulting from a changing climate for decision-making	Number of new knowledge products released	**10** annually	**Results: 76**[4] NRCan's Climate Change Geoscience Program has produced 76 new primary knowledge products in 2014-15, including 13 peer-reviewed scientific journal articles.

[4] Sub-program reaching a point in its program lifecycle – five years in which the majority of projects have wrapped up and results are now being released.

Performance Analysis and Lessons Learned

The expertise, knowledge products and collaborative mechanisms offered by NRCan on climate change adaptation help public and private sector organizations improve planning and take action to reduce the risk of climate change and the cost of adaptation measures.

In 2014-15, the Climate Change Adaptation Platform reached 370 members and continued to deepen engagement with industry, which has provided opportunities to provide more concrete analysis of the impacts of climate change and the economic costs and benefits of adaptation actions. For example:

- In the mining sector, the first public analysis of the costs and benefits of adaptation measures for transportation and water management at mine sites in Canada was completed.
- A new collaborative project was initiated by the Platform's Energy Working Group to estimate changes in demand for heating and cooling over the next 30 years as a result of projected temperature changes in Canada. NRCan, provincial and territorial governments, energy and electricity agencies and companies are collaborating on this project, and the results will inform future energy supply management and planning.
- The use of webinars and member networks has helped to broaden awareness of the latest project results and available products in a timely and cost-effective manner. Webinar participation increased to 2,500 users for the 13 webinars that were offered in 2014-15.

Working with TC and EC, territorial (Nunavut) and local governments, NRCan has completed surficial geological mapping and prepared permafrost data that were used in the selection of alternative routes for winter roads. In addition, in support of the $300 million upgrade to the Iqualuit Airport, the Government of Nunavut used NRCan's multi-year terrain sensitivity mapping and assessments to select appropriate terrain for runways. Working with TC, NRCan helped determine the impact of climate change on currents in potential Arctic harbours.

An audit and evaluation of the Climate Change Adaptation was initiated in 2014-15.

Sub-Program 3.1.5: Geohazards and Public Safety

Description

To enhance the protection of Canadians from natural hazards, constant monitoring of, and effective planning for, adverse natural events are required. Such events include earthquakes, volcanic eruptions, landslides, geomagnetic storms, radiological and nuclear incidents, and tsunamis. Through the provision of hazard information and products, NRCan helps other levels of government, including international government bodies, as well as the private sector and

professional organizations such as the Canadian Institute of Planners to prepare for and mitigate natural disasters. This work also meets NRCan's obligation for ongoing nuclear test monitoring under the Comprehensive Nuclear Test Ban Treaty. This Sub-program comprises a research component, which disseminates risk-related information to support the response, recovery and preparedness phases of emergency management.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
15,438,348	17,506,223	2,067,875

The difference between Planned Spending and Actual Spending is mainly attributed to a transfer from the Department of National Defence for public security initiatives. In addition, expenditures originally planned for sub-program 2.3.3 Environmental Studies and Assessments were subsequently spent in sub-program 3.1.5. Furthermore, costs recoverable from Treasury Board have increased actual spending.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
107	113	6

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Governments, private sector and regulatory bodies access NRCan's hazard information, products and services	Number of requests for NRCan geohazard information, knowledge products or services by government, private sector, including media, and professional organizations in Canada	**55** annually	**Results: 400**[5] Scientists responded to 400 media requests for information and interviews about earthquakes and space weather events, and many more requests from the public. Scientists participated in consultations with industry, critical infrastructure and government.

Performance Analysis and Lessons Learned

The Public Safety Geoscience (PSG) Program and Canadian Hazard Information Service (CHIS) surpassed their target of responding to 55 requests from government, private sector, media and professional organizations in Canada for NRCan geohazard information, knowledge products or services. NRCan responded to 400 media requests for information and interviews about

[5] The number of requests for NRCan geohazard information, knowledge products or services is driven by the number of hazard events that occur over the year.

earthquakes and space weather events, and many more requests from the public. More than 108 PSG and CHIS publications were downloaded a total of 5,500 times from NRCan's Geoscan portal, indicating strong uptake of knowledge products.

Additional examples of significant work undertaken as part of this sub-program include:

- A flagship publication – a special bulletin of the Seismological Society of America on the 2012 Haida G'waii and 2013 Craig Alaska earthquakes – was completed at the end of 2014-15. NRCan staff edited the bulletin and authored about half the articles.
- NRCan scientists participated in consultations on critical infrastructure with industry and government. Partnerships with industry, international and national geoscience organizations, and academia continued to flourish, resulting in several newly signed and ongoing agreements that establish frameworks for future work.
- The marine and seismic geohazards portions of the British Columbia North Coast Geohazards project both had successful field seasons, including two research cruises in 2014-15 and the installation of six on-land seismometer/Global Positioning System stations.
- In support of a world-class tanker safety regime, new knowledge on terrestrial and submarine landslide hazards and associated tsunami hazards are being produced along the potential Kitimat-Douglas Channel tanker corridor.
- Information on earthquakes and space weather events was disseminated within minutes of their occurrence to emergency measures organizations, critical infrastructure operators, media outlets, and the public through web sites and social media.
- NRCan participated in the development and revision of a number of GC emergency management plans; it also exercised four plans and participated in a full-scale exercise with federal and provincial agencies to test the Federal Nuclear Emergency Plan. Lessons learned from these exercises were used to improve plans.

Program 3.2: Landmass Information

Description

Public, academic and private sectors as well as Canadians rely on up-to-date, comprehensive and accessible landmass information to make sound socio-economic and environmental decisions. This Program provides open access to Canada’s fundamental geomatics framework and information system, including accurate three-dimensional positioning, high-resolution satellite imagery and other remote sensing products, legal (boundary) surveys, mapping and other analysis applications. In addition, it delivers logistics support in the North and regulatory oversight for a robust property system framework on Canada Lands.

Budgetary Financial Resources (dollars)

2014-15 Main Estimates	2014-15 Planned Spending	2014-15 Total Authorities Available for Use	2014-15 Actual Spending (authorities used)	2014-15 Difference (actual minus planned)
53,620,414	53,620,414	89,926,292	78,469,116	24,848,702

The difference between Planned Spending and Actual Spending is mainly attributed to funding received for the UNCLOS, a transfer from the Department of National Defence for the Canadian Forces Arctic Training Centre and a transfer from AANDC for the Canadian High Arctic Research Station science and technology program. In addition, funding received from the operating budget carry forward and costs recoverable from Treasury Board have allowed for increased actual spending. Slightly offsetting these increases was funding originally planned for program 3.2 being subsequently spent in Internal Services.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
393	385	(8)

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Polar Continental Shelf Program (PCSP) clients receive cost-effective logistics support needed to conduct field work safely in Canada's Arctic and Sub-arctic regions	Level of client satisfaction with mix, quality and cost of support received	**85%** of clients are either satisfied or very satisfied	**Results: Pending** NRCan has collected informal annual feedback indicating clients are satisfied with PCSP logistics support. The Department is developing a client satisfaction questionnaire, scheduled to be administered in 2015-16.
Public, private sector and academia use accurate, GC geo-information for decision-making	Number of public sector, private sector or academic organizations using accurate geo-information for decision-making	Annually: **10** federal departments or agencies, **5** private sector companies and **3** academic organizations	**Results: Achieved** Public, private sector, governments or academic organizations are using NRCan's Earth Observation product archives to produce information products using accurate geo-information for decision-making. In 2014-15, users of NRCan's National Earth Observation Data Framework Catalogue included: • 24 federal government organizations, • 12 provincial or territorial organizations, • 35 academic organizations, and • 1002 general users (including general public and representatives of private organizations) Satellite-based map products also contributed to improved situational awareness to support better decision-making by emergency responders, including Public Safety Canada and AANDC. For example, 15 flood extent products for the Assiniboine River, Manitoba, were delivered to a network including Public Safety Canada and the Manitoba government. New products highlighting the location of potential river

			ice jams were also produced and used to aid decision-making in 3 government organizations: Ontario Ministry of Natural Resources, Public Safety Canada, and AANDC.
	Percentage of clients who are satisfied with Canada's legal boundary framework for effective governance, economic and social development	**3** baselines complete for client satisfaction surveys (scheduled 1 bi-annually, rotational amongst key client groups: Aboriginal, other government departments, industry)	**Results: Partially Met** A client survey of industry was part of the Canada's Legal Boundary evaluation, which found that program activities, outputs and outcomes were consistent with stakeholder needs.

Performance Analysis and Lessons Learned

Individual sub-programs provide specific details on performance analysis and lessons learned.

Sub-Program 3.2.1: Essential Geographic Information

Description

Many socio-economic and environmental decisions made by the public, academia and private sector (e.g. emergency preparedness and response, land-use, elections planning, transportation and real estate) rely on up-to-date, comprehensive and accessible landmass information. Through this Sub-program, NRCan ensures open access to Canada's fundamental geomatics framework and information system, including accurate three-dimensional positioning, high-resolution satellite imagery and other remote sensing products, mapping and other analysis applications that are accurate, authoritative and assured. This essential geographic information enables sound socio-economic and environmental decisions, which support the effective management of Canada's natural resources and lands.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
32,892,306	36,955,349	4,063,043

The difference between Planned Spending and Actual Spending is mainly attributed to costs recoverable from Treasury Board and funding received from the operating budget carry forward which allowed for increased actual spending. Furthermore, there was additional funding spent through re-prioritization for the Satellite Ground Station operations.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
254	234	(20)

The difference between Planned FTEs and Actual FTEs is a result of FTEs transferred to sub-program 2.3.5 Earth Observations for Responsible Resource Development and 3.2.4 United Nations Convention on the Law of the Sea.

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Public, private sector and academia access authoritative, reliable and accurate geodetic, geographic and geospatial information for the management of natural resources and lands	Number of times geodetic, geographic and geospatial information (geo-information), tools and services are accessed (e.g., pages viewed, total visits, downloads)	**5%** increase from 2012-13	**Results: average 15.9% increase** The 15.9% average increase in users accessing geodetic, geographic and geospatial information, tools and services includes the following: • Products and services from the NRCan Canadian Geodetic Survey were accessed by 6,015 registered clients, a **reduction of 2.2%** compared to 2012-13 (6,151 clients). In line with Canada's policy on Open Government, NRCan recently started to provide access to its products and services without registration. This change affects the performance measure and will have to be updated at the next reporting period to better reflect usage of products and services by clients. • Users registered to access the online Precise Point Positioning Service **increased by 31%** from 2012-13 (2013: 3,427 vs 2014: 4,482). • Over 90 million page views during over 285,000 visits to the GeoGratis website, demonstrating an **18% growth** in total website visits over 2012-13. This represents an additional means of client access to NRCan geospatial information.
	Percentage of NRCan's total dataset repository updated annually	**15%**	**Results: 15%** A new cycle for updating geospatial information was implemented in 2014-15. This process is now done every two months (compared to once annually). The National Road Network and the National Hydrography Network were updated in 2014-15.

Performance Analysis and Lessons Learned

In 2014-15, NRCan focused on ensuring access to geospatial, including Earth Observation (EO) data to as many users as possible. This included developing technical solutions for the new FGP initiative, such as web visualization, web access in compliance with the GC Open Data policy,

integration of multi-departmental datasets from participating federal organizations, and metadata standardization to Treasury Board guidelines.

It also included the continuous development of NRCan's network of EO ground stations to ensure Canadians have access to EO data, anywhere in the country, in real-time. As part of NRCan's satellite infrastructure revitalization project, the three ground station antennas were installed on budget and on time: the antenna in Gatineau, QC, was inaugurated in June 2014; the antenna in Inuvik, NWT, was installed during the summer of 2014; and, the second antenna in Prince Albert, SK, was installed during the fall of 2014.

The further development of EO infrastructure at the Inuvik Satellite Station Facility has advanced Canada's northern agenda and received positive support from all stakeholders: the facility has attracted interest from national and international satellite service providers and is on track to become a major satellite destination for Canada and the world. The completion of the EO Data Management System is planned for 2015-16, when data centres capable of storing large volumes of geospatial data acquired through the satellite infrastructure will be operational.

In addition, NRCan improved the operational capacity for flood mapping via Canada's Emergency Geomatics Service, streamlining operational systems across geographical locations and training additional staff for operational response. The Department continues to maintain and update its geospatial datasets (GeoBase) in collaboration with federal, provincial and territorial partners, while defining components for a modernized data exchange environment (GeoBase II).

Internationally, NRCan also continues to deliver targeted products for the Geological Survey of Canada and completed a project supporting Senegal, to establish a modern geospatial data infrastructure. The Senegal project has helped to generate investment from the Canadian private sector through international contracts.

Finally, on February 26, 2015, the United Nations adopted the first Global Geodetic Reference Frame for sustainable development resolution co-sponsored by 52 member states including Canada. NRCan, through the Canadian Geodetic Survey, contributed to this success by providing leadership in the creation of this resolution, which recognizes the growing demand for more precise positioning services, the economic importance of a global geodetic reference frame and the need to improve the global cooperation within geodesy. This resolution will also assist Canada in maintaining and providing access to its fundamental national geodetic reference frame upon which numerous positioning-based services across Canada depend.

Sub-Program 3.2.2: Canada’s Legal Boundaries

Description

Boundary uncertainty undermines public confidence in the property rights system and is a barrier to exercising property and sovereign rights, as well as responsible social and economic development. For the benefit of all Canadians, NRCan ensures boundary certainty through the proper maintenance of the Canada-US international boundary for law enforcement, land administration, customs and immigration, and transboundary resource management; effective boundary surveys of Aboriginal settlement lands to meet Canada's obligations under land claim settlement legislation and treaties; and statutory registration of legal surveys on Canada Lands (the North, Canada's offshore area, Aboriginal Lands and National Parks), essential to the creation of legal property boundaries. The boundary certainty provided by NRCan through this Sub-program enables effective management of Canada lands and collaboration across jurisdictions, which advance the interests of Canada's natural resource sectors, both domestically and internationally.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
12,946,238	13,631,131	684,893

The difference between Planned Spending and Actual Spending is mainly attributed to costs recoverable from Treasury Board and funding received from the operating budget carry forward, which allowed for increased actual spending.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
107	112	5

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Statutory obligations, including interdepartmental commitments, are achieved in support of boundary certainty for Canada (including the Canada-US boundary) and First Nation Lands	Percentage completion of Canadian obligations for Canada-US boundary maintenance requirements established in the semi-annual Commissioners' Meeting Records of Decision	**100%**	**Results: 100%** 100% of obligations from the semi-annual 2013 Annual Joint Report of the International Boundary Commission were completed (IBC completed and is available online). Canadian obligations included: • Vista clearing along 52 km of the Quebec-Vermont boundary and 53 km along the Alaska-Yukon boundary.

			• Surveying 281 km of boundary monuments along a section of the Quebec-Maine border • Refurbishment of 65 monuments needing work along the Quebec-New York boundary. • Commissioners approval of the plan for additional survey work and monument refurbishing for the Alaska-Yukon border was deferred since the options available to complete the work this year did not provide adequate value. • Plans for a redesigned web portal have broadened in scope, and timelines have been extended accordingly.
	Percentage of statutory obligations and interdepartmental commitments achieved as defined in the legislation and agreements for Canada and First Nation lands	**100%**	**Results: 100%** All survey-related work set out in 38 Interdepartmental Agreements with other government departments was completed. Results include 4,843 cadastral parcels created in the cadastral database.

Performance Analysis and Lessons Learned

New National Standards for the Survey of Canada Lands came into effect on January 19, 2015. This revitalization of the *General Instructions of the Surveyor General of Canada Lands* is a key component in positioning the Canada Lands Survey System for the future and improving the efficiency and effectiveness of the System for all stakeholders.

NRCan worked with the Land Titles offices in Nunavut, Yukon and the Northwest Territories (each of which operates within the Canada Lands Survey System) to provide recommendations and support as they modernize their systems. NRCan's Whitehorse regional office also recently provided survey expertise for the new *Condominium Act* and *Land Titles Act* under development in the Yukon.

NRCan continued to provide legal descriptions, as required by the *First Nations Land Management Act*, such that there is no uncertainty as to the parcels and boundaries of the lands that are to be administered under the regime. In 2014-15, 28 new First Nations (i.e., 199 Reserves) joined the development stage of the regime. As part of a process that extends over multiple fiscal years, NRCan is preparing research reports and legal descriptions for each reserve that will, in turn, be used in each First Nation's Land Code.

In 2014-15, a rigorous evaluation of the Canada's Legal Boundaries (CLB) sub-program for the period 2009-10 to 2012-13 was completed and the final report was made available to the public. The CLB sub-program was found to be well-aligned with GC and NRCan strategic priorities and fulfills an appropriate federal role. It is compliant with legal obligations as defined under the *Canada Land Survey Act* and the *International Boundary Commission Act*.

The CLB Sub-program made improvements in response to the evaluation's three recommendations:

1. Delivery of the New National Standards, a maintenance plan for these standards was developed with the Association of Canada Lands Surveyors;
2. As part of its modernization, the International Boundary Commission has significantly improved and streamlined production of the Annual Report that it prepares and delivers annually to DFATD and the US State Department; and
3. To improve the information available to inform decision-making, additional performance measures have been developed and a new process to capture stakeholder feedback has been established.

Sub-Program 3.2.3: Polar Continental Shelf Logistics Support

Description

Researchers in Canada's Arctic and Sub-arctic regions need safe, efficient and cost-effective field logistics support because of the remoteness, harsh weather, and high cost of working in those regions. Through its Polar Continental Shelf Program (PCSP), NRCan coordinates logistics for Canadian government agencies, provincial, territorial and northern organizations, universities and independent groups conducting research, particularly in Canada's North. Through this work, NRCan supports science and government priorities and contributes to the exercise of Canadian Arctic sovereignty. PCSP services include air transportation to and from remote field camps throughout the Canadian Arctic, field equipment and vehicles across Canada, and fuel for aircraft, equipment and camps. They also include meals, accommodations and working space (including a multi-purpose laboratory) at the PCSP facility in Resolute, Nunavut, and a communications network that links the PCSP with science teams in field camps dispersed throughout the Canadian Arctic.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
7,393,579	12,182,031	4,788,452

The difference between Planned Spending and Actual Spending is mainly attributed to a transfer from the Department of National Defence for the Canadian Forces Arctic Training Centre and a transfer from AANDC for the Canadian High Arctic Research Station science and technology program. In addition, funding received from the operating budget carry forward has allowed for increased actual spending.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
30	28	(2)

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
Canadian Arctic researchers and federal government departments and agencies receive the requested PCSP field logistics support	Percentage of valid requests for logistics support received and supported by PCSP	**95%**	**Results: 97%** 97% of requests for logistics were support by PCSP in 2014-15.

Performance Analysis and Lessons Learned

The Polar Continental Shelf Program (PCSP) provides safe, efficient and cost-effective logistics services to scientists from universities, government and non-governmental organizations. The PCSP has established formal partnerships with the Canadian High Arctic Research Station, the NRCan Geo-Mapping for Energy and Minerals program and the Canadian Armed Forces Arctic Training Centre. Using the PCSP's whole of government approach, these partnerships have helped enhanced the PCSP's ability to provide logistics support to scientific research across the Arctic.

In 2014-15, the PCSP provided logistics support to 151 projects in the Arctic and field equipment to more than 290 projects across the Canadian landmass. The PCSP also provided more than 12,400 person nights of accommodation at its facility in Resolute and coordinated more than 4,500 hours of flying on chartered aircraft. The results of the projects supported by the PCSP help ensure that Canadians have information to manage their lands and natural resources.

Sub-Program 3.2.4: United Nations Convention on the Law of the Sea

Description

Ratification of the United Nations Convention on the Law of the Sea requires Canada to submit the case for extending the outer limits of its offshore beyond 200 nautical miles to the UN Commission on the Limits of the Continental Shelf by December 2013. Through this Sub-program, NRCan conducts seabed and seismic surveys to compile accurate coordinates on the limits of the continental shelf area, as well as to support DFATD with the presentation, interpretation and defence of the scientific evidence included in the formal submission. If successful in defending the case, Canada will secure international recognition for this precisely

determined extended area over which it may exercise sovereign rights over the natural resources of the seabed and subsoil.

Budgetary Financial Resources (dollars)

2014-15 Planned Spending	2014-15 Actual Spending	2014-15 Difference (actual minus planned)
388,292	15,700,605	15,312,313

The difference between Planned Spending and Actual Spending is mainly attributed to funding received for the United Nations Convention on the Law of the Sea (UNCLOS).

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
2	11	9

The difference between Planned FTEs and Actual FTEs is a result of FTEs transferred from sub-program 3.2.1 Essential Geographic Information.

Performance Results

Expected Results	Performance Indicators	Targets	Actual Results
DFATD presents a comprehensive, scientifically sound report for Canada's claim to the Commission on the Limits of the Continental Shelf beyond 200 nautical miles	Percentage of necessary scientific and technical data and analysis delivered to DFATD for the presentation of Canada's claim to the Commission on the Limits of the Continental Shelf beyond 200 nautical miles	**100%**	**Results: On track** In 2014, a new data collection program was initiated focusing on the Lomonosov Ridge in the Eastern Arctic. The program builds on the successful completion of previous stages of the program which included data collection and submission for the Atlantic Ocean, and data collection in the Western Arctic Ocean

Performance Analysis and Lessons Learned

Delineating the outer limits of the continental shelf in the Atlantic and Arctic Oceans is a priority articulated by the GC in the 2007 Speech from the Throne, the 2008 and 2014 Budgets, the Northern Strategy, and the Arctic Foreign Policy Statement.

Since 2004, Canada’s Extended Continental Shelf program has been acquiring and interpreting scientific data in the Atlantic and Arctic Oceans (2006-2012 and 2014) to support the preparation of Canada’s submission to the Commission on the Limits of the Continental Shelf. The program is a horizontal initiative involving DFATD, NRCan and the DFO. NRCan and DFO are responsible for collecting data, interpreting it, preparing the submission from a scientific and

technical standpoint, and supporting engagement with the Commission as it considers Canada's submission.

In December 2013, the Government decided that more work should be undertaken with regard to the Arctic portion of Canada's submission, to maximize Canada's extended continental shelf in the vicinity of the North Pole and along the Lomonosov Ridge. In July 2014, $53.6 million in funding was approved over seven years to undertake new data collection, including two years of seismic and bathymetric surveys (2014 and 2015), and to prepare Canada's Arctic submission.

In August and September of 2014, the UNCLOS program undertook the first of two surveys in the eastern Arctic Ocean, acquiring new bathymetric and limited seismic data (to determine, respectively, the shape of the seabed and the geological structure below the seabed). In the western Arctic Ocean, the survey helped fill a data gap from previous missions by acquiring new seismic data. Challenging ice conditions and vessel limitations during the 2014 expedition mean that work remains to be done in the eastern Arctic.

Internal Services

Description

Internal Services are groups of related activities and resources that are administered to support the needs of programs and other corporate obligations of an organization. These groups are: Management and Oversight Services; Communications Services; Legal Services; Human Resources Management Services; Financial Management Services; Information Management Services; Information Technology Services; Real Property Services; Materiel Services; Acquisition Services; and Other Administrative Services. Internal Services include only those activities and resources that apply across an organization and not to those provided specifically to a program.

Budgetary Financial Resources (dollars)

2014-15 Main Estimates	2014-15 Planned Spending	2014-15 Total Authorities Available for Use	2014-15 Actual Spending (authorities used)	2014-15 Difference (actual minus planned)
158,919,551	158,919,551	169,193,761	162,499,616	3,580,065

The difference between Planned Spending and Actual Spending is mainly attributed to funding received through Supplementary Estimates for internal service support related to new and renewed initiatives. In addition, spending originally planned for other programs that was subsequently spent in Internal Services, the operating budget carry forward, collective bargaining increases and costs recoverable from Treasury Board have allowed for increased actual spending. Offsetting these increases in funding are surpluses as a result of employee departures, delays in staffing, and employees on leave as well as reduced travel costs.

Human Resources (FTEs)

2014-15 Planned	2014-15 Actual	2014-15 Difference (actual minus planned)
1,003	946	(57)

The difference between Planned FTEs and Actual FTEs relates to employee departures and the continued efforts to reduce personnel through attrition, as well as the transfer of FTEs to other programs in the department.

Performance Analysis and Lessons Learned

NRCan's Internal Services program includes a range of policy coordination, international engagement, S&T and corporate activities.

Policy Coordination

In 2014-15, NRCan established the *Extractive Sector Transparency Measures Act* (ESTMA) in response to the Prime Minister 2013 G8 commitment to deter corruption in the extractives sector through transparency measures. The Act requires the reporting of certain payments made to all

levels of governments domestically and abroad. The ESTMA received Royal Assent on December 16, 2014, and came into force on June 1, 2015.

International Engagement

Internationally, the Canada-EU High Level Energy Dialogue was relaunched after the Canada-EU Summit of September 2014, when leaders committed to renewed collaboration in the field of energy. This Dialogue will allow Canada to cooperate with the EU on key energy areas including oil and gas markets, science and technology/R&D cooperation, renewables, and co-operation in international fora, with a particular focus on Ukraine.

Science and Technology

To better **mobilize its science and technology** (S&T), the Department shared its Intellectual Property best practices with respect to publishing and licensing by releasing *A Guide for NRCan Managers*. NRCan also published its first *S&T Annual Report*, highlighting the accomplishments of Signature S&T Projects and demonstrating how these projects advance NRCan's strategic outcomes.

To identify opportunities to establish **new domestic S&T partnerships**, NRCan compiled an inventory of thirteen S&T collaboration instruments that have been entered into at the Deputy Minister or Ministerial level. Many of these S&T collaborations are with academia, focusing on increasing NRCan’s originality and quantity of research relevant to competitiveness, energy and the environment. On the international front, in 2014-15, the Canada-US Clean Energy Dialogue (CED) released its Third Report to Leaders in 2014, outlining joint Canada-US achievements in working groups focused on Carbon Capture and Storage, Integrating Renewable Power into the Grid, as well as Clean Energy R&D and Energy Efficiency. High-level engagement in 2014-15 with China also led to agreements on nuclear collaboration, clean technology, mining, and professional exchanges.

Corporate Activities

In support of its **Blueprint 2020** Action Plan, the Department launched an NRCan Speakers Series and the Natural Resources Economic Analysis Network of experts in economic analysis related to natural resources, hosted a Fail Faire for the federal government (providing tools to support learning from responsible risk-taking), and implemented an Upward Feedback pilot project.

To implement the new government-wide **Performance Management Directive**, NRCan took steps to maximize engagement to ensure a consistent approach across the organization. Tracking

at year-end indicated that more than 91% of employees had completed their year-end assessments. NRCan also completed the implementation of Common Human Resources Business Processes (CHRBP) and it will continue to leverage the CHRBP to modernize its human resource processes.

To complement its Values and Ethics (V&E) Code, the Department defined a **governance structure to support V&E activities** within NRCan, and developed tools and resources for employees including mandatory Conflict of Interest training. To implement the *Public Servants Disclosure Protection Act* (PSDPA), the NRCan Senior Officer for Internal Disclosure established internal procedures and processes that permit the disclosure of wrongdoing by NRCan employees with confidence that they will be treated fairly and protected from reprisal.

To support **transformation of the Department's business practices**, NRCan has fully implemented the GC's new Shared Travel Services portal and continues to work with Treasury Board on the implementation of the Common Financial Management Business Processes. With respect to monitoring financial pressures related to real property assets, NRCan developed a draft national accommodation strategy and national portfolio strategy. The Department continued to optimize office accommodation through workplace densification, re-location and the termination of leases.

On the information management and technology (IMT) front, NRCan **completed the implementation of GCDOCS**, the official enterprise document and records management solution for the GC. Senior management receives monthly reports of user adoption metrics, and surveys are also being conducted to measure progress across sectors in adopting and using the system. The Department also continued its efforts to decrease expenditures on IMT through the reorganization and streamlining of IMT processes. NRCan redefined its partnership with Shared Services Canada (SSC) to ensure that the Department is well positioned to deliver on the SSC mandate and cost savings commitments. Achievements in 2014-15 include migrating 90% of NRCan's Blackberries to the BB10 platform, implementing the Cost Effective Telephone Services Initiative (CETSI) and obtaining bandwidth upgrades from SSC throughout the regions to address NRCan network issues identified from Town Halls with the Deputy Ministers.

NRCan launched the **Cyber Security Action Plan**, a department-wide initiative to implement controls and reduce the Department's exposure to cyber-related vulnerabilities across the enterprise. The Department has made great progress to date, conducting vulnerability assessments and implementing key security controls to protect the NRCan's systems from cyber-attacks as well as detecting and monitoring intrusions.

To **improve tracking of the efficiency and effectiveness of its overall operations**, NRCan renewed the Department's Integrated Risk Management Policy Framework, drawing on best practices and recommendations from a recent internal audit; and developed capacity on the Lean approach to business processes and applied it to streamline processes such as travel approvals.

NRCan has worked with the Treasury Board Secretariat and with the relevant lead departments to support each new release of the Canada.ca Website. NRCan has consistently met every deliverable under **Web Renewal** and will continue to do so in 2015-2016.

The Department also adopted a streamlined approach to **investment planning and project management**, including clarifying thresholds for defining investments and projects, clarifying governance and process steps.

Reporting on NRCan's achievements with respect to **Greening Government Operations** can be found in the Supplementary Table on the Departmental Sustainable Development Strategy.

Section III: Supplementary Information

Financial Statements Highlights

The financial highlights are intended to provide a general overview of the Department's financial position and the net cost of operations before government funding and transfers. The financial highlights presented in this section are drawn from NRCan's consolidated financial statements and have been prepared in accordance with Treasury Board accounting policies, which are based on Canadian public sector accounting standards.

Condensed Consolidated Statement of Operations (unaudited)
For the Year Ended March 31, 2015
(dollars)

Financial Information	2014-15 Planned Results	2014-15 Actual	2013-14 Actual	Difference between 2014-15 Actual and Planned Results	Difference between 2014-15 and 2013-14 Actuals
Total expenses	2,475,529,361	2,100,576,784	2,050,897,311	(374,952,577)	49,679,473
Total net revenues	35,050,952	25,896,040	29,222,000	(9,154,912)	(3,325,960)
Net cost of operations before government funding and transfers	2,440,478,409	2,074,680,744	2,021,675,311	(365,797,665)	53,005,433

Difference between 2014-15 Actual and Planned Results

The 2014-15 Planned Results are derived from the amounts presented in the 2014-15 Future-Oriented Statement of Operations and included in NRCan's 2014-15 Report on Plans and Priorities. The planned results were based on several assumptions and information known at that time.

The overall difference in the total expenses between the 2014-15 planned results of $2,476 million and the 2014-15 actual of $2,101 million represents $375 million, or 15% of overestimated expenses. This is mainly attributable to:

- A $442 million decrease in Atlantic Offshore Statutory Programs (mainly due to decreased oil prices);

- A $184 million decrease under Energy-Efficient Practices and Lower Carbon Energy Sources, due in most part to:
    - The funding allocated for Sustainable Development Technology Canada Next Generation Biofuels fund, for the statutory amount of $79.3 million and voted amount of $25 million, was not required in 2014-15; and
    - The ecoENERGY for Biofuels program of $45.1 million and the ecoENERGY Renewable Power program of $4.8 million, where the contribution programs are based on production levels, had lapses as a result of proponents producing less, therefore claiming less than the maximum allowable under their contribution agreement. Furthermore, due to market challenges several producers were unable to meet their contractual terms and their agreements were terminated.
- A $194 million increase under Responsible Natural Resource Management mainly attributed to the funding received for the Nuclear Legacy Liabilities Program of $195 million through Supplementary Estimates.
- A $26 million increase under Landmass Information mainly attributed to funding received through Supplementary Estimates related to the UNCLOS of $19 million.

Difference between 2014-15 and 2013-14 Actuals

Total actual expenses were $2,101 million in 2014-15 compared to $2,051 million in 2013-14 for a net increase of $50 million or 2.4%, which is mainly attributable to a $42 million increase operating expenses. This net increase in operating expenses is mainly due to:

- A $49 million increase in environmental expenses due to re-profiling of remediation activities to future years and indexing these related costs; and
- A $26 million increase in rental expenses, mainly attributable to the Service Level Agreement of $13 million for rental of a vessel for the 2014 Arctic Exploration Survey related to the UNCLOS, and a $3 million increase related to a building lease; offset by
- A $39 million decrease in salaries and employee benefits.

The chart presenting NRCan’s actual expenses by type for 2014-15 is available on the NRCan website.

The planned net revenues of $35 million were based on historical data. The actual net revenues were $26 million in 2014-15 compared to $29 million in 2013-14, for a net decrease of $3 million.

Condensed Consolidated Statement of Financial Position (unaudited)
As at March 31, 2015
(dollars)

Financial Information	2014-15	2013-14	Difference between 2014-15 and 2013-14
Total net liabilities	1,579,823,467	1,679,609,461	(99,785,994)
Total net financial assets	378,181,969	492,475,117	(114,293,148)
Departmental net debt	1,201,641,498	1,187,134,344	14,507,154
Total non-financial assets	267,355,166	263,100,053	4,255,113
Departmental net financial position	(934,286,332)	(924,034,291)	(10,252,041)

Total net liabilities were $1,580 million in 2014-15, compared to $1,680 million in 2013-14, for in a decrease of $100 million or 6%. This variance is mainly attributable to a $90 million decrease in accounts payable and accrued liabilities mainly for the Newfoundland Offshore Petroleum Resource Revenue Fund and the Nova Scotia Offshore Revenue Account due to oil price fluctuations.

Total net financial assets were $378 million in 2014-15, compared to $492 million in 2013-14, for a net decrease of $114 million or 23%. This variance is attributable to the decrease in the account Due from Consolidated Revenue Fund (CRF) of $114 million, which represents the net amount of cash the Department is entitled to draw from the CRF without further appropriations. The decrease is mainly due to the decrease in accounts payable and accrued liabilities at year-end.

The overall difference between the total net liabilities and total net financial assets are then reflected in the Departmental net debt.

Total non-financial assets, which include prepayments, inventory and tangible capital assets were $267 million in 2014-15, compared to $263 million in 2013-14 for a net increase of $4 million. This variance is mainly due to the increase in prepayments.

The total non-financial assets are then subtracted from the Departmental net debt to reflect the Departmental net financial position.

Financial Statements

NRCan's consolidated financial statements are available online at:
http://www.nrcan.gc.ca/plans-performance-reports/197[xiii]

NRCan's future-oriented statement of operations is available online at:
http://www.nrcan.gc.ca/plans-performance-reports/2014-15/15464[xiv]

Supplementary Information Tables

The supplementary information tables listed in the *2014-15 Departmental Performance Report* are available on the NRCan's website[xv].

- Departmental Sustainable Development Strategy;
- Details on Transfer Payment Programs of $5 million or More;
- Horizontal Initiatives;
- Internal Audits and Evaluations;
- Response to Parliamentary Committees and External Audits;
- Status Report on Transformational and Major Crown Projects;
- Status Report on Projects Operating with Specific Treasury Board Approval;
- Up-Front Multi-Year Funding; and
- User Fees, Regulatory Charges and External Fees.

Tax Expenditures and Evaluations

The tax system can be used to achieve public policy objectives through the application of special measures such as low tax rates, exemptions, deductions, deferrals and credits. The Department of Finance Canada publishes cost estimates and projections for these measures annually in the Tax Expenditures and Evaluations[xvi] publication. The tax measures presented in the Tax Expenditures and Evaluations publication are the responsibility of the Minister of Finance.

Section IV: Organizational Contact Information

Natural Resources Canada

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Canada

Appendix: Definitions

appropriation (*crédit*): Any authority of Parliament to pay money out of the Consolidated Revenue Fund.

budgetary expenditures (*dépenses budgétaires*): Includes operating and capital expenditures; transfer payments to other levels of government, organizations or individuals; and payments to Crown corporations.

costs recoverable from Treasury Board *(frais recouvrables auprès du Conseil du Trésor)*: Include parental benefits, severance pay, and vacation credits payable upon termination. As authority is provided to the Department to make these payments during the year, they are not included in the planned spending.

Departmental Performance Report (*rapport ministériel sur le rendement*): Reports on an appropriated organization's actual accomplishments against the plans, priorities and expected results set out in the corresponding Report on Plans and Priorities. These reports are tabled in Parliament in the fall.

full-time equivalent (*équivalent temps plein*): Is a measure of the extent to which an employee represents a full person-year charge against a departmental budget. Full-time equivalents are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

Government of Canada outcomes (*résultats du gouvernement du Canada*): A set of 16 high-level objectives defined for the government as a whole, grouped in four spending areas: economic affairs, social affairs, international affairs and government affairs.

Management, Resources and Results Structure (*Structure de la gestion, des ressources et des résultats*): A comprehensive framework that consists of an organization's inventory of programs, resources, results, performance indicators and governance information. Programs and results are depicted in their hierarchical relationship to each other and to the Strategic Outcome(s) to which they contribute. The Management, Resources and Results Structure is developed from the Program Alignment Architecture.

non-budgetary expenditures (*dépenses non budgétaires*): Includes net outlays and receipts related to loans, investments and advances, which change the composition of the financial assets of the GC.

performance (*rendement*): What an organization did with its resources to achieve its results, how well those results compare to what the organization intended to achieve and how well lessons learned have been identified.

performance indicator (*indicateur de rendement*): A qualitative or quantitative means of measuring an output or outcome, with the intention of gauging the performance of an organization, program, policy or initiative respecting expected results.

performance reporting (*production de rapports sur le rendement*): The process of communicating evidence-based performance information. Performance reporting supports decision-making, accountability and transparency.

planned spending (*dépenses prévues*): For Reports on Plans and Priorities (RPPs) and Departmental Performance Reports (DPRs), planned spending refers to those amounts that receive Treasury Board approval by February 1. Therefore, planned spending may include amounts incremental to planned expenditures presented in the Main Estimates.

A department is expected to be aware of the authorities that it has sought and received. The determination of planned spending is a departmental responsibility, and departments must be able to defend the expenditure and accrual numbers presented in their RPPs and DPRs.

plan (*plan*): The articulation of strategic choices, which provides information on how an organization intends to achieve its priorities and associated results. Generally a plan will explain the logic behind the strategies chosen and tend to focus on actions that lead up to the expected result.

priorities (*priorité*): Plans or projects that an organization has chosen to focus and report on during the planning period. Priorities represent the things that are most important or what must be done first to support the achievement of the desired Strategic Outcome(s).

program (*programme*): A group of related resource inputs and activities that are managed to meet specific needs and to achieve intended results and that are treated as a budgetary unit.

Program Alignment Architecture (*architecture d'alignement des programmes*)**:** A structured inventory of an organization's programs depicting the hierarchical relationship between programs and the Strategic Outcome(s) to which they contribute.

Report on Plans and Priorities (*rapport sur les plans et les priorités*): Provides information on the plans and expected performance of appropriated organizations over a three-year period. These reports are tabled in Parliament each spring.

result (*résultat*): An external consequence attributed, in part, to an organization, policy, program or initiative. Results are not within the control of a single organization, policy, program or initiative; instead they are within the area of the organization's influence.

statutory expenditures (*dépenses législatives*): Expenditures that Parliament has approved through legislation other than appropriation acts. The legislation sets out the purpose of the expenditures and the terms and conditions under which they may be made.

Strategic Outcome (*résultat stratégique*): A long-term and enduring benefit to Canadians that is linked to the organization's mandate, vision and core functions.

sunset program (*programme temporisé*): A time-limited program that does not have an ongoing funding and policy authority. When the program is set to expire, a decision must be made whether to continue the program. In the case of a renewal, the decision specifies the scope, funding level and duration.

target (*cible*): A measurable performance or success level that an organization, program or initiative plans to achieve within a specified time period. Targets can be either quantitative or qualitative.

voted expenditures (*dépenses votées*): Expenditures that Parliament approves annually through an Appropriation Act. The Vote wording becomes the governing conditions under which these expenditures may be made.

vote netted revenue (*revenu des crédits nets*):Vote netted revenue authority allows the department to charge fees for a service, a product, or the use of departmental facilities and to spend the revenues received on directly related expenditures within the same fiscal year.

whole-of-government framework (*cadre pangouvernemental*): Maps the financial contributions of federal organizations receiving appropriations by aligning their Programs to a set of 16 government-wide, high-level outcome areas, grouped under four spending areas.

Endnotes

i. Atomic Energy of Canada Ltd, http://www.aecl.ca/en/home/default.aspx
ii. National Energy Board, http://www.neb.gc.ca/clf-nsi/rcmmn/hm-eng.html
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