# Natural Resources Canada

2015–16

## Departmental Performance Report

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

Cat. No. M2-9/2016E-PDF ISSN 2368-2310

Aussi disponible en français sous le titre : Rapport ministériel sur le rendement, Ressources naturelles Canada : 2015-2016

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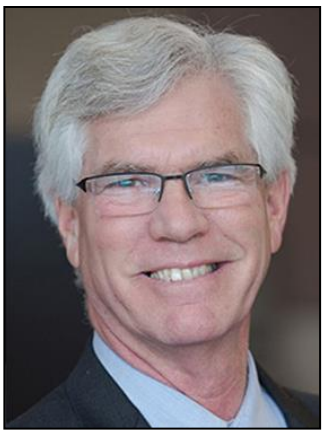
# Minister's Message



I am pleased to present the 2015–2016 Departmental Performance Report for Natural Resources Canada (NRCan).

While the report's focus is necessarily retrospective, it reflects a forward-looking department leading the way on issues that matter to Canadians. Today's headlines read like an overview of NRCan priorities: climate change and the increasing use of renewable energy, Canada's relationship with Indigenous communities, the imperative of innovation and the acceleration of continental collaboration.

To address these issues, and reflective of the mandate letter given to me by the Prime Minister, the Department is focusing on resetting the tone of its relationship with Canadians. And while we recognize that helping to get our natural resources to market is a core responsibility of the federal government, doing so is only possible if Canadians have confidence in the way that major energy projects are reviewed.

This requires engaging meaningfully with Indigenous communities, strengthening our environmental assessment approach, modernizing the National Energy Board, basing decisions on science and providing opportunities for Canadians to have their say and contribute their ideas. The past year has seen important developments in all of these areas.

The Department has made progress on the international front as well. We have signed unprecedented agreements with Mexico and the United States, culminating with the North American Leaders' Summit in Ottawa in June, where the three leaders signed an action plan on climate, clean energy and environmental partnership.

In the past year, Canada became one of the founding members of Mission Innovation, an international partnership of 20 countries and the European Union, committed to doubling their investments in clean technologies over five years. Together with the private sector-led Breakthrough Energy Coalition, Mission Innovation will accelerate the clean energy revolution and create opportunities for Canadians for decades to come.

This performance report provides greater detail on all of these initiatives and many more, including completion of the restructuring of Atomic Energy Canada Limited, new offshore legislation and important collaboration with industry in mining, forestry and earth sciences. It also sets out a work plan to deliver results, ensure openness and provide opportunities for feedback.

More broadly, this report captures the work of NRCan at a critical moment in our history – a time when Canada is making the transition to a lower-carbon future while finding greener ways of developing our resources. In those efforts, it presents a department engaged with Canadians and the world, contributing to a brighter, cleaner and more prosperous future.

It's an exciting time to be making a difference.

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

# Results Highlights

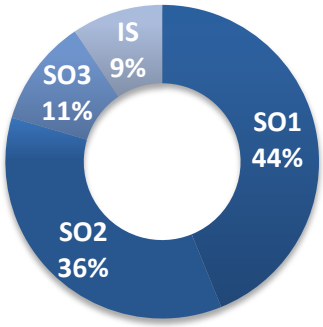
*"Protecting the environment and growing the economy are not incompatible goals; in fact, our future success demands that we do both."*

**Speech from the Throne, 2015**

- **November 2015** – Canada signed onto Mission Innovation, committing to double federal investment in clean energy innovation over five years and work with global partners to better environmental outcomes through reduced greenhouse gas emissions.
- **January 2016** – While the Government completes its review of environmental assessment processes, interim principles and measures were introduced to restore trust in environmental assessments associated with major natural resource project reviews underway by the National Energy Board. Actions include: deeper consultations with Indigenous peoples; public engagement via online questionnaires; assess upstream green house gas emissions associated with projects; and extension of legislated time limits to ensure measures can be met.
- **February 2016** – Canada, the United States (U.S.), and Mexico signed a trilateral Memorandum of Understanding (MOU) on Climate Change and Energy Collaboration to accelerate clean energy innovation, share energy information, and address climate change associated with energy production, transmission and use through continental clean energy cooperation.
- **March 2016** – Prime Minister Justin Trudeau and First Ministers released the Vancouver Declaration on clean growth and climate change to work collaboratively towards finalization of the pan-Canadian framework and build the clean growth economy.

**Actual Spending 2015-16**

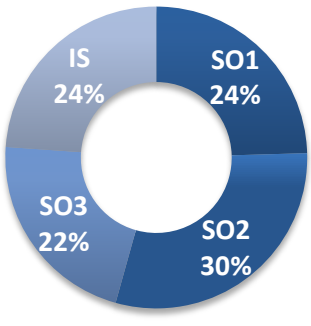
$1,335 million




- Strategic Outcome 1 (SO1): Canada's Natural Resource Sectors are Globally Competitive
- Strategic Outcome 2 (SO2): Natural Resource Sectors and Consumers are Environmentally Responsible
- Strategic Outcome 3 (SO3): Canadians have Information to Manage their Lands and Natural Resources, and are Protected from Related Risks
- Internal Services

**Actual FTEs 2015-16**

3936



# Section I: Organizational Overview

## Organizational Profile

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

**Institutional Head:** Christyne Tremblay

**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)[1]; and
- Energy Supplies Allocation Board (ESAB) (inactive).

**Year of Incorporation / Commencement:** 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
- *Energy Efficiency Act*,[xi] S.C. 1992, c. 36

[1] On November 4, 2015, an Order-in-Council designated the Minister of Industry (now the Minister of Innovation, Science and Economic Development) as the Minister for the purposes of the *Canada Foundation for Sustainable Development Technology Act*.

# Organizational Context

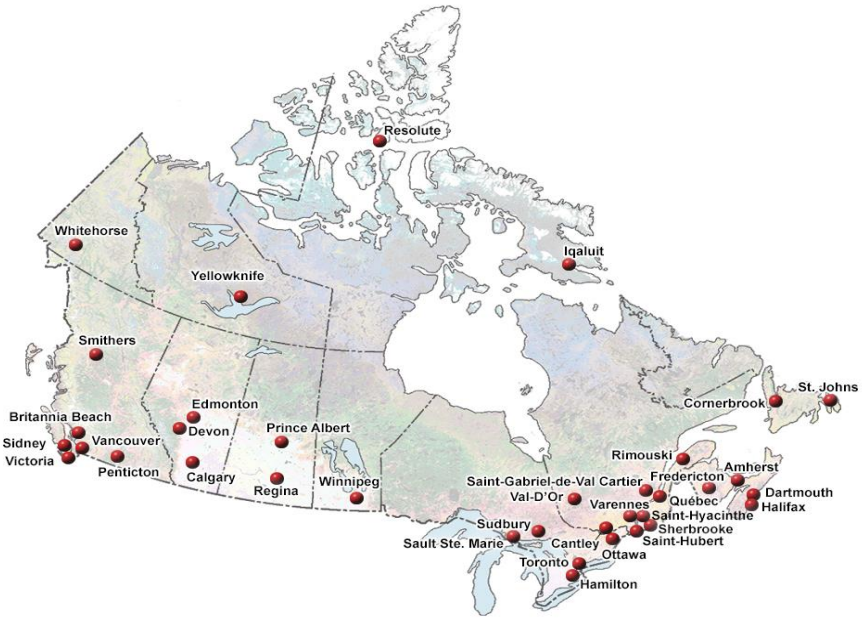
## Raison d'être

The vision of NRCan is to improve the quality of life of Canadians by creating a sustainable resource advantage – now and for the future. It seeks to achieve this vision by working to improve the competitiveness of the natural resource sectors and to grow their contribution to Canada's economy. NRCan supports the responsible development of Canada's resources in a manner that advances the country's global standing as a leader on the environment, and uses its knowledge and expertise of Canada's landmass to support the safety and security of citizens.

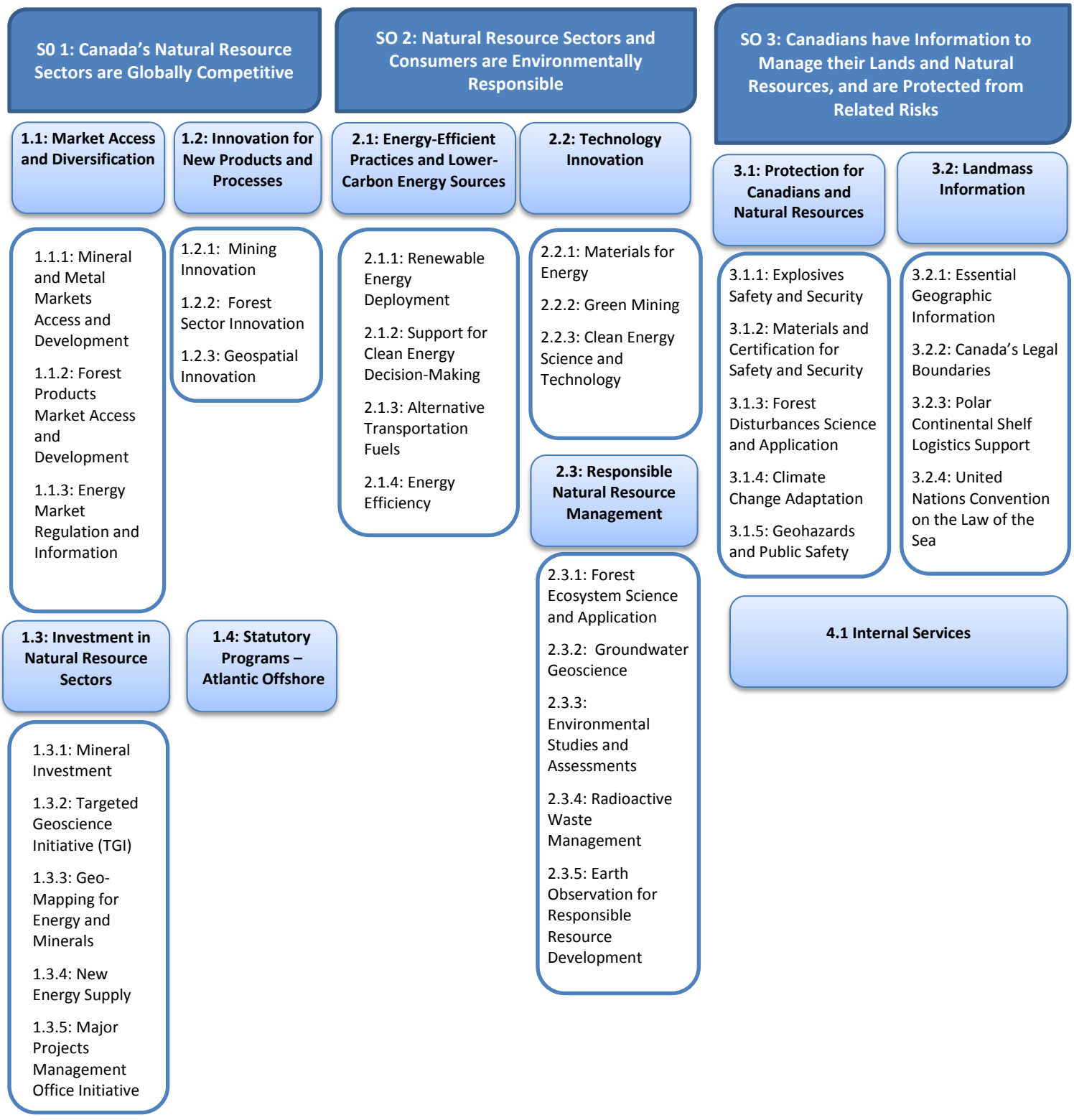
## Responsibilities

The Minister of Natural Resources has responsibilities in relation to 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*, the *Forestry Act* and the *Energy Efficiency Act*. The Department also works in areas of shared responsibilities with provinces, which include the environment, public safety, economic development, science and technology, and consultations with Indigenous Peoples. To fulfil its responsibilities, the Department relies on a number of instruments (e.g., policy, regulation, statutory transfers, grants and contributions) and key activities (e.g., science and technology, partnerships and communications).

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



# Strategic Outcomes and Program Alignment Architecture



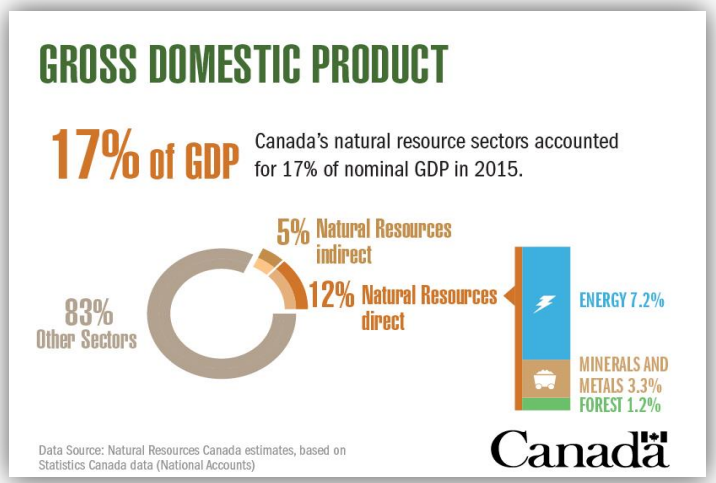
## Operating Environment and Risk Analysis

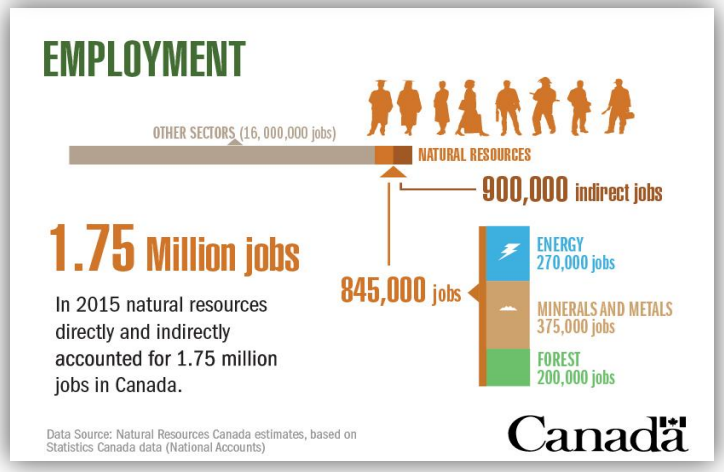
Canada is a nation rich in natural resources. Its energy, minerals and metals and forest resources bring large economic benefits, accounting for about 17 percent of Canada's nominal gross domestic product (GDP), 1.75 million jobs and approximately half of Canada's merchandise exports ($220 billion in 2015).

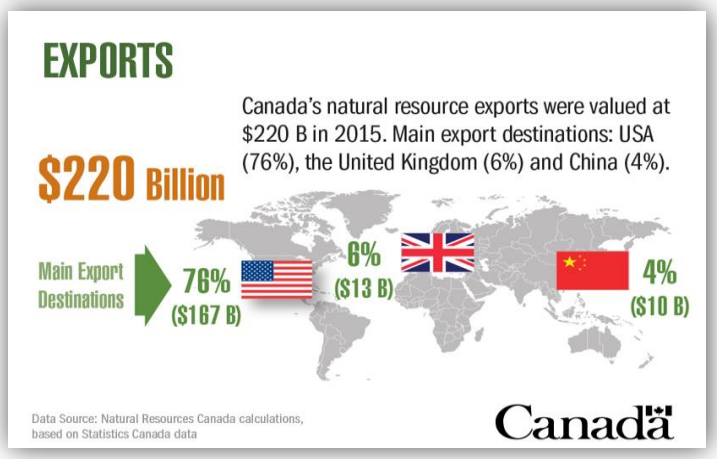
Natural resources are also critical determinants of Canada's environmental performance. Their development and use accounts for the vast majority of our greenhouse gas (GHG) emissions and affect air, water and soil quality, public health and safety, and biodiversity and conservation.

Natural resources are thus at the nexus of Canada's economic and environmental agendas. Our collective challenge, which is also our key opportunity, is to set and implement a plan ensuring the growth of the resource sectors, while protecting the environment.

The Paris Agreement, which aims to limit the global average temperature rise to well below 2 degrees Celsius, includes clear targets and timelines. For Canada, it means reducing GHG emissions by 30 percent from the 2005 level by 2030.



In 2014, Canada's total GHG emissions were 732 megatonnes (Mt) of carbon dioxide equivalent ($CO_2$ eq), or 20 percent (120 Mt $CO_2$ eq) above the 1990 emissions of 613 Mt $CO_2$ eq.[xii] Reaching the 2030 target will be challenging; success will require a concerted effort from all Canadians.

Another key challenge is effective stakeholder engagement – from other federal departments to provincial and territorial governments and Indigenous communities, from natural resource industries to consumers and academia. Evolving jurisprudence on consultations with Indigenous communities has also called into question what constituted meaningful consultations, a key decision-making component on projects impacting traditional lands.

Natural resource industry revenues have also been affected by lower commodity prices. Crude oil and liquefied natural gas prices have fallen by over 60 percent since June 2014; similarly, mineral and metal prices have been on a downward trend since 2011 and hit significant lows in 2015-16. Market access, investment climate, wildfires, hazards and emergency management remain ever-present risks requiring NRCan's continued attention.

Working together and implementing a sound plan will set the foundation for providing Canada with a competitive advantage, improving public confidence in the regulatory system and will help to set the global standard for environmental excellence.

The key strategies deployed by the Department to manage these risks are outlined below.

## Key Risks

| Risk | Risk Response Strategy | Link to the Organization's Programs |
|---|---|---|
| **Climate Change** | | |
| If Canada's actions to meet international climate change commitments are insufficient and if Canada fails to keep pace in adapting to climate change, then the competitiveness of Canada's natural resource sectors could be threatened. | In 2015-16, NRCan's risk response included:<br>• Engaging with provinces and territories to advance the pan-Canadian Framework on Clean Growth and Climate Change and the Canadian Energy Strategy, to support the transition towards a lower carbon future and ensure Canada is a global leader in the sustainable development and the use of the full range of its energy assets; and<br>• Increasing collaboration with the U.S. and Mexico by signing the Memorandum of Understanding (MOU) on Climate Change and Energy Collaboration, which not only addresses climate change and clean energy innovation, but also creates new business opportunities | Canada's Natural Resource Sectors are Globally Competitive<br><br>Natural Resource Sectors and Consumers are Environmentally Responsible |

| | | |
|---|---|---|
| | for Canadian energy technologies, products and services.<br><br>Budget 2016 also provided funding for electric transportation infrastructure and demonstrations of clean technologies while earmarking over $1 billion for the development of a clean technology strategy including for natural resource sectors. | |
| **Market Access and Investment Climate** | | |
| If Canada fails to respond to changing market dynamics such as shifting energy demand to new markets and declining demand from the U.S. or fails to maintain an appropriate investment climate, then energy resource sectors may lose opportunities. | In 2015-16, NRCan's risk response included:<br><br>• Promoting international partnerships through bilateral and multilateral engagement at G7 and G20 meetings to position Canada as the partner of choice for trade and investment in key markets, increasing Canada's stature and credibility and creating opportunities for Canadian industry;<br>• Joining Mission Innovation, a global initiative of 20 countries and the EU, to take action to push clean energy research, development and demonstration, driving transformative clean energy solutions for the future;<br>• Strengthening partnerships with the U.S. and Mexico on key North American energy priorities through the successful signing of the Canada-U.S.-Mexico MOU on Climate Change and Energy Collaboration;<br>• Building on partnerships with provinces and territories to identify and advance areas for collaboration including the Canadian Energy Strategy;<br>• Updating the legislative and regulatory regime for oil and gas development including:<br>  ○ Supporting Environment and Climate Change Canada (ECCC) as it undertakes its review of the federal environmental assessment process;<br>  ○ Leading the modernization of the NEB;<br>  ○ Implementing measures to ensure that decision-making processes for federally-regulated pipeline projects which have already been initiated are inclusive and demonstrate effective use of evidence from consultations and public engagement; and<br>• Collaborating and engaging with Northerners and their institutions to maximize benefits for Northerners from NRCan's Geo-Mapping for Energy and Minerals program.<br><br>Funding was announced in Budget 2016 to:<br><br>• Demonstrate electric vehicle charging infrastructure ($46.1 million over two years);<br>• Demonstrate renewable energy, energy storage and clean transportation technologies to reduce diesel ($82.5 million over two years);<br>• Demonstrate energy-efficient steam generation technologies to reduce emissions and water use in unconventional oil and gas operations ($50 million over two years); and | Canada's Natural Resource Sectors are Globally Competitive<br><br>Natural Resource Sectors and Consumers are Environmentally Responsible |

| | | |
|---|---|---|
| | • Develop, with StatsCan and ISED, core metrics for the clean energy sector and its impact ($2.1 million over two years).<br><br>Budget 2016 also earmarked over $1 billion over four years, starting in 2017-18 to support clean technology including in the natural resource sector. | |
| **Hazards and Emergency Management** | | |
| If Canada does not have sufficient safeguards in the event of a natural or human-driven incident, then it may negatively impact Canadians, the security of Canada's natural resource infrastructure and Canada's overall economy. | In 2015-16, NRCan's risk response included:<br>• Providing advice and information (e.g., seismic hazard models) to inform the 2015-2020 update of *National Building Code of Canada*;<br>• The coming into force of the *Pipeline Safety Act*, which strengthens Canada's pipeline safety system based on prevention, preparedness and response, liability and compensation;<br>• Securing support through Budget 2016 to build the science base (e.g., information, tools) to support climate change adaptation and resilient infrastructure;<br>• Continuing support for a major 5-year refresh of the technology underlying the National Earthquake monitoring infrastructure;<br>• Conducting annual offshore emergency preparedness incident simulations in conjunction with provinces, boards and other government departments;<br>• Providing new climate change geoscience data and developing a preliminary coastal erosion model to support the construction and security of critical infrastructure in northern Canada;<br>• Disseminating notifications for all earthquakes within Canada larger than magnitude 4.0, within four minutes or less from the time of sufficient data availability, to emergency management organizations, critical infrastructure operators, media outlets, and the public through web sites and social media; and<br>• Collaborating with and providing geohazards information, knowledge products and services to governments, the private sector, media and non-governmental organizations. | Canadians have Information to Manage their Lands and Natural Resources, and are Protected from Related Risks |

## Organizational Priorities

While NRCan's core mandate remains anchored in its enabling legislation (see Organizational Context), the Department's priorities shift from year to year in response to the global and domestic context (see Operating Environment and Risk Analysis).

In November 2015, the Prime Minister asked Minister Carr, through his mandate letter, to:

- Work collaboratively with provinces and territories to advance the Canadian Energy Strategy;
- Work with the Minister of Innovation, Science and Economic Development and other responsible ministers to develop a Clean Technology Strategy for Canada to encourage investment in clean energy technologies in the natural resource sector;
- Support the Minister of Environment and Climate Change in reviewing Canada's environmental assessment process, including developing interim measures to guide decision-making on major natural resources projects while the review is under way;
- Develop a path forward to modernize the NEB; and
- Develop an ambitious North American clean energy and environment agreement.

NRCan is collaborating and engaging with provinces, territories and Indigenous peoples to design and put in place the right policies and programs, informed by science, to deliver on these mandate letter commitments and on the department's broader legislative mandate.

In 2015-16, NRCan put in place its plans and made some significant early steps towards meeting these commitments.

## Canadian Energy Strategy

## Priority Type[2]

New

### Key Supporting Initiatives

| Planned Initiatives | Link to the Organization's Programs |
|---|---|
| NRCan will work with the provinces and territories on the Canadian Energy Strategy, to support the transition towards a lower carbon future and to ensure Canada is positioned as a global leader in the sustainable development and use of the full range of its energy assets. | 1.1 |
| Progress Toward the Priority | |
| The Government of Canada has made a commitment to work with the provinces and territories to advance joint actions to support Canada's transition towards a lower carbon future.<br>In March 2016, First Ministers tasked federal, provincial and territorial Energy Ministers to collaborate on specific actions undertaken through the Canadian Energy Strategy – energy efficiency, clean energy technology and innovation, and delivering energy to people – and to report back on progress in fall 2016.<br>NRCan has also worked with provinces and territories to develop technical reports, including on areas such as Adaptation, the Built Environment, Electricity Generation and Transmission, and Agriculture and Forestry, which will support key objectives of both the Canadian Energy Strategy and the Pan-Canadian Framework on Clean Growth and Climate Change. | |

2. 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 Report on Plans and Priorities or the Departmental Performance Report.

## Investments in Clean Technology

### Priority Type[3]

New

### Key Supporting Initiatives

| Planned Initiatives | Link to the Organization's Programs |
|---|---|
| NRCan, in collaboration with partners, will develop a strategy for investing in clean technology across Canada. This will include engaging nationally to develop measures to support clean technology producers and clean technology development and use in the natural resource sectors. It will also include implementing Mission Innovation commitments, a new global initiative aimed at accelerating clean energy technology innovation over the next five years to address climate change, provide affordable and reliable clean energy, and promote economic growth. | 1.1<br>1.2<br>2.2 |
| Progress Toward the Priority | |
| In November 2015, Prime Minister Trudeau announced Canada's participation in Mission Innovation, a global initiative of 20 countries and the European Union (EU), working together to accelerate clean energy innovation. Canada agreed to double federal investments in clean technology innovation over five years, promote greater private sector investment in early stage clean technology development in Canada and increase collaborative efforts with key domestic and international partners.<br><br>NRCan, in collaboration with Innovation, Science and Economic Development Canada (ISED), Agriculture and Agri-Food Canada (AAFC) and the Department of Fisheries and Oceans (DFO), is developing a whole-of-government strategy to advance clean technology, including in the natural resource sectors. This strategy is being informed by comprehensive engagement including ten ministerial roundtables and outreach to more than 300 stakeholders since late 2015. It will identify priorities for the Budget 2016 commitment to invest over $1 billion over 4 years in clean technology, including in the natural resource sectors, as well as maximize the range of federal clean technology policy and program instruments.<br><br>Budget 2016 announced funding for programs to improve energy efficiency and to reduce the environmental impacts of energy production and use while increasing productivity and competitiveness. NRCan led the design on these programs including new energy research, development and demonstration (RD&D) programming for the deployment of electric vehicle infrastructure, clean energy technology, cleaner oil and gas technologies, and improved data on the clean technology sector. | |

3. Ibid.

## Interim Measures in Support of the Environmental Assessment Process Review

### Priority Type[4]

New

### Key Supporting Initiatives

| Planned Initiatives | Link to the Organization's Programs |
|---|---|
| Under the leadership of ECCC, NRCan is working with federal partners to review and restore confidence in Canada's environmental assessment processes by ensuring that views from the public being sought and considered, and that decisions are based on science, traditional knowledge of Indigenous peoples and other relevant evidence. | 1.1<br>1.3<br>2.2 |
| Progress Toward the Priority | |
| In January 2016, NRCan, together with ECCC, developed an Interim Strategy comprised of five principles to guide federal decision-making on major natural resource projects while the Government undertakes a review of the federal environmental assessment process.<br><br>For two significant projects under NEB review, the Trans Mountain Expansion Project and the Energy East Pipeline, interim measures were implemented to ensure consistency with the five principles including:<br>• Enhanced consultation with Indigenous peoples, maximizing consultation time through a multiple team approach, and identifying and providing concrete accommodations to Indigenous groups, where appropriate; and<br>• The announcement of a panel to increase engagement with local communities and Indigenous peoples on their views of the proposed Trans Mountain Expansion Project.<br><br>The principles and specific measures for pipeline reviews (e.g., time limit extensions that create space for deeper consultations with Indigenous peoples), are key first steps in delivering the Government's commitment to review and restore public confidence in the federal environmental assessment processes.<br><br>NRCan established a governance structure to coordinate mandated reviews related to environmental assessments between the Canadian Environmental Assessment Agency (CEAA), Fisheries and Oceans Canada (DFO), and Transport Canada (TC).<br><br>NRCan also contributed advice to ECCC on the application of GHG emissions targets to non-energy projects, such as mining. | |

4. Ibid.

# Modernization of the National Energy Board

## Priority Type[5]

New

## Key Supporting Initiatives

| Planned Initiatives | Link to the Organization's Program |
|---|---|
| NRCan will take steps to modernize the NEB, to ensure that its composition reflects regional views and that it has sufficient expertise in fields such as environmental science, community development, and Indigenous traditional knowledge. | 1.1 |

### Progress Toward the Priority

NRCan is leading a review of the NEB's structure, role and mandate, to position the NEB as a modern, efficient, and effective energy regulator. To commence the review, in 2015-16 NRCan:

- Engaged with stakeholders, including industry, academia, and Indigenous groups, to hear their views on what would help restore the trust of Canadians in their energy regulatory system and how to improve the quality of Indigenous engagement;
- Established working groups with the CEAA, DFO, and TC to align its efforts with other mandated reviews of regulatory agencies;
- Implemented an Interim Strategy comprised of five principles to guide decision-making on major natural resource projects while the Government undertakes a review of environmental assessment processes;
- Facilitated the coming into force of the *Pipeline Safety Act*; and
- Developed a new process for appointing NEB temporary board members.

5. Ibid.

# North American Energy Collaboration

## Priority Type[6]

New

## Key Supporting Initiatives

| Planned Initiatives | Link to the Organization's Program |
|---|---|
| NRCan will work in partnership with the United States and Mexico with the objective of strengthening and advancing continental clean energy cooperation in support of an ambitious North American clean energy and environment agreement. | 1.1 |

### Progress Toward the Priority

In February 2016, Minister Carr and his counterparts from Mexico and the United States met in Winnipeg, Manitoba, for the North American Energy Ministers Meeting. The energy leaders signed a MOU on Climate Change and Energy Collaboration, which expanded and deepened the energy relationship between the three countries.

Under the MOU, 18 projects are at various stages of implementation across the four broad themes of energy data, clean energy, infrastructure and Mission Innovation. Examples of projects include:

- Developing comparative federal measures to reduce methane emissions;
- Designing technology roadmaps;
- Conducting infrastructure resilience workshops;
- Launching a tri-lateral renewable energy integration study; and
- Aligning regulation on energy efficiency.

The MOU has increased collaboration and information-sharing on key areas such as low-carbon electricity, clean technologies, energy efficiency, carbon capture and storage, climate change adaptation, and reducing emissions from the oil and gas sector (including methane).

Trilateral cooperation has contributed directly to the successful statement announced by Leaders' on continental clean energy and environmental collaboration in June 2016.

Results from early collaboration are now being analyzed to determine next steps to continue to advance North American Energy Cooperation.

6. Ibid.

# Section II: Expenditure Overview

## Actual Expenditures

### Budgetary Financial Resources (dollars)

| 2015–16 Main Estimates | 2015–16 Planned Spending | 2015–16 Total Authorities Available for Use | 2015–16 Actual Spending (authorities used) | Difference (actual minus planned) |
|---|---|---|---|---|
| 2,214,476,711 | 2,214,476,711 | 1,715,634,089 | 1,335,178,669 | (879,298,042) |

### Human Resources (Full-Time Equivalents [FTEs])

| 2015–16 Planned | 2015–16 Actual | 2015–16 Difference (actual minus planned) |
|---|---|---|
| 3,832 | 3,936 | 104 |

# Budgetary Performance Summary

## Budgetary Performance Summary for Programs and Internal Services (dollars)

| Programs and Internal Services | 2015–16 Main Estimates | 2015–16 Planned Spending | 2016–17 Planned Spending | 2017–18 Planned Spending | 2015–16 Total Authorities Available for Use | 2015–16 Actual Spending (authorities used) | 2014–15 Actual Spending (authorities used) | 2013–14 Actual Spending (authorities used) |
|---|---|---|---|---|---|---|---|---|
| 1.1 Market Access and Diversification | 48,685,006 | 48,685,006 | 43,993,476 | 28,361,877 | 90,964,090 | 75,927,073 | 61,566,240 | 59,733,334 |
| 1.2 Innovation for New Products and Processes | 83,438,001 | 83,438,001 | 96,074,981 | 55,536,596 | 92,394,682 | 93,375,233 | 71,707,214 | 94,093,063 |
| 1.3 Investments in Natural Resource Sectors | 54,230,114 | 54,230,114 | 62,900,219 | 65,272,906 | 67,692,074 | 68,270,162 | 60,589,504 | 65,333,593 |
| 1.4 Statutory Programs – Atlantic Offshore* | 1,181,938,140 | 1,181,938,140 | 743,336,158 | 761,960,697 | 347,989,273 | 347,989,273 | 837,746,067 | 795,884,721 |
| 2.1 Energy-Efficient Practices and Lower-Carbon Energy Sources | 253,978,461 | 253,978,461 | 183,336,817 | 133,361,992 | 258,837,128 | 211,012,423 | 291,745,439 | 314,652,883 |
| 2.2 Technology Innovation | 126,472,078 | 126,472,078 | 115,838,434 | 108,270,795 | 143,292,764 | 143,620,407 | 151,832,220 | 155,738,548 |
| 2.3 Responsible Natural Resource Management | 193,117,981 | 193,117,981 | 29,619,508 | 28,958,607 | 410,119,888 | 121,598,627 | 267,570,932 | 282,047,031 |
| 3.1 Protection for Canadians and Natural Resources | 58,672,639 | 58,672,639 | 57,808,743 | 49,858,500 | 73,440,885 | 73,709,947 | 65,692,439 | 65,535,095 |
| 3.2 Landmass Information | 71,155,143 | 71,155,143 | 75,092,662 | 51,156,481 | 83,529,098 | 74,110,670 | 78,469,116 | 73,828,231 |
| Internal Services | 142,789,148 | 142,789,148 | 184,517,755 | 137,682,086 | 147,374,207 | 125,564,854 | 162,499,616 | 184,198,094 |
| **Total** | **2,214,476,711** | **2,214,476,711** | **1,592,518,753** | **1,420,420,537** | **1,715,634,089** | **1,335,178,669** | **2,049,418,787** | **2,091,044,593** |

* Statutory Programs – Atlantic Offshore: As per the various Atlantic Offshore Accords, the Government of Canada receives royalties for offshore oil and gas production and subsequently pays an equal amount to the provinces of Nova Scotia and Newfoundland and Labrador.

## Departmental Spending Trend

The overall $879 million difference between the 2015-16 Planned Spending of $2,214 million and actual spending of $1,335 million is attributed to a $499 million reduction in authorities and $380 million in unspent funding.

The $499 million reduction in authorities is explained by the following:

Decreases due to:

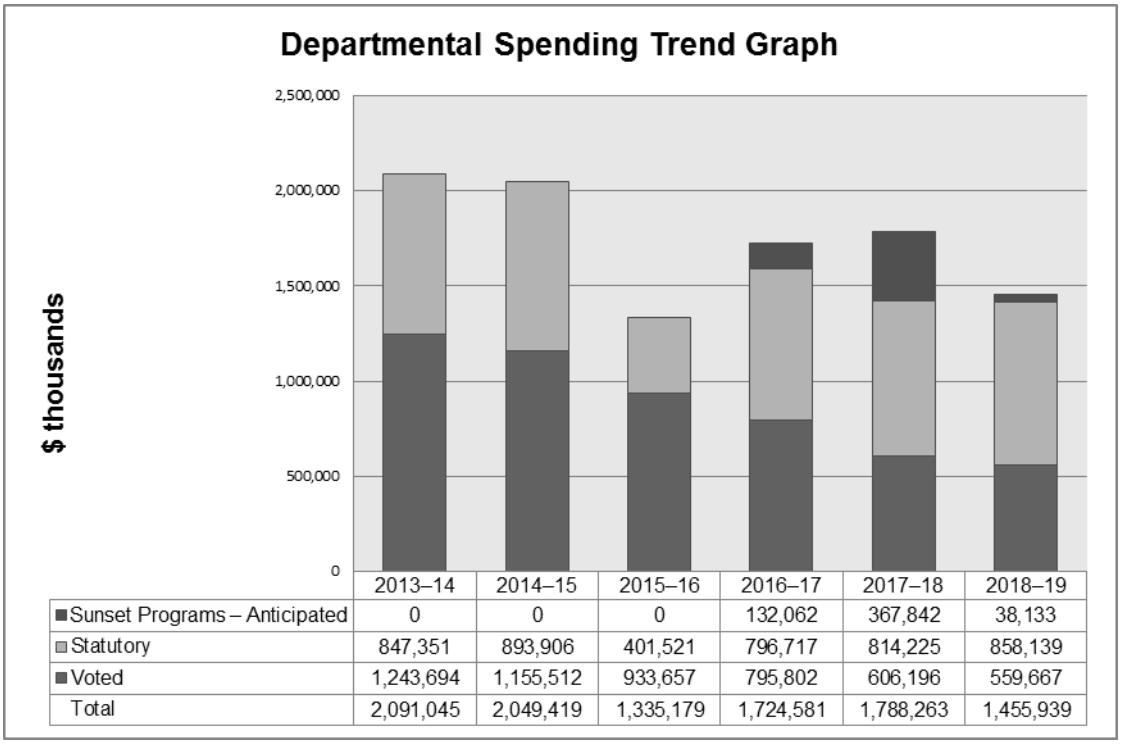
- Reduced authority for statutory payments under the Atlantic Offshore Accord Acts due to reduced oil prices, lower currency exchange rate (CAD/USD) and, reduced commodity prices and production in the offshore area; and
- Various transfers to other government departments.

Increases due to:

- Additional funding received through Supplementary Estimates for the Nuclear Legacy Liabilities Program (NLLP), the Federal Infrastructure Initiative, the renewal of the Targeted Geoscience Initiative, the Soldier Settlement Board mineral rights, defining the outer limits of Canada's continental shelf in the Arctic Ocean, and the renewal of the Major Project Management Office (MPMO) horizontal initiative;
- Various transfers from other government departments; and
- The receipt of the operating budget carry forward.

The $380 million in unspent funding is explained by the following:

- Funds frozen and not available for spending as a result of a government decision to implement the restructuring of AECL's nuclear laboratories by transferring the funding and responsibilities related to NLLP and the Port Hope Area Initiative (PHAI) from NRCan to AECL;
- Funding being moved into future years for the Gunnar Mine Remediation;
- Unspent funds in the Operating vote being carried forward to next year, mainly to cover unfunded collective bargaining increases;
- Unspent funds in the Capital vote being carried forward to next year, mainly for the Federal Infrastructure Initiative; and
- Unspent funds in the Grants and Contributions vote, mainly pertaining to the ecoENERGY for Biofuels program (due to lower than anticipated production by biofuel companies) and the ecoENERGY Renewable Power program (due to lower incentive payouts based on lower production levels).




| | 2013–14 | 2014–15 | 2015–16 | 2016–17 | 2017–18 | 2018–19 |
|---|---|---|---|---|---|---|
| Sunset Programs – Anticipated | 0 | 0 | 0 | 132,062 | 367,842 | 38,133 |
| Statutory | 847,351 | 893,906 | 401,521 | 796,717 | 814,225 | 858,139 |
| Voted | 1,243,694 | 1,155,512 | 933,657 | 795,802 | 606,196 | 559,667 |
| Total | 2,091,045 | 2,049,419 | 1,335,179 | 1,724,581 | 1,788,263 | 1,455,939 |

For 2013-14, 2014-15 and 2015-16, the figures represent actual expenditures as reported in the Public Accounts. NRCan's spending profile remains steady from 2013-14 to 2014-15 and drops significantly in 2015-16, mainly as a result of the Statutory Atlantic Offshore Accounts, the transfer of responsibility over NLLP and PHAI to AECL and reduced spending pertaining to the ecoENERGY for Biofuels and the ecoENERGY Renewable Power programs, as well as less severance pay costs recovered from Treasury Board (TB). These reductions were slightly offset by the implementation of the Federal Infrastructure Initiative.

When comparing planned spending to actual expenditures, costs recovered from TB are recorded as an expense by the Department even though they were not part of the Department's Planned Spending. These costs include parental benefits, severance pay, and vacation credits payable upon termination; they apply throughout Section III of this document and they contribute, in part, to the financial variance between the actual expenditures and planned spending.

The increase between 2015-16 actual expenditures and 2016-17 planned spending is mainly attributed to the Statutory Atlantic Offshore Accounts projected increase; offset by the transfer of responsibility over NLLP and PHAI and the sunsetting of the clean energy envelope.

For 2016-17 to 2018-19, the figures represent total planned spending for the fiscal year, which reflects approved funding by TB to support the Departmental strategic outcomes. Planned spending in Voted authorities from 2016-17 to 2018-19 is declining, mainly as a result of

reduced funding profile for major initiatives (e.g., ecoENERGY for Renewable Power), and sunsetting programs, including the following:

Major initiatives sunsetting in 2016-17 are:

- Federal Infrastructure Budget 2015 announcement;
- Forest Innovation Program and Expanding Market Opportunities, which were extended to 2017-18 through Budget 2015 but funding has not yet been included in planned spending for 2017-18;
- ecoENERGY for Biofuels; and
- Wind Power Production Incentive.

Major initiatives sunsetting in 2017-18 are:

- Investments in Forest Industry Transformation; and
- World Class Prevention, Preparedness and Response Regime.

Statutory authorities from 2016-17 to 2018-19 are likely to increase, mainly as a result of the Atlantic Offshore Accounts. Statutory payment obligations under these accords are largely driven by oil and gas prices, production levels and anticipated corporate income taxes related to offshore operations. The increase was based on the Department's economic modeling forecasts prepared in the fall of 2015 when the 2016-17 Report on Plans and Priorities was developed.

The Sunset Programs – Anticipated for 2016-17 to 2018-19 mostly reflect announcements in Budget 2015 or Budget 2016 that are not yet reflected in voted level for those years but are provided to give a more reasonable picture of the future of the Department.

## Expenditures by Vote

For information on NRCan’s organizational voted and statutory expenditures, consult the *Public Accounts of Canada 2016*.[xiii]

## Alignment of Spending With the Whole-of-Government Framework

### Alignment of 2015–16 Actual Spending With the Whole-of-Government Framework[xiv] (dollars)

| Program | Spending Area | Government of Canada Outcome | 2015–16 Actual Spending |
|---|---|---|---|
| 1.1 Market Access and Diversification | Economic Affairs | Strong Economic Growth | 75,927,073 |
| 1.2 Innovation for New Products and Processes | Economic Affairs | Strong Economic Growth | 93,375,233 |
| 1.3 Investment in Natural Resource Sectors | Economic Affairs | Strong Economic Growth | 68,270,162 |
| 1.4 Statutory Programs – Atlantic Offshore | Economic Affairs | Strong Economic Growth | 347,989,273 |
| 2.1 Energy-Efficient Practices and Lower-Carbon Energy Sources | Economic Affairs | A Clean and Healthy Environment | 211,012,423 |
| 2.2 Technology Innovation | Economic Affairs | A Clean and Healthy Environment | 143,620,407 |
| 2.3 Responsible Natural Resource Management | Economic Affairs | A Clean and Healthy Environment | 121,598,627 |
| 3.1 Protection for Canadians and Natural Resources | Social Affairs | A Safe and Secure Canada | 73,709,947 |
| 3.2 Landmass Information | Social Affairs | A Safe and Secure Canada | 74,110,670 |

### Total Spending by Spending Area (dollars)

| Spending Area | Total Planned Spending | Total Actual Spending |
|---|---|---|
| Economic affairs | - | 1,061,793,198 |
| Social affairs | - | 147,820,617 |
| International affairs | - | - |
| Government affairs | - | - |

# Financial Statements and Financial Statements Highlights

## Financial Statements

The Department's consolidated financial statements are available on the NRCan website.[xv]

## Financial Statements Highlights

The financial statements highlights are intended to provide a general overview of the Department's operations and financial position.

The financial statement 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 and are therefore different from reporting on the use of authorities, reflected in Section I and II of this report. Reconciliation between the net cost of operations and the authorities used is set out in Note 3 of the Department's consolidated financial statements.

### Condensed Statement of Operations (unaudited)
### For the Year Ended March 31, 2016 (dollars)

| Financial Information | 2015–16 Planned Results | 2015–16 Actual | 2014–15 Actual | Difference (2015–16 actual minus 2015–16 planned) | Difference (2015–16 actual minus 2014–15 actual) |
|---|---|---|---|---|---|
| Total expenses | 2,190,166,694 | 1,373,162,269 | 2,100,576,784 | (817,004,425) | (727,414,515) |
| Total revenues | 35,079,370 | 30,836,347 | 25,896,040 | (4,243,023) | 4,940,307 |
| Net cost of operations before government funding and transfers | 2,155,087,324 | 1,342,325,922 | 2,074,680,744 | (812,761,402) | (732,354,822) |

*Transferred operations are included in the total expenses as it relates to the transferred responsibilities of the NLLP and the Historic Waste Program to AECL which became effective on September 13, 2015.

The 2015-16 Planned Results are derived from the amounts presented in the Department's 2015-16 Consolidated Future-Oriented Statement of Operations [xvi] and included in NRCan's 2015-16 Report on Plans and Priorities. The planned results were based on several assumptions and information known at that time.

Total expenses between 2015-16 actual of $1,373 million and 2015-16 planned results of $2,190 million represent $817 million, or 37 percent of overestimated expenses. This is mainly

attributable to a $847 million decrease in Atlantic Offshore Statutory programs in continuing operations mainly due to decreased oil prices, lower production levels and a lower currency rate.

The planned net revenues of $35 million were based on historical data. The actual net revenues were $31 million in 2015-16 compared to $26 million in 2014-15, for a net increase of $5 million.

**Difference between 2015-16 and 2014-15 actuals**

Total expenses were $1,373 million in 2015-16 compare to $2,101 million in 2014-15 for a net decrease of $727 million, or 53 percent. This net decrease is mainly explained by:

- A $513 million decrease in Atlantic Offshore Statutory Programs mainly due to decreased oil prices, lower production levels and lower currency rate and a $79 million decrease in ecoENERGY for Biofuels Program under Energy-Efficient Practices and Lower Carbon Energy Sources as a result of terminated projects and proponents producing less.
- A $105 million decrease in total expenses for transferred operations from $124 million in 2015-16 to $229 million in 2014-15 is due to the transfer of responsibilities from NLLP and the Historic Waste Program to the AECL as of September 2015. Therefore 2015-16 had only 6 months of operating costs compared to 12 months in 2014-15.

The chart presenting NRCan's actual expenses by type for 2016 is available on the NRCan website.

## Condensed Statement of Financial Position (unaudited) As at March 31, 2016 (dollars)

| Financial Information | 2015–16 | 2014–15 | Difference (2015–16 minus 2014–15) |
|---|---|---|---|
| Total net liabilities | 432,291,969 | 1,579,823,467 | (1,147,531,498) |
| Total net financial assets | 257,773,468 | 378,181,969 | (120,408,501) |
| Departmental net debt | 174,518,501 | 1,201,641,498 | (1,027,122,997) |
| Total non-financial assets | 272,387,642 | 267,355,166 | 5,032,476 |
| Departmental net financial position | 97,869,141 | (934,286,332) | 1,032,155,473 |

Total net liabilities were $432 million in 2015-16, compared to $1,580 million in 2014-15, for a decrease of $1,148 million or 73 percent. This variance is mainly attributable to:

- A decrease of $984 million in environmental liabilities and a $40 million in accounts payable and accrued liabilities related to the transfer to the AECL for the NLLP and the Historic Waste Program; and
- A decrease of $120 million in accounts payable and accrued liabilities mainly explained by a decrease of $47 million related to transfer payments under the Atlantic Offshore Statutory Programs.

Total net financial assets were $258 million in 2015-16, compared to $378 million in 2014-15, for a net decrease of $120 million or 32 percent. This variance is attributable to the decrease in the account Due from Consolidated Revenue Fund (CRF) of $120 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 $272 million in 2015-16, compared to $267 million in 2014-15 for a net increase of $5 million. This variance is mainly due to the increase in tangible capital assets due to additional funding received for the Federal Infrastructure Initiative offset by a decrease in prepayments due to the transfer of responsibilities of the NLLP to AECL.

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

# Section III: Analysis of Programs and Internal Services

## Programs

### 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.

#### Program Performance Analysis and Lessons Learned

The Market Access and Diversification Program is home to three of Minister Carr's **mandate letter commitments** including the North American collaboration on clean energy and the environment, the Canadian Energy Strategy and the modernization of the NEB. It also plays a strong supporting role in delivering on the Clean Technology Strategy. **Details on NRCan's key achievements in these areas are provided in the box on the right.**

**Mandate Letter Commitments**

- ✓ Canada-U.S.-Mexico MOU on Climate Change and Energy Collaboration signed in February 2016.
- ✓ Vancouver Declaration on Clean Growth and Climate Change signed by First Ministers in March 2016, establishing areas for federal, provincial and territorial collaboration under the Canadian Energy Strategy.

In the area of **international energy cooperation**, NRCan:

- Engaged with government and industry representatives through G7and G20 Energy Ministers' meetings, Clean Energy Ministerial and International Energy Forum and in key markets including the U.S., Mexico, India, and the EU to position Canada as the partner of choice for trade and investment;
- Signed an MOU on Climate Change and Energy Collaboration with the U.S. and Mexico, which expanded and deepened the energy relationship between the three countries;
- Collaborated with EU partners to assist Ukraine's efforts to increase their energy independence; and
- Continued high-level engagement with key nuclear energy partners by; signing the MOU on Canada-United Kingdom (U.K.) Nuclear Energy Cooperation that facilitates collaborative work between government, industry, and laboratories; representing Canada

at the International Atomic Energy Agency General Conference; and holding high-level bilateral meetings with key partners including the U.S., China, India, the U.K., Romania, Argentina, and Australia.

The **restructuring of AECL was completed** in 2015-16. AECL is now fully responsible for managing federal nuclear science and technology work and all federal radioactive waste liabilities, which it delivers through the GoCo model and related contracts. The major procurement process leading to the selection of a private sector contractor to own, operate and manage Canadian Nuclear Laboratories (CNL) was completed on time, and in September 2015, CNL was transferred under a long-term contract to Canadian National Energy Alliance. With an internal reallocation of funding, NRCan's mandate and important efforts to restructure the Crown Corporation are now concluded. These efforts explain part of the financial and human resources variances.

**Atomic Energy of Canada Limited**

The implementation of the new Government-owned Contactor-operated (GoCo) model at AECL was finalized on time and within budget in 2015, including the approval and enactment of all relevant legislative and regulatory changes for this unprecedented governance.

NRCan continued to enhance energy safety and security in marine, pipeline, offshore and nuclear sectors, by **updating relevant legislative and regulatory** frameworks, including:

- Completing three major updates to Canada's energy legislative and regulatory frameworks including the *Energy Safety and Security Act*, *Georges Banks Protection Act* and the *Pipeline Safety Act*;
- Launching consultations to modernize and amalgamate five existing regulations on petroleum activities through the Frontier and Offshore Regulatory Renewal Initiative; and
- Supporting legislation and developed regulations to create a moratorium on oil and gas activity on Georges Bank in the Canada-Nova Scotia offshore area.

Continuing its work to **maintain Canada's position as a global mining leader** and to diversify markets, NRCan:

- Advocated for the free flow of minerals and metals within Canada during the negotiations for a renewed Agreement on Internal Trade;
- Provided advice to Global Affairs Canada (GAC) on potential Free Trade Agreements; and
- Efficiently implemented Canada's international obligations to prevent trade in conflict diamonds under the Kimberly Process Certification Scheme.

In the **forest sector**, NRCan continued to support the development and expansion of markets for Canadian wood products domestically and abroad by:


- Funding research to inform changes to the 2015 edition of the *National Building Code of Canada* to allow for wood buildings up to 6 storeys;
- Supporting construction of an 18-storey wood building at the University of British Columbia, which is the tallest wood building in the world;
- Supporting the implementation of the Canadian Boreal Forest Agreement and its consensus-based approach to land-use planning; and
- Providing updated forest-related estimates to ECCC for the 2015-16 GHG inventories.

Additionally, NRCan worked with GAC to resolve a NAFTA Chapter 11 claim (details can be found on the GAC website). This mostly explains the financial variance.

### Budgetary Financial Resources (dollars)

| 2015–16 Main Estimates | 2015–16 Planned Spending | 2015–16 Total Authorities Available for Use | 2015–16 Actual Spending (authorities used) | 2015–16 Difference (actual minus planned) |
|---|---|---|---|---|
| 48,685,006 | 48,685,006 | 90,964,090 | 75,927,073 | 27,242,067 |

### Human Resources (Full-Time Equivalents [FTEs])

| 2015–16 Planned | 2015–16 Actual | 2015–16 Difference (actual minus planned) |
|---|---|---|
| 239 | 254 | 15 |

### 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: 25.1%**<br>In 2015-16, Canada's share of American natural resource imports was 25.1% (1.5% above the 10-year 2005-2014 baseline average of 23.6%). The overall value of American natural resource imports from Canada in 2015 was $164.3 billion, above the 2006 figure of $95.2 billion. |
| 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: 1.7%**<br>In 2015-16, Canada's share of Chinese natural resources imports was 1.7%, stable against the 10-year (2005-2014) baseline average. The overall value of Chinese natural resource imports from Canada in 2015 was $11.6 billion, nearly three times the 2006 figure of $4.3 billion. |

## 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.

### Program Performance Analysis and Lessons Learned

Innovation is integral to maintaining Canada's competitiveness in global resource markets.

In 2015-16 in the area of mining, an in-year reallocation of funding to support **Rare Earth Elements (REE) and Chromite** programs strengthened NRCan's leadership role in R&D into mining and processing of these materials. REEs are known as 'green elements' because they are critical to many green energy products, including wind turbines, catalytic converters, energy-efficient light bulbs, hybrid cars, and rechargeable batteries. The Department also launched a new certified reference material, REE2, to ensure the quality of data that informs mineral investment and environmental monitoring.

In the forest sector, NRCan's Investments in Forest Industry Transformation (IFIT) and Forest Innovation (FIP) programs funded the development of more than 10 higher-value technologies and products. These investments have led to new jobs, improved environmental performance and more economic opportunities for the forest industry. Some examples include:

- **Production of 5.2 MW/year of bioenergy** from pulp mill effluent, reducing onsite and offsite carbon dioxide emissions by 45,300 tonnes/year;
- **New seedling technologies** with the capacity to produce 2.5 million somatic seedlings annually, increasing both quality and quantity of wood for the same forest plot, and the ability to treat up to 40 million trees to increase pest resistance;
- **Cross-laminated timber**, an advanced building material that enables construction of taller wood structures, is being commercially produced in Quebec;
- **A Quebec-based engineering firm has adopted a hybrid wood-concrete floor system** designed by FPInnovations that provides environmental benefits by replacing more energy-intensive production of steel or concrete floor systems;
- **Wood fibre boards** for insulating buildings have now met the existing standard for Canadian insulation products. These insulating boards open a new high value market for pulp chips and can lower energy consumption in buildings; and
- Creation of a facility that produces 5 tonnes/day of **cellulose filaments**, which are additives to reinforce products such as paper, tissue, towel, and novel products such as bioplastics and adhesives.

**Aboriginal Forestry Initiative**

Through the Aboriginal Forestry Initiative (AFI), NRCan provides direct support for Indigenous forest-based economic development and stakeholder partnerships.
In 2015-16, the AFI funded 12 projects supporting 30+ Indigenous communities. These investments range from feasibility assessments and business opportunity scans to community economic development planning, support for establishment of joint ventures and partnerships, and development of tools, technologies and products that support natural resource development.

With the January 2015 launch to select audiences, NRCan's Federal Geospatial Platform (FGP), which supports the sharing, use and integration of its geospatial data assets, passed an important milestone. By March 31, 2016, FGP had released 260 federal geospatially-referenced economic, social and environmental datasets which enable location-based decision-making for sustainable resource development, environmental management, regulatory reviews, and safety and security. This significantly exceeded the expectations, delivering on FGP's 3-year commitment to releasing a total of 250 federal datasets one year ahead of schedule. The FGP also supported horizontal policy initiatives including the Tri-lateral Energy Infrastructure Mapping Project and

the World Class Tanker Safety Initiative, and continued to work with Canada's Open Government Portal to simplify the tools, policies and processes for the release of federal geospatial data.

The work of NRCan's GeoConnections initiative further developed Canada's spatial data infrastructure, and enabled the interoperability of 180,000 geospatial data sets, representing 80 percent of the data available through Canada's Open Data portal. GeoConnections also supported an environmental scan on the use of remotely piloted vehicles, and the development of a platform to allow stakeholders to effectively use low-cost open source sensing devices.

Internationally, NRCan's leadership role in open geospatial data access was strengthened through GeoConnections' efforts with the United Nations Committee of Experts on Global Geospatial Information Management, Arctic Spatial Data Infrastructure and bilateral projects with the United States Geological Survey. Technical outputs include the Arctic Data Interoperability Pilot with the Open Geospatial Consortium, continental and circumpolar harmonized data in support of Arctic Council, and the adoption of standards by 520 stakeholders.

NRCan awarded an innovative contract to operate all of its satellite stations and develop the Inuvik Satellite Station Facility as one of the world's foremost satellite receiving stations, while maximizing local economic opportunities. New partnerships were developed which resulted in the doubling of infrastructure by the Swedish Space Corporation at the Inuvik Satellite Station Facility.

### Budgetary Financial Resources (dollars)

| 2015–16 Main Estimates | 2015–16 Planned Spending | 2015–16 Total Authorities Available for Use | 2015–16 Actual Spending (authorities used) | 2015–16 Difference (actual minus planned) |
|---|---|---|---|---|
| 83,438,001 | 83,438,001 | 92,394,682 | 93,375,233 | 9,937,232 |

Budgetary Financial Resources variance mostly explained by Real Property adjustment described in section on Internal Services.

### Human Resources (FTEs)

| 2015–16 Planned | 2015–16 Actual | 2015–16 Difference (actual minus planned) |
|---|---|---|
| 249 | 313 | 64 |

## 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 | **Five** per year[7] | **Results: two products/processes**<br><br>One new product and one new process were developed based on NRCan information, specifically:<br>• A **database of Canada's biomass feedstock characteristics and associated modeling tools**, to which entrepreneurs and industry now have access (providing access to vital information that increases their probability of a successful bioenergy or bioproducts business venture in a low-carbon economy); and<br>• An **evidence-based process for forest managers to mitigate the effects of root rots on high-value timber**. Root rot is a pervasive disease affecting millions of trees either killing them or severely stunting their growth; stump removal or mixing stands with disease tolerant species has proven to decrease the impact of this disease. |
| | 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%**<br><br>In 2015, business enterprise R&D expense intentions for the energy, mining and forest sectors were $2.1 billion, slightly below the 2006 figure of $2.3 billion. However, these natural resource sector intentions accounted for 13.3% of total industry R&D spending, slightly above the 10-year baseline average of 12.0%.<br><br>Note: only the natural resource industries for which the R&D expenses were available for the entire 2006-15 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 confidentiality or data quality reasons for one or more years have been excluded from the analysis). |

[7] 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 2015-16 pertain to CFS only.

| | | | |
|---|---|---|---|
| Public and private sector organizations' business and program decision-making ability is improved as a result of geospatial innovation | Number of public or private sector organizations related to natural resource development using NRCan's innovative geospatial systems, applications or frameworks to aid decision-making | **Five** per year | **Results: five**<br>Five federal departments and agencies adopted the FGP to improve the management of their geospatial information.<br>Support from NRCan's GeoConnections program resulted in improved capacity for decision-making in four organizations (Government of Northwest Territories, SensorUp Inc., Open Geospatial Consortium Inc., Global Spatial Data Infrastructure Association) through improved models, interoperability and content dissemination.<br>An innovative new business model for NRCan's satellite station facilities resulted in increased partnerships with domestic and international organizations. |

## Program 1.3: Investment in Natural Resource Sectors

### Description

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.

### Program Performance Analysis and Lessons Learned

The Investment in Natural Resource Sectors Program is home to Minister Carr's **mandate letter commitment** to support the Minister of Environment and Climate Change in the review of Canada's Environment Assessment process.

**Mandate Letter Commitments**

- ✓ In January 2016, NRCan (together with ECCC) introduced five principles to guide federal decision-making on major natural resource projects while the Government undertakes a review of the federal environmental assessment process.
- ✓ For two significant projects that were under NEB review, Trans Mountain Expansion (TMX) Project and the Energy East Pipeline, interim measures were taken to ensure consistency with the five principles. These include the appointment of a ministerial panel in the case of the TMX project and the appointment of temporary board members to the NEB to conduct community engagement processes.

NRCan's role in this process includes developing interim measures to guide decision-making on major natural resources projects while the reviews are under way, as well as helping to reset the relationship with Indigenous Peoples through a renewed relationship, focused on finding common approaches to building support for major projects.

**Details on NRCan's key achievements in this area provided in the box on page 36.**

Highlighting Canada's positive **mining investment climate**, NRCan produced 12 information products including *Exploration and Mining in Canada: An Investor's Brief*, to promote Canada's regulatory regime and investment incentives for mineral development. NRCan also continues to manage the implementation of the *Extractive Sector Transparency Measures Act*, which requires public reports from resource exploration and extraction companies on payments they make to governments in Canada and abroad.

**Minister Carr at the 2016 PDAC Convention**


- Delivered the keynote address and held roundtables on innovation with industry, non-governmental organizations and Indigenous stakeholders.
- Held bilateral meetings with key international mining partners to enhance their natural resources governance capacity, and to improve the conditions for Canadian companies operating abroad.
- Participated in the Inaugural International Mines Ministers Summit which brought together 16 national ministers to address current issues relating to the mining sector.

NRCan also promoted Canada as a sustainable resource developer, a leading source of expertise, equipment and services at key industry events including Mining Indaba, the 2016 Prospectors and Developers Association of Canada (PDAC) Convention and China Mining.

NRCan supported Canadian investment in mining abroad by enhancing natural resource governance capacity and by promoting clear and transparent policies and regulations in Bolivia, Chile, Colombia, Ecuador, Panama, Peru and South Africa. The Department continued to promote corporate social responsibility (CSR) in Canada and abroad, and disseminated tools such as the CSR Checklist to assist Canadian companies operating overseas in respecting human rights, conducting their activities responsibly and implementing strategies to benefit the communities in which they operate.

The renewal of NRCan's Targeted Geoscience Initiative (TGI) program was announced in Budget 2015 with $22 million in funding over five years, this partly explains the financial and human resources variances. TGI is a collaborative federal geoscience program that provides industry with the next generation of geoscience knowledge and innovative techniques, aimed at more effective targeting and recovery of buried mineral deposits. This program has a demonstrable influence on mineral exploration across Canada. In 2015-16:

- Five new attributions were documented by industry, coupled with anecdotal evidence that the exploration industry continues to use and expand upon the 45 TGI innovations identified in an independent report from 2014; and
- TGI Ore Synthesis Volumes (six volumes) were downloaded 14,110 times.

NRCan's Geo-Mapping for Energy and Minerals (GEM) program produces modern regional-scale geological maps, data sets, and knowledge for Canada's North and makes this information available to the public at no cost. This public geoscience is used by Northerners and industry for land-use and resource development decision-making. In 2015-16, GEM:

- Published 140 new geoscience maps, technical reports and data sets, identifying new areas with a high likelihood of mineral and energy resource potential;
- Continued to strengthen the integration of scientific evidence into Northern decision-making by engaging with Indigenous communities and organizations, seeking advice from the GEM Advisory Group of Northerners, and providing grant funding for innovative approaches and tools that facilitate the uptake of GEM knowledge by Northerners; and
- Issued multi-year geoscience grant funding to Canadian universities to help attract high-quality geoscience research activities that complement NRCan expertise and augment the understanding of the regional geological context in Canada's North.

To meet Canada's future energy demands, NRCan continues to provide 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. In 2015-16, NRCan's Geoscience for New Energy Supply (GNES) completed resource assessments to inform energy-related decisions (including those in Horn River and Bakken regions) and publicly disseminated 33 unique reports.

Budget 2016 announced $135 million over five years, of which NRCan's share is $21 million over the five years, to continue to improve the project decision process through the Major Projects Management Office Initiative. As this funding had not been included in the Planned Spending, it accounts for some of the financial and human resources variances.

### Budgetary Financial Resources (dollars)

| 2015–16 Main Estimates | 2015–16 Planned Spending | 2015–16 Total Authorities Available for Use | 2015–16 Actual Spending (authorities used) | 2015–16 Difference (actual minus planned) |
|---|---|---|---|---|
| 54,230,114 | 54,230,114 | 67,692,074 | 68,270,162 | 14,040,048 |

Budgetary Financial Resources variance mostly explained by Real Property adjustment described in section on Internal Services.

### Human Resources (FTEs)

| 2015–16 Planned | 2015–16 Actual | 2015–16 Difference (actual minus planned) |
|---|---|---|
| 355 | 399 | 44 |

### 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 five years) compared to growth in overall capital expenditures in Canada (average of past five years) | The average five-year growth rate of capital expenditures in the energy sector is equal to or higher than the average five-year growth rate in capital expenditures in Canada | **Results: 5.7% average annual growth**<br>In 2015, energy sector capital expenditures were $89.5 billion. Over the past five years (2010-15), energy sector capital expenditures grew by an average annual rate of 5.7%. This is above the average annual growth rate of 3% in the Canadian economy as a whole. |
| | Growth of capital expenditures in the minerals and metals sector (average of past five years) compared to growth in overall capital expenditures in Canada (average of past five years) | The average five-year growth rate of capital expenditures in the minerals and metals sector is equal to or higher than the average five-year growth rate in capital expenditures in Canada | **Results: 3.5% average annual growth**<br>In 2015, minerals and metals sector capital expenditures were $14.9 billion. Over the past five years (2010-15), minerals and metals capital expenditures grew by an average annual rate of 3.5%. This is above the average annual growth rate of 3% in the Canadian economy as a whole. |
| | Growth of capital expenditures in the forest sector (average of past five years) | The average five-year growth rate of capital expenditures in the | **Results: 14.8% average annual growth**<br>In 2015, forest sector capital |

| | | | |
|---|---|---|---|
| | compared to growth in overall capital expenditures in Canada (average of past five years) | forest sector is equal to or higher than the average five-year growth rate in capital expenditures in Canada | expenditures were $2.7 billion. Over the past five years (2010-15), forest sector capital expenditures grew by an average annual rate of 14.8%. This is above the average annual growth rate of 3% in the Canadian economy as a whole. |

## 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 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.

### Program Performance Analysis and Lessons Learned

The *Canada-Newfoundland and Labrador Atlantic Accord Implementation Act* and the *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.

NRCan met its target relating to the timeliness and accuracy of offshore payments in 2015-16. 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 percent of payments were made on time.

The decrease between Planned Spending and Actual Spending is mainly attributed to lower royalties for the Newfoundland and Labrador Offshore Petroleum Resource Revenue Fund as a result of reduced oil prices; reduced revenue from the Nova Scotia Offshore Revenue Account as a result of lower currency exchange rate (CAD/USD) that is slightly offset by higher than expected production from Deep Panuke in the final quarter of the year; reduced cost recovery remittances received from the Canada-Newfoundland and Labrador Offshore Petroleum Board and the Canada-Nova Scotia Offshore Petroleum Board; and, lower than anticipated Nova Scotia Crown Share Adjustment Payments due to reduced commodity prices and production in the offshore area.

### Budgetary Financial Resources (dollars)

| 2015–16 Main Estimates | 2015–16 Planned Spending | 2015–16 Total Authorities Available for Use | 2015–16 Actual Spending (authorities used) | 2015–16 Difference (actual minus planned) |
|---|---|---|---|---|
| 1,181,938,140 | 1,181,938,140 | 347,989,273 | 347,989,273 | (833,948,867) |

### Human Resources (FTEs)

| 2015–16 Planned | 2015–16 Actual | 2015–16 Difference (actual minus planned) |
|---|---|---|
| - | - | - |

### 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%**<br>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%**<br>NRCan anticipated and pro-actively prepared the necessary materials for 100% of payments to be processed in an accurate manner. |

## 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.

### Program Performance Analysis and Lessons Learned

In 2015-16, NRCan worked across a number of policy and program areas to encourage and enable energy consumers and producers to adopt cleaner and more efficient technologies, products, services and practices.

NRCan provided support for Canada's successful adoption of the Paris Agreement at the 21st Conference of the Parties in December 2015, under the U.N. Framework Convention on Climate Change. The Department provided technical information to support decision-making on climate change and energy issues, such as the development of Canada's intended Nationally Determined Contribution to the Paris Agreement, including the 2030 national GHG emissions reduction target; the development of the Pan-Canadian Framework on Clean Growth and Climate Change; and, the implementation of provisions within federal regulations related to Carbon Capture, Use and Storage (CCUS) for coal-fired electricity generation.

More broadly on the policy front:

- NRCan updated 12 oil sands and pipeline information products to reflect current government priorities;
- Under the **Clean Energy Ministerial** (an international forum to promote policies and programs that advance clean energy technology), NRCan led Canada's engagement at international CCUS fora, including the U.S.-led Carbon Sequestration Leadership Forum;
- Within the **Climate Technology Centre and Network** (CTCN), NRCan took on a leadership role as Canada's National Designated Entity, working with Canadian companies and associations to inform them about potential opportunities in developing and emerging clean technology markets; and
- NRCan completed the development of a framework for administering **marine renewable energy** in the federal offshore, a process that included engagement with provinces and key stakeholders. An additional $1.5 million over two years was announced in

> Budget 2016 for NRCan to continue to work in partnership with other government departments and key stakeholders to advance the development of a federal legislative framework to administer marine renewable energy projects in the federal offshore.

With respect to Renewable Energy Deployment, NRCan's **ecoENERGY for Renewable Power Program** and the **Wind Power Production Incentive** programs supported the production of 13.0 TWh of renewable electricity in 2015-16. As of March 31, 2016, 18 of 22 projects under the Wind Power Production Incentive program had completed their contribution agreements. These projects remain in operation and are continuing to produce clean electricity. Both of these programs had lower production levels than anticipated, resulting in not all of the funding being spent.

From 2011 to 2016, NRCan's **Alternative Fuels program** supported four technical committees in developing codes and standards for natural gas refueling stations and vehicles that helped facilitate lower-carbon fuel use in transportation. Through the Canada-U.S. Regulatory Cooperation Council, NRCan also worked closely with the U.S. Department of Energy to improve Canada-U.S. alignment of existing codes and standards and to develop new binational codes and standards that facilitated greater cross-border natural gas vehicle deployment.

From 2008 to 2012, NRCan's **ecoENERGY for Biofuels program** supported lower-carbon transportation fuel use in Canada by targeting 1,881 million and 555 million litres per year of built production capacity of ethanol and biodiesel respectively. Since 2012 there has been a substantial decrease in the number of Canadian facilities supported by the program, attributable to a number of factors including the end of 14 contribution agreements in March 2015 (a reduction from the original 21 agreements), the suspension and termination for non-compliance with terms of the agreement, and a catastrophic event (i.e., fire) at one existing facility. The program had lower production than anticipated, resulting in not all of the funding being spent, which explains part of the financial variance. In 2015-16, NRCan's ecoENERGY for Biofuels program contributed to achieving the production of 342 million litres of ethanol and 18 million litres of biodiesel.

From 2011 to 2016, NRCan's **ecoENERGY Efficiency program** saved more than 52 Petajoules (PJ) of energy, exceeding its 5-year target by 25 percent. Energy savings achieved through this program are equivalent to the energy required to power over 400,000 homes for a year. The program's energy efficiency standards, codes and certifications also helped support efforts by provinces and territories to reduce GHG emissions and improve energy efficiency.

Key program results in 2015-16 include:

- Improvements to the ENERGY STAR ® labeling initiative including the addition of one product category and increasing the required efficiency level of 11 other product categories;
- Delivery of the ENERGY STAR Portfolio Manager benchmarking tool to 14,000 Canadian commercial and institutional buildings (representing 169 million square metres or about 21 percent of Canada's commercial floor space) for tracking and benchmarking energy use. This exceeded the five-year program target of 9,000 buildings by 2015-16;
- Updates to the National Energy Code for Buildings, which have been officially adopted in British Columbia, Alberta, Manitoba, Ontario and Nova Scotia as well as in Vancouver, BC and Whitehorse, YT. As a result, approximately 70 percent of all new commercial floor space in Canada will be built to the new standard;
- Delivery of the SmartWay Transport Partnership initiative to more than 34,000 trucks (representing over 25 percent of all on-road freight activity in Canada) to reduce their energy use. Hundreds of companies operating in Canada (e.g., retailers, manufacturers, services) require their transportation fleets to participate in SmartWay as a way to maximize the efficiency of their supply chains;
- Providing support for more than 50 provincial, territorial, municipal, utility, and non-governmental programs and regulations with NRCan's EnerGuide Home Rating System, ENERGY STAR, for new homes and R-2000 housing standards; and
- Assisting with the adoption of ISO 50001 energy management standard in six industrial facilities. Since 2011, NRCan has assisted 23 industrial facilities adopt ISO 50001 in multiple sectors (forest products, mining, transportation equipment manufacturing, food and beverage, cement, and steel) achieving on average a 10 percent energy savings in the first year.

### Budgetary Financial Resources (dollars)

| 2015–16 Main Estimates | 2015–16 Planned Spending | 2015–16 Total Authorities Available for Use | 2015–16 Actual Spending (authorities used) | 2015–16 Difference (actual minus planned) |
|---|---|---|---|---|
| 253,978,461 | 253,978,461 | 258,837,128 | 211,012,423 | (42,966,038) |

### Human Resources (FTEs)

| 2015–16 Planned | 2015–16 Actual | 2015–16 Difference (actual minus planned) |
|---|---|---|
| 279 | 264 | (15) |

## 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 five-year trend, as per 2007 baseline of 786.1 million litres of ethanol and 92.8 million litres of biodiesel | **Results: 342 million litres of ethanol and 18 million litres of biodiesel were produced.**<br><br>The production capacity of biofuels in Canada increased steadily between 2007 and 2012.<br><br>In 2015-16, NRCan's ecoENERGY for Biofuels program contributed to achieving the production of 342 million litres of ethanol and 18 million litres of biodiesel. |
| | 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 five-year trend in PJ saved, as per 2008 baseline | **Results: 1,613.2 PJ**<br><br>From 2008 to 2013, energy efficiency savings in Canada showed a favorable trend. While total energy used by final consumers increased by 28% between 1990 and 2013, the increase without energy efficiency improvements would have been 51%.<br><br>From 1990 to 2013, energy efficiency in Canada improved 24%, a significant increase in energy savings which reduced energy use by 1,613.2 PJ, saved Canadians $37.6 billion and decreased GHG emissions by 85.4Mt in 2013. 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 2013-15 Report to Parliament under the *Energy Efficiency Act*. |
| | Renewable electricity generation capacity in megawatts (MW) across Canada | Favourable five-year trend in MW, as per 2007 baseline of 6,753 MW of installed capacity (excluding large hydro) | **Results: 14,301 MW (2013) and 17,236 MW (2014)**<br><br>Renewable electricity generation capacity increased from 14,301 MW in 2013 to 17,236 MW in 2014 (including small hydro). |

## 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 to environmental challenges. This objective is achieved through the generation and dissemination of scientific knowledge, and the development and demonstration of new technologies.

**Mandate Letter Commitments**

- ✓ Canada joined **Mission Innovation** in November 2015, committing to doubling its federal investments in clean energy innovation in five years.
- ✓ Funding was announced in **Budget 2016** to:
  - ✓ Demonstrate next generation electric vehicle charging infrastructure ($46.1 million over two years);
  - ✓ Demonstrate renewable energy, energy storage and clean transportation technologies to reduce diesel ($82.5 million over two years);
  - ✓ Demonstrate energy-efficient steam generation technologies to reduce emissions and water use in unconventional oil and gas operations ($50 million over two years); and
  - ✓ Develop, with Statistics Canada and ISED, core metrics for the clean energy sector and its impact ($2.1 million over two years).
- ✓ **Budget 2016** also earmarked over $1 billion over four years, starting in 2017-18 to support clean technology including in the natural resource sector.

### Program Performance Analysis and Lessons Learned

The Technology Innovation Program is home to Minister Carr's **mandate letter commitment** to work with the Minister of Innovation, Science and Economic Development, to develop a **Clean Technology Strategy** to support investment in innovation and the use of clean technologies in Canada's natural resource sectors (e.g., forestry, fisheries, mining, energy and agriculture).

In 2015-16, the Technology Innovation Program also delivered significant results in scientific research, development and demonstration in energy and mining.

In the area of **Clean Energy Science and Technology**, 204 projects were completed including clean energy research, development and demonstration projects in collaboration with industry, academia and other federal organizations, to address environmental challenges and GHG emission reductions.

The successful **ecoENERGY Innovation Initiative** (ecoEII), a $268 million program over 5 years (2011-16), completed its funding period. ecoEII's objective was to find ways to produce cleaner energy and to use it in more efficient ways. Leveraging more than $250 million from

partners to date, the ecoEII program has funded over 300 projects in total, including 70 projects with industry, technology producers, academia and other levels of government through contribution agreements.

## ecoENERGY Innovation Initiative 2015-16 Project Highlights

**TUGLIQ**

- TUGLIQ is Canada's first industrial-scale wind turbine (3MW) with hydrogen storage.
- It is installed at a Canadian nickel-copper mine.
- It displaced 2.4 million liters of arctic diesel, equivalent to 7,600 tCO2e of GHG emissions.
- TUGLIQ provides a flagship reference site in the Arctic to show mine operators and remote communities' the viability of alternatives to diesel to produce electricity.

**Canadian Hydrokinetic Test Centre (CHTTC)**

- Located in Winnipeg, MB, the CHTTC allows technology developers to test turbine systems fully integrated onto the national electricity grid.
- The CHTTC helps accelerate Canadian expertise in marine renewable energy solutions for Canada's many river systems and small-scale tidal sites.
- To date, four Canadian turbines have been tested at the CHTTC.

**Electric Vehicle (EV) Charging Station Networks**

- Two ecoEII projects supported the installation of over 1100 Level2 charging stations across Canada – 700 in Quebec, 100 in Ontario and 300 in British Columbia.
- These 1100 new EV charging stations make up one third of the increase in Canada from 2012 to 2016.

NRCan also completed a number of applied research and development projects focused on **materials for energy**, including:

- Innovative materials for use in power generation systems – development of a nano-silicon carbide-nickel composite coating, which was transferred to a Canadian company to improve the safety of current Canada Deuterium Uranium (CANDU) reactors;
- New technologies/standards to support the effective transport of fossil fuels – development of a new pipeline fracture toughness test method that was approved by the American Society of Testing and Materials (ASTM); and
- Innovative materials for greater vehicle efficiency – development of a medium carbon stainless steel for automotive exhaust components to be used by industry partners for new applications.

In the area of **Green Mining**, NRCan's research contributes to reducing the environmental footprint of the mining industry by reducing energy consumption – and, as a result, GHG emissions – through cleaner processes for oil sand production and reclamation of contaminated soils.

Development of technologies to reduce the impacts of mining and processing produced the following results in 2015-16:

- Identified different types of biochar – charcoal that is used for agricultural purposes – to determine the feasibility of developing productive agricultural land uses on former mine and mine waste sites;
- Developed a process for the treatment of oil-sands-produced waste water for recovery and recycle of water in in-situ oil sands;
- Worked towards improving efficiency in a grinding mill, and reducing energy costs by building and successfully testing the 3D free falling rock sizing sensor prototype in a rock quarry in Bedford, QC, in collaboration with two Canadian companies; and
- Finalized a small scale demonstration project in collaboration with the Green Mining Initiative Advisory Committee that maps recoverable waste energy in the grinding circuit of rocks.

**New Standards to Help Improve Automotive Fuel Efficiency**

- NRCan has developed an iron-castings specification that was adopted as a new standard by the ASTM).
- The standard covers iron castings used in high-temperature car exhaust manifolds, turbocharger housings, and in power generation plants.
- Lighter, more heat-resistant products for exhaust and turbocharger parts benefit the fuel efficiency of car engines. This standard assists automotive manufacturers to reduce the cost of iron castings and allows for greater design flexibility.

### Budgetary Financial Resources (dollars)

| 2015–16 Main Estimates | 2015–16 Planned Spending | 2015–16 Total Authorities Available for Use | 2015–16 Actual Spending (authorities used) | 2015–16 Difference (actual minus planned) |
|---|---|---|---|---|
| 126,472,078 | 126,472,078 | 143,292,764 | 143,620,407 | 17,148,329 |

Budgetary Financial Resources variance mostly explained by Real Property adjustment described in section on Internal Services.

### Human Resources (FTEs)

| 2015–16 Planned | 2015–16 Actual | 2015–16 Difference (actual minus planned) |
|---|---|---|
| 616 | 665 | 49 |

### 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 five years | **Results: 11%**<br>The target was achieved with an 11% average growth over the previous five year period. |

## 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.

### Program Performance Analysis and Lessons Learned

In 2015-16, NRCan undertook a range of activities to enable government departments, regulatory bodies and industry to manage environmental risks in natural resource development.

Under the **Forest Ecosystems Science and Application program**, NRCan:

- Expanded collaboration on the Canada-U.S. forest biomass map completed in 2014-15 to include Mexico in 2015-16, creating the first North American above-ground forest biomass map; and
- Collaborated with the tri-national Commission on Environmental Cooperation to apply improved regional scale tools in support of climate change mitigation analyses in the North American forest sector.

In 2015-16, NRCan's **Groundwater Geoscience program**:

- Met its target to map 25 percent of three aquifers in Ontario; and
- Increased geoscience data and scientific products by 5 percent relative to 2014-15, and released the following products to the public:
    - Six geology maps (Ontario);
    - New data covering 19,441 boreholes in Ontario and 48 water wells in Nova Scotia; and
    - Data for the Milk River Aquifer (Transboundary aquifer Alberta-U.S.).

NRCan also released findings on the effects of hydraulic fracturing on shallow aquifers and induced seismicity to the public (publications available through Geoscan), information that furthered Canada's scientific and technical knowledge of the impacts of unconventional resource development on groundwater and seismicity.

Under the **Radioactive Waste Management** program, NRCan managed for part of the year the NLLP and the Port Hope Area Initiative (PHAI), and provided oversight for the Low-level Radioactive Waste Management Office (LLRWMO) to address the federal government's legacy and historic wastes responsibilities.

NRCan's **Nuclear Legacy Liabilities Program** ended on September 13, 2015, with the completion of the Atomic Energy of Canada Limited restructuring process (see Program 1.1 for full details on the restructuring) and the full implementation of the new management model for Canadian Nuclear Laboratories. At the program end date, 80 percent of the decommissioning and radioactive waste management milestones due for completion had been achieved. Canadian Nuclear Laboratories was expecting to complete 90 percent of the 2015-16 program milestones by the end of March 2016. Key results in 2015-16 to reduce Canada's environmental nuclear liabilities include:

- Repatriation of used highly enriched uranium (HEU) fuel from Canada's NRX and NRU research reactors in Chalk River, back to the U.S.;
- Initiation of testing of technologies for treating waste from medical isotope production to stabilize it for future disposal;

- Awarding of the contract to demolish half of the main nuclear research complex at Whiteshell Laboratories; and
- Commencement of operations at the Fuel Packaging and Storage facility with the successful retrieval, repackaging and processing of damaged research reactor fuel.

NRCan's responsibilities related to the **Port Hope Area Initiative** (PHAI) also ended on September 13, 2015, with the completion of the Atomic Energy of Canada Limited restructuring process. Both the Port Hope and Port Granby projects managed under the Initiative are targeted to be 100 percent complete by March 31, 2022.

As of the transfer date, 100 percent of the milestones related to the transfer of Canada's PHAI responsibilities from NRCan to Atomic Energy of Canada Limited had been completed, including the transfer of all Public Services and Procurement Canada led contracts to Canadian Nuclear Laboratories.

The major construction contract for the Port Granby long-term waste management facility was awarded and the waste water treatment plant was on target to complete active commissioning by year end. Under the Port Hope Project, as of the transfer date, major resurvey contracts for roads and residential properties had also been awarded. The transfer of NLLP and PHAI largely accounts for the financial variance between Planned and Actual Spending.

NRCan's **Earth Observation** program provides Earth observation and geospatial data on oil- and gas-concentrated regions such as the North and the Alberta oil sands, to inform identification of baseline conditions and cumulative effects of natural resource development.

**Earth Observation collaboration with the Alberta Energy Regulator**

- Collaborated with the Alberta Energy Regulator (AER) to deliver a public report describing how earth observation information and products could be used to improve environmental performance of energy development in the province of Alberta;
- Supported the AER, in its efforts to prevent harmful bitumen leaks, in using satellite-based techniques developed at NRCan to better model and understand the impacts of oil sands bitumen extraction on the integrity of the resource reservoir;
- Provided updated and improved satellite–based snow cover and peatland maps, which were used by Alberta Environment and Parks to better identify fire risk and wetland health in the Alberta oil sands region; and
- Provided recommendations to the AER on new satellite-based tools capable of measuring changes in energy infrastructure in the Alberta oil and gas development areas (which the AER has begun to operationalize).

In 2015-16, NRCan undertook some specific tasks with the AER, which are **detailed in the red box on page 51**. The Department also continued its on-going work with stakeholders to advance the use of Earth observation information and methods to measure the cumulative impacts of resource development and climate change. Using NRCan's satellite-based information and products, the Government of the Northwest Territories created two new environmental indicators in 2015-16 for their annual State of the Environment report: (1) changes in shrub cover, and (2) changes in permafrost-related terrain subsidence.

NRCan also assessed the impact of wildfires and climate change on arctic permafrost using satellite data and modelling. In addition to new remote sensing and geophysical methods developed to assess permafrost terrain changes, new maps of permafrost distribution were also created allowing better understanding of risks to northern infrastructure (e.g., roads, pipelines).

### Budgetary Financial Resources (dollars)

| 2015–16 Main Estimates | 2015–16 Planned Spending | 2015–16 Total Authorities Available for Use | 2015–16 Actual Spending (authorities used) | 2015–16 Difference (actual minus planned) |
|---|---|---|---|---|
| 193,117,981 | 193,117,981 | 410,119,888 | 121,598,627 | (71,519,354) |

### Human Resources (FTEs)

| 2015–16 Planned | 2015–16 Actual | 2015–16 Difference (actual minus planned) |
|---|---|---|
| 233 | 244 | 11 |

### 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 | **Seven** (specifically environmental impacts reduced at Whiteshell Laboratories and Chalk River Laboratories, Glace Bay, Port Granby waste management facility, and Port Hope Welcome waste management facility, Port Hope sites and Northern Transportation Route sites) | **Results: seven**<br><br>NRCan's NLLP ended on September 13, 2015. Details of the completion of work under this program can be found above in the Program Performance Analysis and Lessons Learned. |

| | | | |
|---|---|---|---|
| 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 | **Three** annually | **Results: four**<br><br>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.<br>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.<br>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.<br>4. NRCan's Environmental Geoscience Program's work on background seismicity is mentioned in the Strategic Environmental Assessment of Quebec hydrocarbon report which is one of the province's decision-making tools in relation to its global energy policy. In addition, scientists from the |

| | | | |
|---|---|---|---|
| | | | Environmental Geoscience Program are providing expertise and sharing knowledge to help the Government of the Northwest Territories identify health related issues due to arsenic in the environment after new data was acquired on arsenic in soils, water and sediments in the Yellowknife area. |

## 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 (including explosives and earthquakes).

### Program Performance Analysis and Lessons Learned

In 2015-16, NRCan implemented new regulations on security screening for individuals with access to high-risk explosives and continued to support the protection of Canadians through collaboration with the Department of National Defence and Defence Research and Development Canada (DRDC) through the creation of new armour materials for enhanced protection for military assets and personnel. NRCan also supported industry’s need for qualified Non-Destructive Testing (NDT) technicians, who are responsible for inspection of infrastructure and other components critical to public safety, by maintaining 17,533 NDT certifications.

Through its research, NRCan also contributed to the preparedness against natural hazards and risk mitigation of natural disasters in Canada. NRCan program experts published an earthquake risk assessment for the District of North Vancouver and released a seismic hazard assessment and marine geology and geomorphology maps for BC's North Coast in support of a world-class tanker safety regime.

In the area of **Forest Disturbances Science and Applications**, NRCan:

- Provided forest managers with indicators and a ready-to-use, science-based adaptation toolkit for forest change tracking and adaptation;
- Supported an early intervention strategy for spruce budworm, and provided scientific advice to slow the spread of mountain pine beetle; and

- Supported the development of a Canadian Wildland Fire Preparedness and Response Plan under the direction of the Canadian Council of Forest Ministers.

### Budgetary Financial Resources (dollars)

| 2015–16 Main Estimates | 2015–16 Planned Spending | 2015–16 Total Authorities Available for Use | 2015–16 Actual Spending (authorities used) | 2015–16 Difference (actual minus planned) |
|---|---|---|---|---|
| 58,672,639 | 58,672,639 | 73,440,885 | 73,709,947 | 15,037,308 |

Budgetary Financial Resources variance mostly explained by Real Property adjustment described in section on Internal Services.

### Human Resources (FTEs)

| 2015–16 Planned | 2015–16 Actual | 2015–16 Difference (actual minus planned) |
|---|---|---|
| 456 | 474 | 18 |

### 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 | **Six** collaboration agreements | **Results: six**<br>Maintained existing networks through delivery of Canada's Adaptation Platform, an NRCan led initiative that brings together governments, national industry, professional, and not-for-profit organizations to collaborate on adaptation priorities. This included, for example, a new collaborative initiative with Chartered Professional Accountants to help prepare their membership of 190,000+ to address climate change adaptation in their work.<br>New collaboration agreements were also established with provinces, territories and other federal departments to support enhanced forest disturbance management across Canada. For example, a collaborative project with the Northwest Territories provided aerial survey training to forest health specialists. A collaborative agreement was also established with Ontario to develop tools for the early |

| | | | |
|---|---|---|---|
| | | | detection and management of emerald ash borer, which is an exotic pest that is killing ash trees in urban areas of southern Ontario and Quebec.<br><br>The Ontario Centre for Climate Adaptation Research, Ouranos (a Consortium in Quebec) and NRCan collaborated to prepare for a national conference in early 2016 (*Adaptation Canada 2016*) to showcase results of the federal adaptation programming and provide the first national networking opportunity in ten years. |
| | Number of risk assessments (climate change, hazards, other), policies, standards or guidelines developed using NRCan information or services | **Five** annually | **Results: eight**<br><br>NRCan expertise was used to develop three new risk assessments with respect to climate change adaptation. Delivered through the Adaptation Platform, these included a risk assessment for the oil and gas sector of Northeastern British Columbia, and a risk and opportunity assessment of climate change on British Columbia electricity demand.<br><br>NRCan geohazard knowledge products contributed to five standards and guidelines developed by public and private sector organizations. Most notably, NRCAN developed seismic hazard models that were used to inform the National Research Council Canada's 2015-2020 update of National Building Code of Canada. |

## 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.

## Program Performance Analysis and Lessons Learned

In 2015-16, NRCan provided successful satellite reception service for the Canadian Space Agency's (CSA) RADARSAT-2, with service available to key government and private sector clients 99.8 percent of the time. RADARSAT-2 transmits data on sea ice mapping and ship routing, iceberg detection, agricultural crop monitoring, marine surveillance for ship and pollution detection, terrestrial defence surveillance and target identification, geological mapping, mine monitoring, and land use, wetlands and topographic mapping.

NRCan also optimized federal satellite infrastructure by integrating antenna capabilities, thus avoiding an additional $10 million in expenditures across federal departments. Through continued improvements to storage and data archiving technologies, NRCan is ensuring that Canada will be in a position to make use of future nationally-significant data streams and decades of archived satellite imagery from all sources towards understanding Canada's changing landmass. This includes planning for the upcoming RADARSAT Constellation Mission, led by CSA and expected to launch in 2018, which will be a three-satellite configuration to provide greater coverage of Canada's landscape to facilitate maritime surveillance, disaster management and ecosystem monitoring.

### United Nations Convention on the Law of the Sea

Ratification of the United Nations Convention on the Law of the Sea (UNCLOS) in 2003 requires Canada to delineate the outer limits of its extended continental shelf beyond 200 nautical miles and to submit this information to the UN Commission on the Limits of the Continental Shelf. International recognition of its new offshore boundaries will give Canada jurisdiction over the natural resources on the seabed and in the subsoil.

In 2015, NRCan's UNCLOS program conducted a 42-day survey in Amundsen Basin and the Lomonosov Ridge, mapping several critical points and acquiring 500 km of geophysical data, providing key scientific evidence for Canada.

The UNCLOS program also began planning the 2016 expedition in collaboration with the Swedish Polar Research Secretariat, securing the use of the Swedish icebreaker Oden to provide support to the Canadian Coast Guard Ship Louis S. St-Laurent during the 2016 survey. Related bilateral agreements also provide a framework for scientific collaboration between Canada and Sweden during the upcoming survey, allowing scientists from both countries to undertake joint research to improve our knowledge of the Arctic

NRCan continues to lead the GeoBase initiative, a collaboration of federal, provincial and territorial partners to ensure public access to nationally-significant data streams about Canada's changing landmass, including geodetics (land surveys), geographical names, geopolitical boundaries, federal electoral districts, road and railway networks, etc. In 2015-16, updates were made to data layers of the Canadian Geographical Names Data Base, National Road Network,

National Railway Network, and National Hydrographic Network. These models serve as key building blocks to integrate economic and social data that help drive open and big data.

Under the **Canada's Legal Boundaries** program, NRCan completed International Boundary Maintenance work along portions of the Yukon-Alaska, British Columbia-Washington and Quebec-New York/Vermont/Maine boundaries. The Department also published 132 research reports and 45 land descriptions that were recorded in the Canada Lands Survey Records in support of First Nation Land Management. NRCan continued transitioning to electronic approvals and official registration of legal survey plans for the Canada Lands Survey System (expected completion by March 2018).

NRCan completed the first phase of the **International Great Lake Datum (IGLD)** GPS survey work in collaboration with the United States National Oceanic and Atmospheric Administration, ECCC and the Canadian Hydrographic Service. This internationally-coordinated vertical datum is the reference system by which Great Lakes and St-Lawrence River Basin water levels are measured to ensure safe navigation, and compliance with international treaties and regulation. The 2015 survey is the first phase of the update to the 1985 IGLD datum, which requires a refresh every 25 to 30 years due to movement of the earth's crust.

NRCan's **Polar Continental Shelf Program (PCSP)** provided logistics support to 168 science and operations projects, 8 Canadian Armed Forces Arctic Training Centre projects and 12 Search and Rescue activities. The PCSP also provided specialized field equipment support to hundreds of projects working across the Canadian landmass, more than 10,500 person nights of accommodation at its facility in Resolute and coordinated more than 5,077 hours of flying on chartered aircraft. To maximize efficiencies, the PCSP partners with major science programs and other federal government departments and agencies to provide whole-of-government approach to meet Government of Canada objectives. Work on PCSP and UNCLOS largely account for the financial and human resources variances between Planned and Actual Spending.

### Budgetary Financial Resources (dollars)

| 2015–16 Main Estimates | 2015–16 Planned Spending | 2015–16 Total Authorities Available for Use | 2015–16 Actual Spending (authorities used) | 2015–16 Difference (actual minus planned) |
|---|---|---|---|---|
| 71,155,143 | 71,155,143 | 83,529,098 | 74,110,670 | 2,955,527 |

## Human Resources (FTEs)

| 2015–16 Planned | 2015–16 Actual | 2015–16 Difference (actual minus planned) |
|---|---|---|
| 420 | 383 | (37) |

## Performance Results

| Expected Results | Performance Indicators | Targets | Actual Results |
|---|---|---|---|
| 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: 90%**<br>Through a client satisfaction questionnaire administered in 2015-16, 90% of respondents indicated they were either satisfied or very satisfied with the mix and quality of logistics support provided by the PCSP. |
| Public, private sector and academia use accurate, Government of Canada geo-information for decision-making | Number of public sector, private sector or academic organizations using accurate geo-information for decision-making | **Ten** federal departments or agencies, **five** private sector companies and **three** academic organizations | **Results: Achieved**<br>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.<br>Geospatial data products (i.e. data sets, maps) represent more than 5 million downloads annually from more than 2,300 requests from the public, private sector, governments, NGOs and academic organizations. There is an increase of more than 50% in use of the recent Clip-Zip-Ship tool for custom data coverage delivery.<br>In 2015-16, users of NRCan's National Earth Observation Data Framework Catalogue included:<br>• 27 federal government organizations;<br>• 12 provincial or territorial organizations;<br>• 40 academic organizations; and<br>• 2,253 general users (including general public and representatives of private organizations) |

| | | | |
|---|---|---|---|
| | Pieces of evidence identifying that the Canada Lands Survey System activities are meeting stakeholder needs | **One** piece each from First Nations, other government departments and industry for the Canada Lands Survey System<br><br>**One** piece from an international boundary stakeholder | **Results: Achieved**<br>Evidence collected for 2015-16 indicates that stakeholder needs were met and benefits from modernization of the Canada Lands Survey System were realized by stakeholders.<br><br>Stakeholders identified areas for improvement including increased alignment with the Yukon Land Titles System. |

# 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. Internal services include only those activities and resources that apply across an organization, and not those provided to a specific program. The groups of activities 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; and Acquisition Services.

## Program Performance Analysis and Lessons Learned

### Open Government and Science Computing

In 2015-16, NRCan’s Science and Computing Task Team assessed specific computing needs required to improve science computing capabilities, such as identifying opportunities for the integration of requirements from the Open Government Directive into NRCan’s S&T policies and reporting. NRCan's Open Government Steering Committee is finalizing governance and activities to be included in the Open Government Implementation Plan (OGIP), which will be finalized in 2016-17.

### Science Promotion Strategy

NRCan undertook proactive regional and national media outreach, including interviews with scientists, resulting in 380 stories across 225 media outlets. The Department also expanded its use of social media including media-friendly videos on YouTube and partnered with The Daily Planet, The Weather Network and Canadian Geographic to promote NRCan science.

**Government of Canada Web Renewal**

To prepare for web renewal, NRCan reviewed and optimized web content resulting in a reduction from 75,000 to 9,000 web pages. The Department also established new governance including a working-level web committee and an executive-level digital communications oversight committee and engaged the leads of various Canada.ca themes pertinent to NRCan.

**Modernizing IT Infrastructure**

NRCan made progress in modernizing its IT Infrastructure by migrating applications to Shared Services Canada Enterprise Data Centres and retiring 46 of 87 applications. The NRCan Cyber Security Action Plan is currently in Phase 2. This initiative protects NRCan's assets against Cyber Threats, and will improve how the Department responds to cyber-level incidents. The Shared Services Cost Effective Telephony Initiative is fully implemented and the Department has fully migrated to Legacy mailboxes in September 2015, completing Phase 1 of the Email Transformation Initiative.

**Government-Wide Initiatives**

During NRCan's first full year of implementation of government-wide initiatives such as the Performance Management program for employees, GCDOCS, and pay system renewal, the Department focused on change management and improving performance.

Strong focus was also placed on increasing management capacity to hold effective performance and career conversations in tandem with use of the new Public Service Performance Measurement application and rating scales. This included peer coaching circles, targeted performance management clinics and tools to increase consistency of performance objectives. GCDOCS was migrated to the end state data centre and an approach to migrate electronic information of business value to GCDOCS in 2016-17 has been developed.

**Emergency Procedures and Physical Security**

NRCan undertook several initiatives in 2015-16 to enhance physical security to better protect its employees and assets. Work is underway to conduct risk assessments on all NRCan facilities. The Department has successfully developed a policy framework and implementation plan for the roll-out of a departmental Occupational Health and Safety Management System (OHSMS). The OHSMS will standardize NRCan’s Occupational Health and Safety (OHS) practices and work towards improved OHS performance. Furthermore, the Department has begun analysis to prepare for the replacement of a key physical security system. The departmental Building Emergency Organization has worked with regional locations to analyze and update the building emergency and evacuation plans.

**Booth Street Complex Project**

In 2015-16, the Department made significant progress re-accommodating Booth Street Complex (BSC) staff and programs out of 615 Booth St., and advancing our re-accommodation strategy for all BSC custodial buildings and the Finance Annex at Tunney's Pasture. The department was also successful in selling its lands and buildings that comprise the North-West Quadrant of the BSC to Canada Lands Corporation in October 2015.

**Federal Infrastructure Initiative**

Under the 2014 Federal Infrastructure Initiative, NRCan successfully completed close to $40 million in major repairs and upgrades of the Department’s laboratories and research facilities in 15 locations across Canada, including:

- Repairs and upgrades to the base building infrastructure in NRCan's research facilities such as roofs, lighting, heat and air handling systems, security and fire suppression system and electrical distribution; and
- Laboratory upgrades to support NRCan's science research and energy efficiency and carbon reduction investments.

Efforts to reflect real property expenditures in 2015-16 against the program the property supported, where practical, resulted in a significant amount of expenditures planned in Internal Services being transferred to various programs, which, offset by some Federal Infrastructure Initiative expenses being recorded in Internal Services, largely explains the financial variance.

**Federal Sustainable Development Strategy**

In addition to the initiatives outlined above, NRCan is a participant in the 2013-16 Federal Sustainable Development Strategy (FSDS) and contributes to the Theme IV (Greening Government Operations) targets through the internal services program. In 2015-16, the Department has:

- Further reduced the departmental GHG emissions from its buildings and fleet;
- Achieved an industry-recognized level of high environmental performance in Government of Canada real property projects and operations;
- Acted in accordance with the Federal Policy on Green Procurement. This includes: green procurement training taken by functional specialists, now available for managers, and now mandatory for new Acquisition Card holders. It also includes developing, and monitoring progress against, specific commodity targets (SMART targets below);
- Improved the sustainability of its workplace by integrating environmental considerations into corporate policies, processes and practices; and
- Established SMART targets to reduce the environmental impact of goods/services acquired for its clients. This includes SMART targets for acquiring ‘green’ copy paper,

‘green’ furniture, as well as the reduction of GHG emissions resulting from business-related travel.

Additional details regarding NRCan’s contribution to the 2013-16 FSDS can be found in the Departmental Sustainable Development Strategy Supplementary Information Table.

### Budgetary Financial Resources (dollars)

| 2015–16 Main Estimates | 2015–16 Planned Spending | 2015–16 Total Authorities Available for Use | 2015–16 Actual Spending (authorities used) | 2015–16 Difference (actual minus planned) |
|---|---|---|---|---|
| 142,789,148 | 142,789,148 | 147,374,207 | 125,564,854 | (17,224,294) |

### Human Resources (FTEs)

| 2015–16 Planned | 2015–16 Actual | 2015–16 Difference (actual minus planned) |
|---|---|---|
| 985 | 940 | (45) |

# Section IV: Supplementary Information

## Supporting Information on Lower-Level Programs

Supporting information on lower-level programs is available on the NRCan website.[xvii]

## Supplementary Information Tables

The following supplementary information tables are available on the NRCan website.[xviii]

- 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
- Up-Front Multi-Year Funding
- User Fees, Regulatory Charges and External Fees

## Federal Tax Expenditures

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 Report of Federal Tax Expenditures.[xix] This report also provides detailed background information on tax expenditures, including descriptions, objectives, historical information and references to related federal spending programs. The tax measures presented in this report are the responsibility of the Minister of Finance.

## Organizational Contact Information

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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*): Operating and capital expenditures; transfer payments to other levels of government, organizations or individuals; and payments to Crown corporations.

**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 Reports on Plans and Priorities. These reports are tabled in Parliament in the fall.

**full-time equivalent** (*équivalent temps plein*): 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*): Net outlays and receipts related to loans, investments and advances, which change the composition of the financial assets of the Government of Canada.

**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.

**plans** (*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.

**results** (*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.

**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 Limited, http://www.aecl.ca/en/home/default.aspx
ii National Energy Board, http://www.neb.gc.ca/clf-nsi/rcmmn/hm-eng.html
iii Canadian Nuclear Safety Commission, http://www.cnsc-ccsn.gc.ca/eng/
iv Canada-Newfoundland and Labrador Offshore Petroleum Board, http://www.cnlopb.ca
v Canada-Nova Scotia Offshore Petroleum Board, http://www.cnsopb.ns.ca/
vi Northern Pipeline Agency, http://npa.gc.ca/home
vii Sustainable Development Technology Canada, http://www.sdtc.ca/index.php?page=home&hl=en_CA
viii *Department of Natural Resources Act,* http://laws-lois.justice.gc.ca/eng/acts/N-20.8/
ix *Forestry Act,* http://laws-lois.justice.gc.ca/eng/acts/F-30/
x *Resources and Technical Surveys Act,* http://laws-lois.justice.gc.ca/eng/acts/R-7/
xi *Energy Efficiency Act,* http://laws-lois.justice.gc.ca/eng/acts/e-6.4/
xii Greenhouse Gas Emissions, https://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=FBF8455E-1
xiii. Public Accounts of Canada 2016, http://www.tpsgc-pwgsc.gc.ca/recgen/cpc-pac/index-eng.html
xiv. Whole-of-Government Framework, http://www.tbs-sct.gc.ca/hgw-cgf/finances/rgs-erdg/wgf-ipp-eng.asp
xv NRCan 2015-16 Financial Statements, http://www.nrcan.gc.ca/plans-performance-reports/197
xvi NRCan 2015-16 Consolidated Future-Oriented Statement of Operations, http://www.nrcan.gc.ca/plans-performance-reports/2015-16/17081
xvii Supporting Information on Lower-Level Programs, http://www.nrcan.gc.ca/plans-performance-reports/dpr/2015-2016/19073
xviii Supplementary Information Tables, http://www.nrcan.gc.ca/plans-performance-reports/dpr/2015-2016/19004
xix. Report of Federal Tax Expenditures, http://www.fin.gc.ca/purl/taxexp-eng.asp