

# Natural Resources Canada

2017–18

## **Departmental Results Report**

Originally signed by

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The Honourable Amarjeet Sohi, P.C., M.P.

Minister of Natural Resources

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## Minister's message

I'm delighted to present the 2017-2018 Departmental Results Report for Natural Resources Canada (NRCan). The following pages reflect a year of significant achievement in helping Canadians embrace the opportunities of a low-carbon future.



Central to those efforts was Generation Energy, the largest conversation about energy in our history. Canadians told us they want a future of clean, affordable and reliable energy – one that respects Indigenous rights, protects the environment and grows our economy. That vision is reflected in the policies we presented and will continue to inform our efforts in the year ahead.

The legislation introduced to modernize the National Energy Board is a prime example of positioning Canadians to succeed. It will transform how we assess major resource projects - whether a new mine, dam or pipeline - while protecting the environment and providing certainty to investors.

To make Canada a global leader in the use of sustainable biomass, we helped develop the Forest Bioeconomy Framework. This will decarbonize the economy as a whole and create economic opportunities and job creation in rural and Indigenous communities.

As Canada continues to renew its nation-to-nation relationship with Indigenous Peoples, we are supporting improved capacity in areas such as environmental stewardship and forest management.

Over the past year, our department launched discussions on the Canadian Minerals and Metals Plan – a plan that prepares for the mining industry of the future, where emissions are lower and productivity is higher; where there are more Indigenous-owned companies and more women in every type of job.

To make it easier for Canadians to develop their clean tech ideas, we created a single point of access to all government funding and services. And women entrepreneurs were encouraged to share their innovations through a new prize-based Women in Cleantech challenge.

The department introduced several new programs to build the green infrastructure of tomorrow – everything from smart grids and alternative fuel charging stations to more energy efficient buildings. We also made important strides in helping rural and remote communities use cleaner,

healthier forms of energy. And communities across the country were given new tools to help them adapt to climate change.

Internationally, NRCan continued to expand global markets for our resources, including liquefied natural gas, creating new opportunities for Canadian producers.

As the world moves toward a low-carbon future, NRCan will continue to play a key role, supporting Canada’s natural resource sectors as they make our traditional energy even cleaner, develop renewables, promote energy efficiency, provide key minerals and metals and bring exciting new wood products to market.

It’s an exciting time to be part of Natural Resources Canada and I look forward to continuing this important work for Canadians.

The Honourable Amarjeet Sohi, P.C., M.P.  
Minister of Natural Resource

## Results at a glance

Canada's natural resources play a critical role in the transition to a low-carbon future and remain an important source of jobs, prosperity and opportunity, accounting for 17% of all economic activity. To improve the quality of life for all Canadians, Natural Resources Canada (NRCan) advances the sustainable development of these resources through its programs, world-class research and development, as well as domestic and international engagement.

In 2017-18, NRCan made significant progress on delivering results for Canadians and meeting the Minister's Mandate Letter Commitments in five priority areas highlighted below.

### **Priority Economic Growth through Innovation**

Canada's vision for a clean, innovative economy balances both economic growth and environmental protection through natural resource sectors that are stronger, more sustainable and more competitive. In 2017-18, NRCan:

- Helped meet Canada's climate change goals, create jobs, and Canadian companies commercialize and expand their access to global markets by investing in innovative clean technologies through the Clean Growth Program (\$155 million over four years). To grow projects or companies, NRCan launched the Clean Growth Hub jointly with Innovation, Science and Economic Development Canada to provide a whole-of-government focal point for access to programs, services and funding (engaged with over 200 companies as of March 2018).
- Helped find marketable breakthrough solutions to environmental challenges while at the same time promoting gender equality by launching the Women in Cleantech Challenge, the first of NRCan's five prize-based competitions under the Impact Canada initiative.
- Advanced Government of Canada priorities in forest sector innovation and growth with targeted investments, including through the Indigenous Forestry Initiative (IFI) (additional \$10 million) and the Forest Innovation Program (funded 17 projects, valued at \$1.2 million). These investments were reinforced by the release of Canada's Forest Bioeconomy Framework by the Canadian Council of Forest Ministers and by NRCan's innovative forest research which supports economic development and the shift to the emerging bio-economy.
- Addressed mining issues from spurring innovation to providing regulatory certainty and support a diverse workforce, including for Indigenous peoples, by initiating the Canadian Minerals and Metals Plan with provincial mining ministers. NRCan also helped to reduce energy consumption and greenhouse gas emissions through the Green Mining Innovation Program for improved productivity and competitiveness.
- Supported efforts to advance the global competitiveness of Canada's liquefied natural gas and offshore sectors by convening a Joint Working Group on oil and gas competitiveness with provinces.
- Helped develop economic growth strategies to support long-term resource competitiveness by co-leading the creation of the Clean Technology and Resources of the Future Economic Strategy Tables.

**Priority**

**Effective Action on Climate Change**

Effective action on climate change means reducing our greenhouse gas emissions while growing our economy and making informed decisions to adapt to a changing climate. In 2017-18, NRCan:

- Continued implementation of more than half of the 50 actions under the Pan Canadian Framework on Clean Growth and Climate Change (PCF) and worked with provinces and territories on actions under the Canadian Energy Strategy (CES). This includes launching five Green Infrastructure programs: Clean Energy for Rural and Remote Communities (including partnering with Indigenous communities), Emerging Renewable Power (such as, solar, biomass, tidal), Smart Grids, Electric Vehicle and Alternative Fuel Infrastructure, and Energy Efficient Buildings.
- Spearheaded the Generation Energy dialogue to produce a vision for a prosperous energy future that balances environmental and economic interests. This dialogue was the largest, most diverse conversation about energy in Canada’s history, with more than 380,000 Canadians and international experts participating.
- Expanded the ENERGY STAR® program to include industry and buildings for enhanced energy efficiency, reduced costs, and increased competitiveness. NRCan is also introducing new energy efficiency standards to reduce differences that exist between federal and provincial regulations.
- Hosted a successful meeting to prepare for the Clean Energy Ministerial (CEM) and Mission Innovation (MI) which was held in Europe in May and which Canada will host in 2019.

**Priority**

**Increase Trade, Growth and Foreign Direct Investment in the Natural Resources Sector**

NRCan worked closely with domestic and international partners to promote trade and investment, support greater access to foreign markets and maintain Canada’s overall natural resources advantage. In 2017-18, NRCan:

- Helped restore Canadians’ confidence in how major resource projects are reviewed, protect the environment and provide certainty to businesses and investors by contributing to the Government of Canada’s comprehensive review of environmental and regulatory processes, working closely with other government departments on legislation that will modernize the National Energy Board by establishing a new Canadian Energy Regulator and creating the Impact Assessment Agency of Canada.
- Provided ongoing support to renegotiating NAFTA and NRCan also made significant progress promoting Canada’s energy sector through the Canada-Mexico Partnership, which led to increased participation by Indigenous communities and generated ideas for improving the consultation process. Agreement on enhanced energy integration and collaboration was reached at the North American Energy Ministerial in November.
- Strengthened bilateral cooperation with China through a large trade mission in June 2017. The mission resulted in signed trade agreements worth close to \$100 million, including for integrating zero-emission motors on Chinese city buses and developing solar seasonal



storage for district heating systems. The Canada-India Ministerial Energy Dialogue was expanded to include electricity, energy efficiency, and renewable energy.

- Advanced foreign investment in Canada's natural resource sectors and strengthened market access by leading over 20 trade and investment missions in 2017-18. NRCan also supported the G7 Energy Ministerial, the International Energy Forum and the International Atomic Energy Agency by sharing best practices and expertise and enhancing science and technology collaboration.

### Priority

#### **Advance Reconciliation and Enhance Economic Outcomes in Indigenous Communities**

A renewed relationship with Indigenous peoples includes improving economic opportunities in communities and ensuring that they benefit from natural resource projects. In 2017-18, NRCan:

- Co-developed and implemented Indigenous Advisory and Monitoring Committees to help oversee the Trans Mountain Expansion and Line 3 Replacement projects. The first of their kind, these Committees approved contribution agreements worth over \$11 million and their work has informed government and regulatory policies.
- Advanced economic development for Indigenous communities through improving access to federal programs and services related to pipeline projects by launching the Economic Pathways Partnership pilot.
- Promoted increased Indigenous participation in Generation Energy, the Energy and Mines Ministers' Conference and the Canadian Council of Forest Ministers meeting.
- Moved forward in helping to reduce the reliance of rural and remote communities on diesel fuel for heat and power by launching the Clean Energy for Rural and Remote Communities program in February 2018 that provides funding to clean energy projects in those communities (\$218 million over six years).
- Supported economic development projects of 35 Indigenous communities and regional organizations in the areas of environmental stewardship, forest resource management and use, and participation in the forest bioeconomy by funding 30 projects under the Indigenous Forestry Initiative (IFI) as part of Canada's Softwood Lumber Action Plan (SLAP).
- Advanced the participation of Indigenous peoples in the mining industry, addressed competitiveness challenges, and raised the level of the mining industry's economic contribution in regions across the country by developing the Canadian Minerals and Metals Plan in August 2017 (which is targeted for release in 2019).

### Priority

#### **Greater Safety and Security for Canadians**

The Department contributed to the protection of Canadians, Canada's infrastructure and the environment by providing critical tools to help fight natural disasters and protect Canada's oceans and lands. In 2017-18, NRCan:

- Released a new satellite monitoring system for tracking fires, upgraded 50 seismic stations to monitor earthquakes and enhanced the Emergency Geomatics Service to improve situational awareness during floods and wildfires.

- Assisted in safeguarding our coasts and oceans from oil spills by contributing essential research to the Government of Canada’s Oceans Protection Plan as well as key mapping data for the moratorium on tanker traffic along British Columbia’s north coast. NRCan also continued its work on advancing regulations under the Pipeline Safety Act.
- Contributed geoscience knowledge and advice to environmental impact assessments to help reduce adverse environmental effects and ensure proper mitigation measures were in place for 53 development projects (e.g., mining, oil and gas, nuclear projects).
- Helped minimize forest loss through research on the Spruce Budworm and Mountain Pine Beetle that continue to threaten millions of hectares of North American forests, including through an innovative early intervention strategy for controlling the spruce budworm.

2017-18 Actual Spending	2017-18 Actual Full-Time Equivalents
\$1,566 million	3,980

For more information on Natural Resources Canada’s plans, priorities and results achieved, see the “Results: what we achieved” section of this report.



## Operating context and key risks

### Operating context

Canada's wealth of natural resources, which include renewable and non-renewable energy, minerals and metals, and forests, are key to our economic prosperity and provide Canadians with good jobs and business opportunities. In 2017, Canada's natural resource sectors accounted for approximately 17% of Canada's nominal gross domestic product and directly or indirectly provided 1.8 million jobs.

NRCan works to advance the prosperity of Canada's natural resource sectors while also achieving environmental results such as reduced greenhouse gas (GHG) emissions through sustainable practices. In fulfilling its mandate, the Department faced a number of domestic and global challenges in 2017–18.

First, the emergence of large and growing export markets for natural resources, such as China and India, is increasing the overall demand for natural resources and putting positive pressure on commodity prices. Together with demand from the United States, which continues to be generally strong, and specific measures on our softwood lumber exports, this upward trend in demand gives Canada opportunities for increasing our exports and driving further economic growth and job creation.

Secondly, as Canada's natural resource industries work to gain their share of the growing global market, they face an evolving competitive landscape marked by cyclical downturns in pricing, changing supply and demand patterns in the United States and beyond, and regulatory changes and new policy approaches to climate change and carbon pricing. In response, in 2017–18, NRCan worked with international partners to promote investment in Canada's natural resource sectors and collaborated with Canadian industry to research, develop and test innovative approaches, diversify products and services, and leveraged knowledge and clean technologies to ensure we stay competitive. In addition, the Department continued to work to ensure that the right structures are in place—including resource management systems, environmental and regulatory regimes, and accessible public geoscience—to support Canada's competitive advantage in the natural resource sectors.

Thirdly, 2017–18 saw a continued increase in competition in natural resource markets worldwide, accompanied by a greater emphasis on sustainability and environmental stewardship among international governments. NRCan took steps to ensure Canada has sustainable, cleaner, and competitive natural resource sectors to drive towards a low carbon future. Through its scientific research and partnerships, the department continued to support innovation in the development of clean technologies.

Also in support of the transition to a low-carbon future, NRCan continued its efforts to minimize the carbon footprint of conventional energy sources by supporting initiatives to increase the supply of clean and renewable energy and by promoting energy efficiency. The Department engaged Canadians in a national dialogue called [Generation Energy<sup>viii</sup>](#) and helped establish the Generation Energy Council to make recommendations to accelerate Canada's transition to a competitive, reliable, affordable, low-carbon energy future.

Lastly, climate change continued to affect the sustainability and competitiveness of our natural resource sectors (e.g., contributing to the increased threat of wildfires and destructive pests that can have devastating effects on Canada's forest sector). Through its risk management programs, NRCan helped to manage climate-related and other threats and emergencies.

## Key risks

NRCan monitors its risks on an ongoing basis to ensure that it can effectively deliver its mandate. The following table outlines the Department's key external risks and mitigation strategies identified in the 2017–18 Departmental Plan. While these risks do not lend themselves to being fully addressed in the short term, as highlighted below, the Department made progress in responding to these risks.

Risks	Mitigating strategy	Link to the Department's programs	Link to mandate letter commitments or to government-wide and Departmental priorities
<b>Climate Change and Adaptation Mitigation</b>			
<p>If energy and natural resource decisions do not support Canada's transition to a low carbon economy and adoption of adequate adaptation measures, Canada's climate change commitment to reduce GHG emissions by 30 % may not be met, the competitiveness of our natural resource sectors may be undermined and communities may become increasingly vulnerable to the</p>	<p>In 2017–18, NRCan's risk responses included:</p> <ul style="list-style-type: none"> <li>Continuing to invest in infrastructure to support the transition to a cleaner transportation system and make low-carbon vehicles more attractive to Canadians, by launching Phase II of the Electric Vehicle and Alternative Fuel Infrastructure Program. Phase II will provide \$120 million over four years in support of the establishment of a national coast-to-coast network of EV charging stations, natural gas stations, and hydrogen stations in urban centers; demonstration projects that address barriers to the deployment of innovative and next-generation electric vehicle charging infrastructure; and the development of enabling codes and standards;</li> </ul>	<p>1.1 Market Access and Diversification</p> <p>2.1 Energy-Efficient Practices and Low-Carbon Energy Sources</p> <p>2.2 Technology Innovation</p> <p>3.1 Protection for Canadians and Natural Resources</p>	<p><b>Government Priorities:</b> Environment and Climate Change</p> <p><b>Mandate Letter:</b> Develop a Canadian energy strategy with provinces and territories</p> <p>Make strategic investments in the clean technology sector</p>

Risks	Mitigating strategy	Link to the Department's programs	Link to mandate letter commitments or to government-wide and Departmental priorities
<p>impacts of climate change.</p>	<ul style="list-style-type: none"> <li>• The Smart Grid program, launched in January 2018, will provide funding for utility-led projects to reduce GHG emissions, better utilize existing electricity assets and foster innovation and clean jobs. Up to \$100 million over four years is available for the demonstration and deployment of smart grid technologies. This new program expects to distribute funds in fall 2018;</li> <li>• The Emerging Renewable Power program, launched in January 2018, will expand the portfolio of commercially viable renewable energy sources available to provinces and territories as they work to reduce GHG emissions from their electricity sectors. This program has \$200 million over five years to fund utility-scale projects. This new program expects to distribute funds in fall 2018;</li> <li>• The Clean Energy for Rural and Remote Communities program, launched in February 2018, will reduce the reliance of rural and remote communities on diesel fuel for heat and power by providing funding to clean energy projects in those communities. As Indigenous communities comprise the majority of the rural and remote communities that rely on diesel fuel as their primary or back-up source of electricity and heat, this initiative is aligned with the Government of Canada's commitment to a renewed relationship with Indigenous peoples. Developed in tandem with Crown-Indigenous Relations and Northern Affairs Canada's Northern Responsible Energy Approach for Community Heat and Electricity (REACHE) Program, this initiative will help deploy new renewable electricity and BioHeat systems, test new technologies and help build local capacity in communities. This program has \$220 million over six years and includes a capacity-building component to help communities towards their energy goals. This program also liaises with other federal departments to strengthen collaboration on</li> </ul>		

Risks	Mitigating strategy	Link to the Department's programs	Link to mandate letter commitments or to government-wide and Departmental priorities
	<p>Pan-Canadian Framework (PCF) on Clean Growth and Climate Change goals. This new program expects to distribute funds in fall 2018; and</p> <ul style="list-style-type: none"> <li>Collaborating with provincial and territorial counterparts on the Canadian Energy Strategy and to advance work on the PCF. Specific collaborative actions are being pursued on energy efficiency, delivering clean energy to people, and technology and innovation. In addition, NRCan is working closely with Environment and Climate Change Canada (ECCC), Infrastructure Canada (INFC) and other government departments to assess and advance progress on initiatives related to the PCF.</li> </ul>		
<b>Clean Technology and Innovation in the Natural Resource Sectors</b>			
<p>Lack of innovation may reduce job creation and economic growth in Canada's natural resource industries and clean technology sector</p>	<p>In 2017–18, NRCan managed this risk by:</p> <ul style="list-style-type: none"> <li>Funding programs to advance research and development and the deployment of clean technology in Canada's natural resource sectors. This includes improving energy efficiency and reducing the environmental impacts of energy production and use. Budget 2017 committed \$2.3 billion to support Canada's clean technology sector, which is investing in clean technology and innovation to reduce emissions, and support clean growth;</li> <li>Launching the Clean Growth Program in November 2017 that provides \$155 million to co-fund innovative clean technology projects (from R&amp;D to commercial scale demonstration) with provinces and territories in the energy, mining and forestry sectors. Projects focus on addressing pressing environmental challenges and economic opportunities facing Canada's natural resource operations, which will reduce environmental impacts, while enhancing competitiveness and creating jobs. This</li> </ul>	<p>1.2 Innovation for New Products and Processes</p> <p>2.1 Energy-Efficient Practices and Lower-Carbon Energy Sources</p> <p>2.2 Technology Innovation</p>	<p><b>Government Priorities:</b> Environment and Climate Change</p> <p><b>NRCan Mandate Letter:</b> Make strategic investments in the clean technology sector</p> <p>Enhance Canada's tax measures to generate and attract more clean technology investments</p>



Risks	Mitigating strategy	Link to the Department's programs	Link to mandate letter commitments or to government-wide and Departmental priorities
	<p>flagship program implements a new collaborative approach of doing business by leveraging investments in publicly funded research, research centres and P/T funding programs to better mobilize clean technologies;</p> <ul style="list-style-type: none"> <li>Continuing to play a leadership role as a member of the <a href="#">Mission Innovation</a><sup>ix</sup> Steering Committee by assuming the role of Chair in 2018 and participating in seven innovation challenges;</li> <li>Establishing partnerships with industry through the Clean Technology and Resources of the Future Economic Strategic Tables to support innovation in the natural resource sectors; and</li> <li>Continuing to work with the Minister of Finance to explore opportunities to enhance existing tax measures to generate more clean technology investments.</li> </ul>		
<b>Energy Infrastructure</b>			
<p>If the public and Indigenous peoples do not have confidence in Canada's ability to expand its infrastructure in a safe and environmentally sound manner, then Canada's ability to grow its economy, increase interconnectedness, and diversify markets may be limited.</p>	<p>In 2017–18, NRCan's risk responses included:</p> <ul style="list-style-type: none"> <li>Concluding several important milestones in its comprehensive review of environmental and regulatory processes: <ul style="list-style-type: none"> <li>Received the National Energy Board Modernization Expert Panel's Report;</li> <li>Released—together with ECCC, the Department of Fisheries and Oceans Canada (DFO) and Transport Canada—a Discussion Paper on Environmental and Regulatory Reviews to inform legislative changes as part of the comprehensive review; and,</li> </ul> </li> <li>Introduced legislation that repeals and replaces the National Energy Board Act and Canadian Environmental Assessment Act, 2012 with a new Canadian Energy Regulator Act and</li> </ul>	<p>1.1 Market Access and Diversification</p> <p>1.3 Investment in Natural Resource Sectors</p> <p>2.2 Technology Innovation</p> <p>2.3 Responsible Natural Resource Management</p>	<p><b>Government Priorities:</b> Environment and Climate Change</p> <p><b>NRCan Mandate Letter:</b> Develop a Canadian energy strategy with provinces and territories</p> <p>Modernize the National Energy Board</p> <p>Review Canada's environmental assessment processes</p>



Risks	Mitigating strategy	Link to the Department's programs	Link to mandate letter commitments or to government-wide and Departmental priorities
	Impact Assessment Act, and which also amends the Navigation Protection Act.	3.1 Protection for Canadians and Natural Resources	

In 2017-18, NRCan monitored its risk environment, including the global and domestic context within which the Department operated, and implemented strategies to reduce the impact of risks on Canadians, the Department and stakeholders.

The Department worked to reduce the impact of climate change on Canadians, their communities and the environment. NRCan also fostered the development of innovative solutions to the most pressing environmental issues in support of the transition to a low-carbon economy. Lastly, the Department supported environmentally sound approaches to building and improving the secure infrastructure needed for transporting Canada's energy resources to domestic and international markets, an essential element in maintaining public trust and confidence, including among Indigenous communities.

## Results: what we achieved

### 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 and public confidence. 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.

##### **Results**

In 2017–18, the Department delivered a range of policies and outreach activities to address barriers to market access and diversification, support the development and expansion of Canada's natural resource products, and bolster public confidence in the natural resource sectors.

NRCan supported market access and diversification of Canada's natural resource sectors by:

- Supporting the Minister's participation in the **G7 Energy Ministerial**, the **Clean Energy Ministerial**, **Mission Innovation** and the **International Energy Agency Ministerial**. As a leader in the transition to a low-carbon economy, NRCan highlighted opportunities for investment and trade with Canada. To advance Canada's nuclear energy sector NRCan also participated in a number of meetings, committees and initiatives led by the International Atomic Energy Agency (IAEA), including the IAEA annual General Conference, the International Group of Experts on Nuclear Liability, as well as co-chairing the Uranium Group meetings.
- Leading over 20 trade and investment promotion missions with key international partners, such as the United States, China, Japan, and Mexico. For example, NRCan led a ministerial mission to China in June 2017, which resulted in commercial agreements totalling close to \$100 million worth of investments;
- Strengthening bilateral cooperation in China and India. Specifically, in China, NRCan enhanced cooperation on energy, eco-cities, sustainable mineral resource science and research through a series of Memoranda of Understanding (MOU); reached an agreement with China to launch the **Ministerial Dialogue on Clean Energy** under the **Canada–China Joint Statement on Climate Change and Clean Growth**<sup>x</sup> and launched a **Canada–China Track II Energy Dialogue**. In India, NRCan expanded the Terms of Reference

for the **Canada–India Ministerial Energy Dialogue** to include electricity, energy efficiency, and renewable energy;

- Promoting Canada’s energy sector by offering Canada’s best practices on Indigenous community engagement through the **Canada–Mexico Partnership**<sup>xi</sup> and playing a significant role in the establishment of the **France–Canada Climate and Environment Partnership**,<sup>xii</sup> which was announced by both countries at the One Planet Summit in Paris in December 2017;
- Collaborating with Global Affairs Canada to develop a new process to recognize foreign quality assurance systems in the South Korean market and provide science support to the Canadian Food Inspection Agency in order for Canadian phytosanitary certificates to meet Malaysian import requirements;
- Establishing a **Raw Material Dialogue** with the European Union, under the **Canada–European Union Free Trade Agreement** in order to facilitate market access for raw material goods, services, and investments. This dialogue entered into force in September 2017;
- Providing on-going technical advice to the renegotiation of **NAFTA**, including on issues related to energy, dispute settlement mechanisms, investment, environment and rules of origin. Also, at the **North American Energy Ministerial** in November 2017, Canada, the U.S. and Mexico agreed to continue to advance North American energy integration by collaborating in the areas of security (including energy infrastructure security), reliability and responsibility, trade and investment development, and diversifying energy resources;
- Convening a **Joint Working Group on oil and gas competitiveness** to examine issues affecting the competitiveness of the upstream oil and gas industry in Canada, build a common understanding of the factors that influence investment, promote Canada’s comparative advantages, and discuss opportunities to promote the Canadian energy brand. Specifically, Canada has been working closely with provinces, following a

#### The Canadian Minerals and Metals Plan

As a world leader in mining, Canada’s minerals and metals sector provides 596,000 direct and indirect jobs and contributes 3% to Canada’s GDP. Canadian mining companies abroad also have \$171 billion in assets across 102 countries. Accordingly, it is important that Canada’s mining industry continues to have a competitive advantage at home and abroad that attracts investment and encourages partnerships to develop mining projects positioning mineral development for long-term success.

To further build Canada’s brand on the world stage and realize the industry’s potential at home, NRCan, along with provincial and territorial Ministers responsible for mining, committed in August of 2017 to develop a **Canadian Minerals and Metals Plan**.

The Plan, targeted for release in 2019, aims to address competitiveness challenges, raise the level of the mining industry’s economic contribution in regions across the country, advance the participation of Indigenous peoples, and increase attractiveness to foreign investment. The Plan is intended to align with national priorities by looking at clean and inclusive growth, environmental and regulatory efficiency and predictability, innovation, healthy communities, progressive trade, and a renewed relationship with Indigenous peoples.

commitment by Energy and Mines Ministers to study barriers to oil and gas competitiveness, including the Government of British Columbia, on concrete options both levels of government can take to ensure the global competitiveness of Canada's liquefied natural gas and offshore sectors;

- Providing funding to **WoodWORKS!**<sup>xiii</sup> programs to increase the use of wood products in Canada's construction market through the **Expanding Market Opportunities Program**<sup>xiv</sup>. Specifically, the programs influenced 238 projects to use wood over traditional materials, creating an incremental \$163 million of direct wood products sales; provided training to over 24,000 professionals; expanded wood-based construction in the mid-rise (five to six storeys) market; and supported the construction of the **Brock Commons**<sup>xv</sup>, a tall wood building at the University of British Columbia; and
- Facilitating the forest sector's capacity to diversify offshore wood markets in China, Japan and other key offshore markets. Specifically, NRCan supported the call for proposals to establish the second **Sino-Canadian Eco-District Initiative** and China's first modern tall wood demonstration building with the goal both to improve the capacity of Canada's construction industry to build with wood and to showcase wood construction to stakeholders. In Japan, NRCan supported wood residential and non-residential construction training to over 750 participants with the aim to build 2,289 residential wood units over the next five years. NRCan also increased offshore outreach, technical support, and marketing activities by providing an additional \$3 million annually through the **Softwood Lumber Action Plan**, which reinforces Canada's presence in China, Japan, South Korea and India.

In 2017–18, the Department delivered a range of policy and outreach activities to make information available to Canadians, engage Canadians on the future of natural resources, bolster public confidence in Canada's natural resource sectors, and improve relationships with, and outcomes for, Indigenous peoples. For example, NRCan:

- Launched **Generation Energy**.<sup>xvi</sup> This was the largest national conversation about energy in Canada's history, engaging more than 380,000 Canadians and international experts both in person and online. Over six months, youth, Indigenous peoples, energy experts, academia, industry stakeholders, and the public shared their vision of how Canada could meet climate goals, create jobs, and keep energy affordable. This information will be instrumental in building the new energy vision for Canada;
- Improved the energy information it collects and shares, and revamped its Energy Fact Book, providing a solid foundation for Canadians to understand and discuss important developments across the energy sector;
- In partnership with Indigenous communities, co-developed and implemented **Indigenous Advisory and Monitoring Committees**. These Committees bring together Indigenous

and government representatives to review and monitor the environmental, safety and socio-economic issues related to the [Trans Mountain Expansion Project](#)<sup>xvii</sup> (TMX) and the [Line 3 Replacement Program](#)<sup>xviii</sup> (Line 3). Through their work, and with over \$11 million in contribution funding committed by March 31, 2018, the committees have reviewed proponent plans and reports, conducted monitoring, enhanced Indigenous community capacity, and begun to inform government and regulator policies and processes;

- Launched the **Economic Pathways Partnership** (EPP) pilot for the TMX and Line 3 projects with six workshops held across the four western provinces to connect representatives from over 125 Indigenous communities, organizations and businesses with proponents, federal departments, service providers and others to support their economic development interests. The EPP is a whole-of-government approach that makes it easier for Indigenous groups to access existing federal programs and services that help them participate in opportunities related to pipeline projects, and advance their broader economic development interests;
- Addressed Indigenous priorities and interests related to energy infrastructure development by working collaboratively with Indigenous communities and other federal departments, and by providing \$11.7 million in support for 57 projects related to jobs and economic growth, environmental action, fish habitat restoration, and engagement through the **Strategic Partnerships Initiative – West Coast Energy Infrastructure Initiative**;
- Continued its work on advancing regulations under the Pipeline Safety Act;
- Administered (ongoing) the [Export and Import of Rough Diamonds Act](#)<sup>xix</sup> to ensure that Canada is in compliance with the international [Kimberley Process Certification Scheme](#)<sup>xx</sup> to secure Canada's diamond exports as an ethical source of valuable minerals; and
- Helped deliver 450 annual reports that identified over \$20 billion in payments to nearly 1,000 governments in Canada and abroad to ensure that Canada meets its obligations under the [Extractive Sector Transparency Measures Act](#).<sup>xxi</sup> These products contributed to Canada's international commitments to increased transparency and deterring corruption in the extractive sector.

Finally, NRCan has made progress towards modernizing the [National Energy Board](#)<sup>xxii</sup> (NEB). NRCan has been instrumental in providing expertise and engaging with Indigenous groups, industry associations, environmental groups and other stakeholders to develop new policies and regulations. In parallel, NRCan contributed to important milestones in the Government's review of the environmental and regulatory processes in order to rebuild public trust in the resource development decision-making process. The Government tabled proposed legislation in February 2018 that will establish a new impact assessment and regulatory system, including the proposed **Impact Assessment Act** and the **Canadian Energy Regulator Act**. These legislative and policy reforms were informed by an expert panel report, a federal discussion paper, parliamentary studies, and almost two years of consultations with Indigenous peoples, industry, provinces and territories, non-governmental organizations, academia, and the public. The approach proposed by this new impact and regulatory system is founded on a commitment to change how the federal government works with Indigenous peoples, for example, by setting the full recognition of Indigenous rights and interests as the basis of partnership from the outset and by creating opportunities for Indigenous partnerships and co-development in project monitoring and traditional knowledge integration.

**Mandate Letter Commitment**  
**Modernize the National Energy Board (NEB)**

For nearly 60 years, the NEB has been responsible for regulating approximately 73,000 km of international and interprovincial pipelines 1,400 km of international power lines, and the import and export of energy in Canada.

In May 2017, after extensive public engagement, the Expert Panel on the Modernization of the NEB released its report with recommendations and advice on the NEB's governance and structure, mandate and future opportunities, decision-making roles, compliance, enforcement and ongoing monitoring, engagement with Indigenous peoples and public participation responsibilities.

Subsequently, as announced in February 2018 and under the purview of the **Canadian Energy Regulator Act**, the Government proposed to create the new [Canadian Energy Regulator](#), replacing the NEB, to continue to evolve and adapt to changing times.

This new Regulator will have the independence and the proper accountability to oversee a strong, safe and sustainable Canadian energy sector, while addressing economic and climate change goals, regaining public trust and supporting reconciliation with Indigenous peoples.

## Results achieved

Expected results	Performance indicators	Target	Date to achieve target	2017–18 Actual results	2016–17 Actual results	2015–16 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 of ten-year average of Canada's share of United States and global imports	March 31, 2018	<p><b>Results: Achieved</b></p> <p>In 2017-18, Canada's share of U.S. Natural Resource Imports for 2017-18 was <b>25.2%, above the target of 23.7%, the 10-year baseline average from 2007-2016.</b> The overall value of American natural resource imports from Canada in 2017 was \$172.3 billion, below the 2008 value of \$197.2 billion.</p> <p>In terms of global imports, Canada's share amounted to <b>4.4%, in line with the 10-year baseline average of 4.4% from 2007-2016.</b><sup>1</sup></p>	<p><b>Results: Achieved</b></p> <p>In 2016–17, Canada's share of American natural resource imports was <b>23.8%, a minor variation against the 10-year baseline average 23.7%.</b></p> <p>There was a decline in the value of U.S. natural resource imports from Canada in 2016–17, largely a result of lower commodity prices. The overall value of American natural resource imports from Canada in 2016 was \$110.5 billion, below the 2007 value of \$151.8 billion.</p>	<p><b>Results: Achieved</b></p> <p>In 2015–16, Canada's share of American natural resource imports was <b>25.1% (1.5% above the 10-year 2005–14 baseline average of 23.6%).</b> The overall value of American natural resource imports from Canada in 2015 was \$164.3 billion, above the 2006 figure of \$95.2 billion.</p>



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 of ten-year average of Canada's share of China and India's imports	March 31, 2018	<p><b>Results: Achieved</b></p> <p>In 2017-18, Canada's share of Chinese natural resource imports was <b>1.4%</b>, <b>close to the target of 1.7%</b> (10-year baseline average from 2007-2016).<sup>2</sup></p> <p>The value of China's imports from Canada was \$11.4 billion, above the 2008 value of \$7.2 billion.</p> <p>Canada's share of India's Imports rose to <b>1.2%</b>, <b>well above the target of 0.6%</b>, the 10-year baseline average from 2007-2016. The value of India's imports from Canada was \$4 billion in 2017-18.<sup>3</sup></p>	<p><b>Results: Achieved</b></p> <p>In 2016-17, Canada's share of Chinese natural resource imports was <b>1.6%</b>, <b>close to the 10-year baseline average of 1.7%</b> (2007-16). The overall value of Chinese natural resource imports from Canada in 2016 was \$7.7 billion, above the 2007 value of \$6.0 billion.</p>	<p><b>Results: Achieved</b></p> <p>In 2015-16, Canada's share of Chinese natural resources imports was <b>1.7%</b>, <b>stable against the 10-year (2005-14) baseline average</b>. 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.</p>
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<sup>1</sup> Similar results were achieved for previous years. Canada's share in the global imports was 4.4% in 2016-2017 in line with the 10-year baseline average of 4.4% from 2006-2015. Canada's share in the global imports was 4.4% in 2015-2016, a minor variation against the 10-year baseline average of 4.5% from 2005-2014.

<sup>2</sup> It should be noted that every sector has seen significant annual increases (Energy +55%, Forestry +14%, and Minerals +5%) and that the reduced aggregate is a result of China's overall imports figure going up.

<sup>3</sup> Similar results were achieved for previous years. In 2016-17, Canada's share of Indian natural resources imports was 1.1%, well above the target of 0.6%, the 10-year baseline average from 2006-2015. The value of India's imports from Canada was \$2.8 billion. In 2015-16, Canada's share of Indian natural resources imports was 0.9%, well above the target of 0.5%, the 10-year baseline average from 2005-2014. The value of India's imports from Canada was \$2.6 billion.

#### Budgetary financial resources (dollars)

2017-18 Main Estimates	2017-18 Planned spending	2017-18 Total authorities available for use	2017-18 Actual spending (authorities used)	2017-18 Difference (actual minus planned)
60,190,597	60,190,597	82,822,778	69,193,650	9,003,053

The increase between Planned spending and Actual spending is mainly attributed to additional funding received during the year through Supplementary Estimates for the Softwood Lumber Action Plan and the Indigenous



Advisory and Monitoring Committees for Energy Infrastructure projects, as well as wage increases due to collective bargaining.

#### Human resources (full-time equivalents)

2017–18 Planned	2017–18 Actual	2017–18 Difference (actual minus planned)
267	304	37

The increase between Planned FTEs and Actual FTEs is mainly attributed to the hiring related to funding received through Supplementary Estimates.

Information on NRCan's lower-level programs is available in the [GC InfoBase](#).

## 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.

### Results

In 2017–18, NRCan advanced the development and implementation of new innovative technologies, processes and tools to enhance sustainability and promote economic growth. This was achieved in collaboration with provincial and territorial governments, Indigenous peoples, industry and other stakeholders.

In the **forest sector**, NRCan supported economic growth through innovation by:

- Facilitating the Canadian Council of Forest Ministers in ratifying a [Forest Bioeconomy Framework for Canada](#)<sup>xxiii</sup> in September 2017. The Framework's objective is to promote economic growth through the development of sustainably managed forest-based resources into innovative value-added products and services;
- Supporting economic development for Indigenous peoples by funding 30 projects under the [Indigenous Forestry Initiative \(IFI\)](#)<sup>xxiv</sup> as part of Canada's **Softwood Lumber Action Plan (SLAP)**. In 2017–18, the SLAP provided an additional \$10 million to the IFI to support forest-based economic development and clean growth technology across Canada.

This funding supported economic development projects of 35 Indigenous communities and regional organizations in the areas of environmental stewardship, forest resource management and use, and participation in the forest bioeconomy;

- Selecting proposals for the [Investments in Forest Industry Transformation Program](#)<sup>xxv</sup> that will help recipients develop innovative technologies in forest product facilities across Canada, thus increasing the forest product sector's economic and environmental sustainability and competitiveness. The program received \$55 million in 2017;
- Supporting research, development and technology transfer activities in Canada's forest sector to advance Government of Canada priorities in forest sector innovation and growth, NRCan funded 17 projects, valued at \$1.2 million, under the [Forest Innovation Program \(FIP\)](#); <sup>xxvi</sup>
- Providing research funding to [FPInnovations](#), <sup>xxvii</sup> through the FIP to enable the building of a large-scale Thermal mechanical pulp (TMP)-Bio Plant on the site of a Resolute Forest Products mill in Thunder Bay, Ontario. TMP-Bio is a game-changing technology that converts wood chips traditionally used in newsprint production into sugar and lignin and has the potential to position the Canadian forest industry as a key player in the bioeconomy;
- Co-leading a biomass harvesting research project, focusing on the effects of biomass harvesting in partial harvest systems on stand-level productivity and biodiversity with the Ontario Ministry of Natural Resources and Forestry and the [Canadian Wood Fibre Centre](#); <sup>xxviii</sup> and
- Collaborating on the NSERC Collaborative Research and Development project, **AWARE**, that uses Enhanced Forest Inventory to improve forest sector productivity and the sustainable management of forest values such as timber, water, and habitat. AWARE involves seven industrial partners, five provincial government partners, and researchers and graduate students from nine Canadian universities.

In the **mining** sector, NRCan participated in initiatives that increased productivity, improved efficiency and protected the environment by:

- Demonstrating five technologies to increase productivity, including synthetic hoist cables, a performance evaluation of new mining equipment (MinRail), a plasma torch for mine use for rock breaking without explosives, sensors for soft rock deformation, and the beginning of field-testing of a new rock bolt sensor for monitoring bolt rock integrity; and
- Developing new, patent-pending technologies to decrease capital and operating costs, and environmental impacts, including two processes to produce ferrochrome from chromite ore and a purification process for rare earth element recovery.

In the area of **geospatial data**, NRCan encouraged the adoption of innovative technologies by:

- Delivering a new geospatial tool that allowed future **RADARSAT Constellation Mission (RCM)** users to stimulate the entire spectrum of data provided by the three-satellite configuration. This tool has permitted government, industry, and academia to have access to greater coverage of Canada’s landscape to facilitate maritime surveillance, disaster management and ecosystem monitoring;
- Advancing Spatial Data Infrastructure (SDI) by enabling agreements on technology standards, institutional arrangements, and policies that will assist in the discovery and use of geospatial information. This includes developing and releasing national guidelines on the acquisition of airborne LiDAR imagery, used by government and industry to measure landscapes, forests and human-built infrastructure down to the centimetre-scale;
- Completing projects related to **Smart Cities** and **Sensor Web – the Internet of Things** through the GeoConnections contribution agreements program.
- Developing a **Strategic Framework on Geospatial Information and Services** for disasters, which was adopted by the United Nations Global Geospatial Information Management Committee of Experts.

Results achieved

Expected results	Performance indicators	Target	Date to achieve target	2017-18 Actual results	2016–17 Actual results	2015–16 Actual results
Natural resource sectors increase production of new products and processes	Number of new products and processes resulting from NRCan information	2 per year	March 31, 2018	<p><b>Results: Achieved</b></p> <p>Nine new products were developed based on NRCan information:</p> <ol style="list-style-type: none"> <li>1. North America’s largest contiguous coppice willow plantation was established to manage the City of Calgary’s biosolids waste stream;</li> <li>2. An economic assessment of the Western Red Cedar industry in BC was conducted;</li> <li>3. Decision support tools derived from the Enhanced Forestry Inventory were applied to improve digital soil mapping;</li> <li>4. FastTRAC delivered genomic selection for</li> </ol>	<p><b>Results: Achieved</b></p> <p>Two new products were developed based on NRCan information:</p> <ol style="list-style-type: none"> <li>1. One new Canadian Standards Association (CSA) standard on cellulose nanomaterials was developed to improve the quality of the end product.</li> <li>2. One new regulatory</li> </ol>	<p><b>Results: Achieved</b></p> <p>Two new products were developed based on NRCan information:</p> <ol style="list-style-type: none"> <li>1. A database of Canada’s biomass feedstock characteristics and associated modeling tools, to which entrepreneurs and industry now have access; and,</li> <li>2. An evidence-based process for forest managers to</li> </ol>

				<p>specific breeding programs and operating environments;</p> <p>5. Testing of a synthetic hoist cable to enable economical ore hoisting from deep mines;</p> <p>6. New mining equipment (MinRail) was evaluated to enable access to resources in shallow-angle ore deposits;</p> <p>7. A plasma torch for rock breaking in mines without explosives is underway;</p> <p>8. Development of a new instrument to measure borehole closure is underway to monitor the behaviour of rock in soft and hard rock mines; and</p> <p>9. Field testing of a new rock bolt sensor is underway.</p>	<p>standard for the International Movement of Wood was developed to help prevent the movement of pests.</p>	<p>mitigate the effects of root rots on high-value timber.</p>
	<p>R&amp;D expenditures in natural resource sectors, specifically total intramural R&amp;D expenditures in energy, mining and forest sectors</p>	<p>Meet or exceed a rolling ten-year baseline average of Canada's total intramural R&amp;D expenditures in energy, mining and forestry sectors.</p>	<p>March 31, 2018</p>	<p><b>Results: Not Achieved</b></p> <p>In 2017, business enterprise R&amp;D expense intentions for the energy, mining and forest sectors were <b>\$1.3 billion, below the 2008 figure of \$2.4 billion.</b></p> <p>These natural resource sector intentions accounted for <b>7.7% of total industry R&amp;D spending, lower than the 10-year baseline average of 13.1%.</b></p> <p>R&amp;D spending levels are affected, in part, by commodity prices.</p> <p>Recent R&amp;D expenditure declines are largely concentrated in the petroleum sector, but were also observed in the forestry and mining sectors.</p>	<p><b>Results: Not Available<sup>1</sup></b></p> <p>In 2016, business enterprise R&amp;D expense intentions for the energy, mining and forest sectors were <b>\$1.7 billion, below the 2007 figure of \$2.1 billion.</b></p> <p>These natural resource sector intentions accounted for <b>9.7% of total industry R&amp;D spending, which is lower than the 10-year baseline average of 12.6%.</b></p>	<p><b>Results: Achieved</b></p> <p>In 2015, business enterprise R&amp;D expense intentions for the energy, mining and forest sectors were <b>\$2.1 billion, slightly below the 2006 figure of \$2.3 billion.</b> However, these natural resource sector intentions accounted for <b>13.3% of total industry R&amp;D spending, slightly above the 10-year baseline average of 12.0%.</b></p>
<p>Methodologies, policies, strategies, plans and standards</p>	<p>Number of formally adopted methodologies, policies,</p>	<p>Increase in the number of methodologies,</p>	<p>March 31, 2018</p>	<p><b>Results: Achieved</b></p> <p>Six new tools were developed:</p>	<p><b>Results: Achieved</b></p>	<p><b>Results: Not available</b></p>

are collaboratively used by governments and private sector organizations in the development of new innovative and value-added geospatial applications	strategies, plans and standards generated from collaborative activities and participation	policies, strategies, plans and standards generated from collaborative activities and participation in 2016-17 and compared to the 2015-16 baseline year		<ul style="list-style-type: none"> <li>• Strategic Framework on Geospatial Information and Services for Disasters;</li> <li>• Two international geospatial standards;</li> <li>• Recommended guidelines for establishment of future Open Smart Cities;</li> <li>• The creation of Internet of Things (IoT) based smart cities sensor networks for Canadian cities and Arctic communities; and</li> <li>• National guidelines on the acquisition of airborne LiDAR imagery.</li> </ul>	Three new tools were developed. This number will be used as the baseline for future reporting years.	Performance indicator did not exist in 2015-16
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<sup>1</sup> Although results based on the performance indicator are available, an assessment of whether the target was met in 2016–17 was not possible as no targets were established at the time, as reported in [NRCan's 2016–17 DRR](#).

#### Budgetary financial resources (dollars)

2017–18 Main Estimates	2017–18 Planned spending	2017–18 Total authorities available for use	2017–18 Actual spending (authorities used)	2017–18 Difference (actual minus planned)
109,154,844	109,154,844	119,804,678	118,506,415	9,351,571

The increase between Planned spending and Actual spending is mainly attributed to additional funding received during the year through Supplementary Estimates for the Softwood Lumber Action Plan as well as wage increases due to collective bargaining.

#### Human resources (full-time equivalents)

2017–18 Planned	2017–18 Actual	2017–18 Difference (actual minus planned)
289	334	45

The increase between Planned FTEs and Actual FTEs is mainly attributed to the hiring related to funding received through Supplementary Estimates.

Information on NRCan's lower-level programs is available in the [GC InfoBase](#).

## **Program 1.3: Investment in Natural Resource Sectors**

### **Description**

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

### **Results**

In 2017–18, NRCan facilitated investment in the energy, forestry, and mining sectors by continuing to support regulatory reform aimed at addressing impact assessment of major development projects in a manner that protects our environment, respects Indigenous rights, and rebuilds public trust—all while ensuring good projects go ahead and our energy resources get to markets responsibly.

On June 20, 2016, the Government of Canada launched a comprehensive review of environmental and regulatory processes, including a review of the Canadian Environmental Assessment Act, the National Energy Board Act, the Fisheries Act, and the Navigation Protection Act, that culminated in the tabling of legislation in February of 2018. NRCan worked closely with other government departments to prepare new and amended environmental and regulatory legislation, which progressed to the Standing Committee on Environment and Sustainable Development by the end of the 2017–18 fiscal year. Key milestones in 2017–18 for NRCan included:

- Contributing to the creation of better rules for the review of major projects, and establishment of the **Impact Assessment Agency of Canada** and the **Canadian Energy Regulator**;
- Providing leadership across the federal government by chairing the Major Projects Deputy Ministers' Committee to ensure effective collaboration, communication and coordination between departments and agencies. In 2017–18, the Committee provided overarching project management and accountability to facilitate improvements to the regulatory system for major resource projects in Canada;

- Approving five major resource projects: NGTL Towerbirch Expansion Project, Scotian Basin Exploration Drilling Project, Kemess Underground Gold/Copper Mine, Sisson Tungsten and Molybdenum Mine, and Murray River Coal; and
- Continuing to implement the Government's Interim Strategy for Pipelines and other National Energy Board Reviews, including the Sisson Tungsten and Molybdenum Mine Project. This project underwent a rigorous federal environmental assessment and a provincial environmental impact review based on scientific evidence and benefitting from extensive consultation with Indigenous groups and the public, including the consideration of traditional knowledge from Indigenous peoples.

#### Mandate Letter Commitment

##### Review Canada's environmental assessment processes

In February 2018, the Government tabled proposed legislation that will [build a new impact assessment and regulatory system for Canada](#). The new system ensures that the environment, human health and the rights of Indigenous peoples are protected, while also providing certainty to businesses.

These reforms were developed by talking with the public early on and working with Indigenous people at every stage of the process. A discussion paper on government-proposed changes was released in June 2017 and engagement included over 100 meetings and over 1,000 written comments. As a consequence, legislation was tabled on February 8, 2018. The new assessment and regulatory system proposed in the legislation is based upon the best available science and Indigenous knowledge; and one assessment for one project, with the scale of assessment aligned with the scale of the potential impacts of the project.

NRCan continues to implement the Government of Canada's approach to using an environmentally sound, efficient and consistent process to develop and transport our energy resources to domestic and international markets in a manner that will help build public trust and confidence and diversify our market access.

To allow for more comprehensive investment decisions NRCan made information available to industry and potential investors in the mineral sector and the public that increases awareness of opportunities, regulations, and obligations of natural resource projects. Specifically, NRCan:

- Published 429 **Geo-Mapping for Energy and Minerals (GEM)** products, which were accessed and downloaded 12,750 times, an 87% increase in uptake for 2017–18. At two international industry exploration conferences in Vancouver and Toronto, [Targeted Geoscience Initiative \(TGI\)](#),<sup>xxix</sup> released two key milestone reports synthesizing new results from over 40 projects, which were subsequently downloaded 3,690 times. [Geoscience for New Energy Supply Program](#)<sup>xxx</sup> published eighteen reports in 2017–18 to support assessment and investment decision-making on new energy exploration opportunities;
- Established collaboration between the [Geological Survey of Canada](#)<sup>xxxi</sup> and Quebec and Newfoundland and Labrador scientific agencies to:
  - Support mineral exploration in northern Quebec and Labrador (Hudson–Ungava) by producing a digital atlas of lake sediment geochemical data; and

- Identify new gold and base metal exploration targets in the same area through the creation of surficial geology and geochemistry maps.
- Signed a Memorandum of Understanding with Statistics Canada to transform the **Minerals and Metals Production Statistics Program** into a shared delivery model and improve how NRCan collects and publishes statistics on mineral exploration, development, and production in Canada.

Results achieved

Expected results	Performance indicators	Target	Date to achieve target	2017–18 Actual results	2016–17 Actual results	2015–16 Actual results
Natural resource sectors have increased investment	Growth of energy sector capital expenditures (average of past 5 years) compared to growth in overall capital expenditures in Canada (average of past 5 years)	The past 5-year average growth rate of energy sector capital expenditures is equal to or greater than the past 5-year average growth rate in total capital expenditures in Canada	March 31, 2018	<p><b>Results: Not Achieved</b></p> <p>In 2017, energy sector capital expenditures were \$75 billion. Over the past five years (2012–2017), energy sector capital expenditure declined by an average annual rate of 3.4%. This is <b>below the average annual growth rate</b> of -1.0% in the Canadian economy as a whole.</p> <p>This decline continues to reflect the oil price collapse of 2015, which had a significant impact on the industry, and need for infrastructure.</p>	<p><b>Results: Not Achieved</b></p> <p>In 2016, energy sector capital expenditures were \$74 billion. Over the past five years (2011–16), energy sector capital expenditure declined by an average annual rate of 1.6%. This is <b>below the average annual growth rate</b> of 0.3% in the Canadian economy as a whole and is likely due, in part, to lower commodity prices which have led natural resource producers in Canada and globally to lower investment.</p>	<p><b>Results: Achieved</b></p> <p>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 <b>above the average annual growth rate</b> of 3% in the Canadian economy as a whole.</p>



	<p>Growth of forest sector capital expenditures (average of past 5 years) compared to growth in overall capital expenditures in Canada (average of past 5 years)</p>	<p>The past 5-year average growth rate of forest sector capital expenditures is equal to or greater than the past 5-year average growth rate in total capital expenditures in Canada</p>	<p>March 31, 2018</p>	<p><b>Results: Achieved</b>                  In 2017, forest sector capital expenditures were \$2 billion. Over the past five years (2012–2017), forest sector capital expenditure increased by an average annual rate of 9.4%. This is <b>above the average annual growth rate</b> of -1.0% in the Canadian economy as a whole.</p>	<p><b>Results: Not Achieved</b>                  In 2016, forest sector capital expenditures were \$13 billion. Over the past five years (2011–16), forest sector capital expenditure declined by an average annual rate of 5.2%. This is <b>below the average annual growth rate</b> of 0.3% in the Canadian economy as a whole and is likely due, in part, to lower commodity prices which have led natural resource producers in Canada and globally to lower investment.</p>	<p><b>Results: Achieved</b>                  In 2015, forest sector capital 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 <b>above the average annual growth rate</b> of 3% in the Canadian economy as a whole.</p>
	<p>Growth of minerals and metals sector capital expenditures (average of past 5 years) compared to growth in overall capital expenditures in Canada (average of past 5 years)</p>	<p>The past 5-year average growth rate of minerals and metals sector capital expenditures is equal to or greater than the past 5-year average growth rate in total capital expenditures in Canada</p>	<p>March 31, 2018</p>	<p><b>Results: Not Achieved</b>                  In 2017, minerals and metals sector capital expenditures were \$12 billion. Over the past five years (2012–2017), minerals and metals sector capital expenditure declined by an average annual rate of 12%. This is <b>below the average annual growth rate</b> of -1.0% in the Canadian economy as a whole.                   Investment in minerals and metals is impacted by, in part, commodity prices.</p>	<p><b>Results: Achieved</b>                  In 2016, minerals and metals sector capital expenditures were \$13 billion. Over the past five years (2011–16), minerals and metals sector capital expenditure grew by an average annual rate of 6.7%. This is <b>above the average annual growth rate</b> of 0.3% in the Canadian economy as a whole.</p>	<p><b>Results: Achieved</b>                  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 <b>above the average annual growth rate</b> of 3% in the Canadian economy as a whole.</p>

## Budgetary financial resources (dollars)

2017-18 Main Estimates	2017-18 Planned spending	2017-18 Total authorities available for use	2017-18 Actual spending (authorities used)	2017-18 Difference (actual minus planned)
73,163,653	73,163,653	79,038,507	79,038,129	5,874,476

The increase between Planned spending and Actual spending is mainly attributed to wage increases due to collective bargaining. The increase is also explained by a realignment of real property expenditures related to special purpose buildings and the Federal Infrastructure Initiative to the appropriate program, in line with TBS guidelines.

## Human resources (full-time equivalents)

2017-18 Planned	2017-18 Actual	2017-18 Difference (actual minus planned)
395	417	22

Information on NRCan's lower-level programs is available in the [GC InfoBase](#).

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## **Program 1.4: Statutory Programs – Atlantic Offshore**

### **Description**

Through this Program, NRCan monitors and facilitates payment disbursement agreements and transfer payments under the Atlantic Offshore Accord Acts. The Program includes the following: 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.

### **Results**

NRCan met its target on the timeliness and accuracy of offshore payments in 2017–18 and 100% of payments were made on time.

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.

The Department anticipated and prepared the necessary materials for payments to be processed within the prescribed time 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 Act.

## Results achieved

Expected results	Performance indicators	Target	Date to achieve target	2017-18 Actual results	2016-17 Actual results	2015-16 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%	Ongoing	<b>Results: Achieved</b> NRCan anticipated and pro-actively prepared the necessary materials for <b>100%</b> of payments to be processed in a timely manner	<b>Results: Achieved</b> NRCan anticipated and pro-actively prepared the necessary materials for <b>100%</b> of payments to be processed in a timely manner	<b>Results: Achieved</b> NRCan anticipated and pro-actively prepared the necessary materials for <b>100%</b> 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%	Ongoing	<b>Results: Achieved</b> NRCan anticipated and pro-actively prepared the necessary materials for <b>100%</b> of payments to be processed in an accurate manner	<b>Results: Achieved</b> NRCan anticipated and pro-actively prepared the necessary materials for <b>100%</b> of payments to be processed in an accurate manner	<b>Results: Achieved</b> NRCan anticipated and pro-actively prepared the necessary materials for <b>100%</b> of payments to be processed in an accurate manner

## Budgetary financial resources (dollars)

2017-18 Main Estimates	2017-18 Planned spending	2017-18 Total authorities available for use	2017-18 Actual spending (authorities used)	2017-18 Difference (actual minus planned)
408,998,253	408,998,253	524,634,823	524,634,823	115,636,570

The increase between Planned spending and Actual spending is attributed to a reassessment of royalties paid from prior years resulting in a one-time payment. This was offset by reduced statutory payments under the Atlantic Offshore Accord Acts for royalties related to 2017-18, mainly as a result of lower production and pricing from what was planned.

## Human resources (full-time equivalents)

2017-18 Planned	2017-18 Actual	2017-18 Difference (actual minus planned)
0	0	0

Information on NRCan's lower-level programs is available in the [GC InfoBase](#).

## Program 2.1: Energy-Efficient Practices and Low-Carbon Energy Sources

### Description

Canada's energy markets are defined by the decisions of energy consumers and producers. However, there are multiple barriers to the adoption of energy-efficient practices and implementation of low-carbon energy sources, 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 objective of this Program is to address these barriers by encouraging and enabling energy consumers and producers to adopt cleaner and more energy-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.

### Results

In 2017–18, NRCan invested in cleaner transportation, improved energy efficiency and strengthened strategic partnerships to advance the longer-term decarbonization of the Canadian economy.

To support the transition to a clean transportation system and to make low-carbon vehicles more attractive to Canadians, NRCan:

- Invested \$62.5 million over two years starting in 2016-2017 under **Phase I of the Electric Vehicle and Alternative Fuel Infrastructure Initiative**, supporting the deployment of 102 electric fast chargers, seven natural gas and three hydrogen refueling stations as well as the demonstration of more than 200 next generation electric vehicle charging stations;
- Launched **Phase II of the Electric Vehicle and Alternative Fuel Infrastructure Initiative**,<sup>1</sup> an additional \$120 million over four years starting in 2018-19, supporting the development of up to 900 new electric fast chargers, 15 natural gas and 12 hydrogen refuelling stations by 2024;
- Held the **Low-Carbon Pathways for Road Freight Workshop**, a multi-stakeholder consultation with over 100 stakeholders to encourage fuel-efficient best practices for freight and to discuss proposed actions for further GHG emission reductions; and

<sup>1</sup> Part of NRCan's Green Infrastructure Programs – see Section 2.2.

- Supported tire testing to inform the development of minimum efficiency standards for light-duty vehicle replacement tires in collaboration with Transport Canada and the National Highway Traffic Safety Administration.

To help the construction industry improve the energy efficiency of buildings and homes the Department invested in key initiatives by:

- Sponsoring the [Building Owners and Managers Association of Canada’s Net Zero Challenge](#)<sup>xxxii</sup>, which recognizes high performance buildings on the path to net zero;
- Launching the [ENERGY STAR certification](#)<sup>xxxiii</sup> and “who will be the first” challenge for commercial and institutional buildings;
- Releasing the [Build Smart – Canada’s Buildings Strategy](#)<sup>xxxiv</sup> to improve how homes and buildings are designed, renovated and constructed, and to improve the energy efficiency of the appliances and equipment they use;
- Collaborating with provinces and territories to develop and adopt increasingly stringent model building codes, with the goal that provinces and territories reach “net-zero energy ready” (NZER) by 2030 for new buildings;
- Signing a six-year Memorandum of Understanding with the National Research Council to develop a NZER model code for buildings and houses as well as a new model energy code for existing buildings and houses by 2022;
- Launching the **Greening Government Operations** initiative, an enhanced suite of technical advisory services for federal organizations seeking energy and GHG reductions from their building and fleet operations; and
- Implementing eight multi-sectoral projects that drive demand for energy efficiency and energy conservation in the residential building sector.

### Pan-Canadian Framework on Clean Growth and Climate Change

The [Pan-Canadian Framework on Clean Growth and Climate Change \(PCF\)](#) is Canada’s plan to meet our emissions reduction targets, grow the economy, and build resilience to adapt to a changing climate. The plan was developed with the provinces and territories and in consultation with Indigenous peoples, who continue to be involved as the plan is implemented. NRCan leads on almost half of the more than 50 concrete actions under the Framework, representing action across all sectors of the economy. In 2017–2018, NRCan launched a number of programs under the PCF, including:

- **Modernizing electricity systems:** \$100 million toward smart grid utility-led deployment and demonstration projects to reduce GHG emissions, better utilize existing electricity assets and foster innovation and clean jobs. A call for proposals was launched in 2018.
- **Making new buildings more energy efficient:** \$99 million to develop net-zero energy ready building codes for new buildings that will increase energy efficiency, including funding for RD&D projects to lower costs of high performance homes and buildings, in collaboration with provinces and territories.
- **Deploying electric vehicle and alternative fuel Infrastructure: \$16.4 million for Phase I** of the Electric Vehicle and Alternative Fuel Infrastructure Deployment Initiative, which led to the installation of 43 electrical vehicle chargers and one natural gas refueling station as of March 2018.

NRCan worked with provincial and territorial governments and industry stakeholders to improve the efficiency of energy-using equipment used in buildings and homes, specifically by:

Endorsing, at the August 2017 Energy and Mines Ministers' Conference:

- The [market transformation strategies for energy-using equipment in the building sector<sup>xxxv</sup>](#) to define goals to increase the energy performance of key equipment to 2030 and beyond; and
- The [Encouraging Market Transformation through Collaboration on Energy Efficiency Standards<sup>xxxvi</sup>](#) to define action plans for how federal, provincial and territorial governments can collaborate to support market transformation and achieve greater harmonization on energy efficiency standards.

NRCan also developed and received Royal Assent for amendments to modernize the Energy Efficiency Act.

NRCan worked with Canadian industry and North American partners to improve industrial energy efficiency, drive competitiveness, and accelerate the uptake of energy management systems, specifically by:

- Providing financial and technical assistance to Canadian companies for energy management projects through NRCan's **Industrial Energy Management Program**;
- Expanding the [ISO 50001 energy management program<sup>xxxvii</sup>](#) to provide support to commercial and institutional sectors. There are now over 160 ISO 50001 certified sites across Canada's industrial, commercial, and institutional sectors.
- Helping businesses track, analyze and improve energy use by launching new initiatives, such as the [ENERGY STAR Challenge for Industry<sup>xxxviii</sup>](#), [ENERGY STAR for Industry Certification<sup>xxxix</sup>](#) and five **ENERGY STAR Energy Performance Indicators** for integrated steel, automotive, and commercial banking sectors.
- Supporting Canadian leadership of the [Clean Energy Ministerial Energy Management Working Group<sup>xl</sup>](#) to continue to strengthen alignment with North American and other governments to advance industrial energy management and ISO 50001 adoption worldwide.

NRCan also updated and introduced new energy efficiency standards under Canada's Energy Efficiency Regulations to align standards and to reduce regulatory differences that exist between federal and provincial regulations.

In 2017–18, to support the transition to low-carbon sources in clean electricity, NRCan strengthened dialogue with provinces, territories, and utilities by:

- Working together to determine the most promising electricity infrastructure projects that will reduce greenhouse gases through regional dialogues under the **Regional Electricity Cooperation and Strategic Infrastructure Initiative**. The findings, which will be publicly available in 2018, will provide an evidence base to inform investment decisions on electricity infrastructure and support efforts to increase access to affordable, clean, and reliable supplies of energy for all Canadians, as part of the Canadian Energy Strategy;
- Supporting the production of renewable energy under the [ecoENERGY for Renewable Power Program](#)<sup>xli</sup> through 104 funded projects; and
- Supporting sustainable community development to encourage investment in environmental municipal projects by collaborating with ECCC to provide \$125 million to the Federation of Canadian Municipalities' [Green Municipal Fund](#).<sup>xlii</sup>

**Mandate Letter Commitment  
Canadian Energy Strategy (CES)**

NRCan is working collaboratively with provincial and territorial governments on advancing the CES to maximize social, environmental and economic benefits from the energy sector. Collectively, we are building a future where there is greater energy conservation, more use of clean energy and innovative technologies, reduced diesel use in remote and off-grid communities and greater access to international markets.

In 2017, NRCan launched Generation Energy, a nation-wide dialogue with stakeholders, experts and individual Canadians to envision what a low-carbon energy future would look like over the course of a generation. Building on the results of that dialogue, the Minister of Natural Resources formed the Generation Energy Council to prepare a report in order to answer crucial questions about Canada's energy future.

Along with working through the Energy and Mines Ministers' Conference and the Pan-Pacific Framework mechanism, federal, provincial and territorial representatives will also use recommendations from the Generation Energy Council to deliver on actions outlined in the Canadian Energy Strategy.

Moving forward, First Ministers reaffirmed the importance of energy to Canada's economy and demonstrated the need for energy and climate policies to go hand in hand.

NRCan also worked with international governments to:

- Develop the [SmartWay](#)<sup>xliii</sup> Transport Partnership with Brazil, which is designed to help freight carriers and shippers reduce fuel costs while transporting goods in the cleanest, most efficient way possible; and
- Advance women's participation in the clean energy revolution by contributing to the development of the inaugural [Clean Energy Education and Empowerment \(C3E\)](#)<sup>xliv</sup> data pamphlet, which was drafted in collaboration with Sweden, Italy, and the International Energy Agency (IEA) and launched at the IEA Ministerial in November 2017.



Finally, in response to the **Deputy Ministers Task Force Mandate Letter on Public Sector Innovation**, NRCan is integrating experimentation into the way we design and deliver policies, programs, and services for Canadians. In 2017–18, the Department used experimentation as a platform to collaborate with partners and stakeholders, co-create new possibilities, and test hypotheses to understand what works to advance energy efficiency and a low-carbon transitions.

**Experimentation at NRCan:*****Finding out what works and why is the basis for evidence-based policy making.***

NRCan is using experimentation to explore, establish and test hypotheses that inform and improve policies, services and tools, including through randomized controlled trials.

Last year, NRCan worked with Treasury Board of Canada Secretariat (TBS) and other government departments to co-created the Experimentation Maturity Model to provide a framework to support ongoing conversations about departmental experimentation. Moreover, in 2017–18, NRCan joined the first cohort of departments participating in Experimentation Works, a Government of Canada–wide initiative to train public servants in experimentation by supporting and showcasing actual experiments from start to finish. As part of the initiative and in support of the Energy-Efficient Practices and Low-Carbon Energy Sources Program (2.1), NRCan began designing two experiments to systematically test:

- Types of message frames to determine their effectiveness in nudging homeowners to learn more about home energy audits and;
- How EnerGuide labelling could more clearly communicate energy efficiency ratings to Canadians.

Results achieved

Expected results	Performance indicators	Target	Date to achieve target	2017–18 Actual results	2016–17 Actual results	2015–16 Actual results
Energy consumers and producers adopt environmentally responsible products and practices related to energy use and production	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))	Positive five-year trend in PJ saved	Ongoing	<p><b>Results: Achieved</b></p> <p>From 1990 to 2015, energy efficiency in Canada improved 26.5%, which saved 1,766.1 PJ or \$38.2 billion in energy and avoided 94.8 Mt of GHG emissions in 2015.</p> <p>Over the same period, total final energy demand in Canada increased 30%. It would have increased 55% without energy efficiency improvements. More details on energy savings and emission reduction from energy efficiency improvements can be found in the report of <a href="#">Energy Efficiency Trends in Canada 1990-2015</a>.<sup>xlv</sup></p>	<p><b>Results: Not Available<sup>1</sup></b></p> <p>From 1990 to 2014, energy efficiency in Canada improved 25%, which saved 1,669.3 PJ or \$38.5 billion in energy and avoided 90.5 Mt of GHG emissions in 2014.</p> <p>Over the same period, total final energy demand in Canada increased 31%. It would have increased 55% without energy efficiency improvements. More details on energy savings and emission reduction from energy efficiency improvements can be found in the report of Energy Efficiency Trends in Canada 1990-2014.<sup>xlvi</sup></p>	<p><b>Results: Achieved</b></p> <p>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%.</p> <p>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.</p>

	Renewable electricity generation capacity in megawatts (MW) across Canada	Favourable 5-year trend in MW, as per 2007 baseline of 6,753 MW of installed capacity (excluding large hydro)	Now and ongoing	<b>Results: On Track</b>  Renewable electricity generation capacity increased from 19,996.5 MW in 2015 to <b>21,400 MW in 2016</b> (including small hydro).	<b>Results: On Track</b>  Renewable electricity generation capacity increased from 17,435.5 MW <sup>2</sup> in 2014 to <b>19,996.5 MW in 2015</b> (including small hydro).	<b>Results: On Track</b>  Renewable electricity generation capacity increased from 14,301 MW in 2013 to <b>17,236 MW in 2014</b> (including small hydro).
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<sup>1</sup> Although results based on the performance indicator are available, an assessment of whether or not the target was met in 2016-17 was not possible because there were no targets established at the time, as reported in [NRCan's 2016-17 DRR](#).

<sup>2</sup> The 2014 renewable electricity generation capacity in megawatts (MW) across Canada has been revised to 17435.5MW as based on NRCan's and Statistics Canada's most recent data.

#### Budgetary financial resources (dollars)

2017-18 Main Estimates	2017-18 Planned spending	2017-18 Total authorities available for use	2017-18 Actual spending (authorities used)	2017-18 Difference (actual minus planned)
183,461,546	183,461,546	248,370,347	237,241,683	53,780,137

The increase between Planned spending and Actual spending is mainly attributed to additional funding received during the year through Supplementary Estimates for the Green Municipal Fund as well as wage increases due to collective bargaining, offset by reduced spending for the ecoENERGY for Renewable Power Incentive Program due to lower levels of production.

#### Human resources (full-time equivalents)

2017-18 Planned	2017-18 Actual	2017-18 Difference (actual minus planned)
252	257	5

Information on NRCan's lower-level programs is available in the [GC InfoBase](#).

## Program 2.2: Technology Innovation

### Description

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

### Results

NRCan continues to support Canada's natural resource sectors to become stronger, more sustainable and more economically competitive. This includes supporting new clean technology and energy research, development, and deployment approaches while emphasizing partnerships and collaboration with stakeholders to strengthen programs and research.

In 2017–18, NRCan made progress on the implementation of its Budget 2016 **Clean Energy Innovation initiatives** by:

- Providing leadership and scientific expertise to develop enabling codes and standards, advance emerging clean technologies, demonstrate promising near-commercial technologies and address barriers to the widespread deployment of clean energy technologies in Canada's natural resource sectors through the [Energy Innovation Program](#)<sup>xlvii</sup> and [Program of Energy Research and Development](#),<sup>xlviii</sup>
- Funding, under the [Oil and Gas Clean Technology Program](#),<sup>xlix</sup> industry-led clean energy technology demonstration projects to improve environmental performance and help reduce GHG emissions in the oil and gas sector;
- Leading and funding RD&D to: improve the detection, measurement, verification reporting, and reduction of methane, VOC emissions, and other short-lived climate pollutants; develop and demonstrate carbon capture, use, and storage technologies; improve oil spill safety and remediation processes; and provide scientific expertise to inform the development of federal methane regulations and policies; and
- Under the [Electric Vehicle Infrastructure Demonstration Program](#):<sup>1</sup>
  - Making progress in addressing barriers to implementing charging infrastructure in multi-unit residential buildings, in urban centres and at workplaces. Two projects have completed demonstrations.<sup>2</sup>

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<sup>2</sup> [CrossChasm's Enhanced Charging Infrastructure via Vehicle-Side Data Demonstration Project](#) and the [British Columbia Institute of Technology's \(BCIT\) Next Generation Infrastructure Charging Infrastructure demonstration](#)<sup>2</sup>.

- Funding the installation of over 200 next-generation electric vehicle charging stations, including 34 charging stations along the Trans-Canada Highway in northern Ontario, Manitoba and Saskatchewan; and
- Supporting demonstrations of next-generation electric vehicle infrastructure such as an overhead bus charging system, electric vehicle chargers for multi-residential and commercial buildings, and projects in Quebec, Ontario, and Manitoba to demonstrate next-generation fast charging stations, street-side chargers, and innovative business models.

NRCan began implementing its Budget 2017 clean technology programs by:

- Encouraging new partnerships among natural resource companies, clean technology producers, and end-users to bring innovative technologies to commercial readiness through the launching of the [Clean Growth in the Natural Resources Program](#)<sup>li</sup> in November 2017, and by completing preliminary screenings of more than 800 submissions for funding across the mining, forestry, and energy sectors. The Program, which provides \$155 million in funding over four years, represents a collaborative approach that includes co-funding of projects with provinces and territories.

To position NRCan as a leader in the transition to a low-carbon economy, the Department also launched its Budget 2017 [Green Infrastructure Programs](#),<sup>lii</sup> including [Smart Grid](#)<sup>liii</sup> (\$100 million over four years), [Clean Energy for Rural and Remote Communities](#)<sup>liv</sup> (\$218 million over six years), [Energy Efficient Buildings](#) (\$182 million over eight years), [Emerging Renewable Power](#)<sup>lv</sup> (\$200 million over five years), and Phase II of Electric Vehicle and Alternative Fuel Infrastructure [Demonstration](#)<sup>lvi</sup> and [Deployment](#)<sup>lvii</sup> initiatives (\$120 million over four years).

To accelerate global clean energy innovation, ensuring clean energy technologies are widely affordable, and driving economic growth, NRCan continued to make investments toward the Federal government's Mission Innovation (MI) commitment to double investments in clean energy innovation over five years (from \$387 million in 2014–15 to \$775 million by 2020), with a federal investment of \$437.9 million in Year 2, including:

**Mandate Letter Commitment**  
**Enhance Canada's tax measures to generate and attract more clean technology**

Budget 2016 changed Canadian tax rules to make certain electric vehicle charging stations and electrical energy storage equipment eligible for accelerated capital cost allowance treatment. Budget 2017 introduced further expansions of this tax treatment to geothermal projects and expenses.

NRCan supports Finance Canada by performing economic modelling and providing technical and environmental analysis on these tax measures to ensure that the Government continues to work towards making Canada a competitive tax jurisdiction for clean technology.

- Supporting Canada’s participation in eight innovation challenges, including as co-lead of the [Sustainable Biofuels Challenge](#)<sup>lviii</sup> and the [Clean Energy Materials Challenge](#);<sup>lix</sup>
- Playing an active leadership role within the Mission Innovation initiative, as the Chair of the Steering Committee, co-lead of the Analysis and Joint Research sub-group, Chair of the Ministerial Planning Team, and participant in the Business and Investor Engagement subgroup; and
- Supporting Canada’s hosting of the January 2018 preparatory meeting for the Clean Energy Ministerial/Mission Innovation meetings, welcoming delegates from more than 25 countries.

NRCan took on the leadership of the **Clean Technology Impact Stream** of the [Impact Canada Initiative](#),<sup>lx</sup> a whole-of-government effort to accelerate the adoption of outcomes-based approaches to deliver high-impact, meaningful results to Canadians. Specifically, NRCan developed five prize-based challenges for launch in 2018, including the [Women in Cleantech Challenge](#),<sup>lxi</sup> to support the Department’s commitment to advance gender equality in the natural resource sectors.

In January 2018, NRCan, in partnership with Innovation, Science and Economic Development Canada (ISED), launched the [Clean Growth Hub](#),<sup>lxii</sup> a whole-of-government focal point for clean technology producers and users to help companies navigate clean technology supports, coordinating with programs administering \$2.3 billion in clean technology funding, and tracking results. In 2017–18, the Hub engaged

<p><b>Mandate Letter Commitment</b></p> <p><b>Make strategic investments in the clean technology sector</b></p>
<p>Clean technology refers to any process, product or service that reduces environmental impacts. Since 2016, the Government of Canada has committed to several measures to grow clean technology in Canada as part of the Innovation and Skills Plan and the Pan-Canadian Framework on Clean Growth and Climate Change. These investments strive to foster greater adoption of clean technologies at home and increase our export markets.</p> <p>To make a difference to Canada and be a model for the world, we need to work together and share the knowledge and investments we make. NRCan is:</p> <ul style="list-style-type: none"> <li>• Making accessible, through the <a href="#">Clean Growth program</a>, \$155 million over four years for clean technology investments to help Canada meet its climate change goals, create economic opportunities and expand global markets.</li> <li>• Providing \$75 million to the <a href="#">Impact Canada Challenge</a> in support of NRCan led Challenges that will drive new solutions in areas of climate change and green growth. In 2017–18 NRCan announced the first of these initiatives, the <a href="#">Women in Cleantech Challenge</a>, aimed at women finding breakthrough solutions in clean technology.</li> <li>• Co-chairing the <a href="#">Clean Growth Hub</a>, launched in January 2018, to provide advisory service that help companies access over \$2.3 billion of funding to improve the commercialization, growth and adoption of clean technology.</li> <li>• Co-led the creation of the <a href="#">Clean Technology and the Resources of the Futures Economic Strategy Tables</a>, which established a new model for industry–government collaboration, focused on turning Canadian economic strengths into global advantages. The tables are chaired by industry leaders and will set ambitious growth targets, identify sector-specific challenges and bottlenecks, and lay out an actionable roadmap to achieve their goals.</li> </ul>

with over 200 companies, held more than 300 client meetings, and had more than 2,900 website visits.

To support the development of data in the area of innovation to better inform future decision-making, the Government of Canada, through Budget 2017, invested \$14.5 million over four years for the **Clean Technology Data Strategy**. A first set of data was released in December 2017, showing how clean technologies and environmental goods and services benefit the Canadian economy.

To address long-term resource competitiveness, NRCan co-led the creation of the **Clean Technology and Resources of the Futures Economic Strategy Tables**, which established a new model for industry–government collaboration to create economic growth strategies while supporting innovation.

In 2017–18, NRCan successfully performed applied research and development that delivered materials and materials-processing innovations, enabling clean energy production, safe and reliable energy distribution, and more efficient use of energy in areas such as transportation, buildings, and industry.

NRCan’s **Green Mining Innovation Program**<sup>lxiii</sup> supports economic growth through innovation while also addressing climate change issues through the development of new processes that enable energy efficiency and reduce greenhouse gas emissions. In 2017–18, NRCan:

- Developed, in collaboration with partners, an online energy-benchmarking program for mines;
- Collaborated with industry partners to successfully pilot an effective mine water treatment process that received funding from Sustainable Development Technology Canada for a field demonstration project;
- Made advancements in the evaluation of the use of organic covers to

***Did you know?***

**NRCan supports success and diversity in science, technology, engineering, and mathematics (STEM)**

Through the **Green Jobs Science and Technology Internship Program**, NRCan delivered 550 jobs in STEM fields in the natural resource sectors in 2017-18. The program helps youth gain experience and develop new skills through 6–12 month internships to prepare them for the evolving labour market.

NRCan also encouraged women and Indigenous inclusion in STEM fields by launching seven *Career Alliance 360* projects. All of the projects are currently underway, the most advanced of which is the Indigenous Origins: Recognizing the Language and Origins of Canadian Geographical Names, with a story map and research summary being completed.

The Department’s engagement in this area is part of the Action Plan for diversity at NRCan’s GeoBase.

revegetate mine tailings, together with hybrid willows, with the potential to generate energy production from biomass; and

- Worked to obtain value from mine waste, which resulted in the successful development of two processes to recover metals from both nickel and gold-bearing mine tailings.

Results achieved

Expected results	Performance indicators	Target	Date to achieve target	2017–18 Actual results	2016–17 Actual results	2015–16 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 the average of the previous 5 year period	March 31, 2018	<p><b>Results: Not Achieved</b></p> <p>1% average growth over the previous five-year period. (data reference period 2011–2015)</p> <p>The reduced rate of growth in investor spending reflects, in part, stakeholders' various priorities. This mirrors the rate of growth in other areas of investment by these stakeholders.</p>	<p><b>Results: Achieved</b></p> <p>The target was achieved with <b>an 8% average growth</b> over the previous five-year period.</p>	<p><b>Results: Achieved</b></p> <p>The target was achieved with <b>an 11% average growth</b> over the previous five-year period.</p>



## Budgetary financial resources (dollars)

2017-18 Main Estimates	2017-18 Planned spending	2017-18 Total authorities available for use	2017-18 Actual spending (authorities used)	2017-18 Difference (Actual spending minus Planned spending)
219,965,182	219,965,182	244,479,484	227,759,555	7,794,373

The increase between Planned spending and Actual spending is mainly attributed to additional funding received during the year through Supplementary Estimates for the Youth Employment Strategy, the Oceans Protection Plan, Advancing Clean Technology and the Impact Canada initiative, as well as wage increases due to collective bargaining, offset by a reprofile for the Electric Vehicle Infrastructure Demonstration program.

## Human resources (full-time equivalents)

2017-18 Planned full-time equivalents	2017-18 Actual full-time equivalents	2017-18 Difference (Actual full-time equivalents minus Planned full-time equivalents)
646	719	73

The increase between Planned FTEs and Actual FTEs is mainly attributed to the hiring related to funding received through Supplementary Estimates.

Information on NRCan's lower-level programs is available in the [GC InfoBase](#).

## **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 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.

### **Results**

In 2017–18, to help analyze earth observation data that improve the understanding, monitoring, and mitigation of the cumulative effects of climate change and natural resources development, NRCan developed new tools and data such as:

- The **Centre of Expertise in Geomatics** to concentrate activities, partnerships and projects in location-based information management;
- An advanced satellite data processing environment that permits the rapid extraction of trends and maps of land cover, vegetation and water. Combined with artificial intelligence techniques, this system was used to produce the official map of North American land cover in record time;
- The application of satellite remote sensing technology, which the Department pioneered, for monitoring the cumulative impacts of climate change and resource development on caribou in Canada's Arctic;
- New **unmanned aerial vehicle (UAV)**-based mapping methods and applications, which include new methods for mapping snow depths adjacent to the new Inuvik–Tuktoyaktuk Highway. The results of these methods provide a framework for conducting low-cost, on-demand surveys for a variety of Arctic vegetation types, disturbances, and infrastructures;
- A spatially explicit forest **Generic Carbon Budget Model** that will use earth observation and other data and allow detailed estimates of how forest management is affecting carbon stocks and greenhouse gas emissions and removals; and
- Annual records of harvesting history and forest fires over a 30 year period by using historical archives of Landsat imagery that could be used for assessing historical trends of land cover change, while also supporting the capacity to model future trends.

NRCan contributed to sustainable land-use decision-making and groundwater management through work in environmental and groundwater geoscience such as:

- The [Groundwater Geoscience Program](#)<sup>lxiv</sup> that achieved its target of five citations from public and private sector organizations that incorporated NRCan's groundwater geoscience information and tools into their products; and
- The Geological Survey of Canada's geoscientific technical contribution in 53 development projects, under the **Environmental Studies and Assessment (ESA) Program**, pursuant to the Canadian Environmental Assessment Act, that helped to ensure that the projects' adverse environmental impacts were minimized and proper mitigation measures were in place. In 2017–18, over 95% of the requests for geoscience expertise were met on time and the [Environmental Geoscience Program](#)<sup>lxv</sup> had over five citations from public and/or private sector organizations.

### Results achieved

Expected results	Performance indicators	Target	Date to achieve target	2017-18 Actual Results	2016–17 Actual results	2015–16 Actual results
Public and private sectors establish practices to mitigate the environmental impacts to natural resources	Number of public and private sector new or updated policies, regulations or other decision-making tools completed annually	3 per year	March 31, 2018	<p><b>Results: Achieved</b></p> <p>Five public and private sector new or updated policies, regulations or other decision-making tools:</p> <ol style="list-style-type: none"> <li>1. The Generic Carbon Budget Model (GCBM) was updated, including a Peatland Module. The GCBM is a spatially explicit version of the Carbon Budget Model of the Canadian Forest Sector</li> <li>2. An approach to mosaicking Landsat imagery was developed that has produced historical records of forest harvest and burns over 30 years;</li> <li>3. Basic forest inventory data was provided using satellite remote sensing that has not existed in the past;</li> <li>4. A decision making tool for caribou habitat restoration strategies was developed for Cold Lake, Alberta area.</li> </ol>	<p><b>Results: Achieved</b></p> <p>Four public and private sector new or updated policies, regulations or other decision-making tools:</p> <ol style="list-style-type: none"> <li>1. NRCan's Canadian Forest Service continued to update its version of the Carbon Budget Model of the Canadian Forest Sector (CBM-CFS3), improved guidance for using the model, and provided it to stakeholders. It also held two training workshops.</li> <li>2. A synthesis of scientific information and research results from the Ecosystem Management Emulating Natural Disturbance (EMEND) experiment formed the basis for 2 symposia. New insights about ecosystem-based</li> </ol>	<p><b>Results: Achieved</b></p> <p>Four public and private sector new or updated policies, regulations or other decision-making tools:</p> <ol style="list-style-type: none"> <li>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.</li> <li>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</li> </ol>

				<p>5. The applicability of the Bowtie Risk Assessment Tool was demonstrated, in the previously untested context of sustainable forest management, through a proof-of-concept pilot in cumulative effects management.</p>	<p>forestry management were shared with researchers, including concrete examples of ecosystem attributes that responded positively or recovered more quickly at higher retention levels, resulting in a better understanding of the benefits of retention harvesting.</p> <p>3. NRCan's Groundwater Geoscience program has signed an MOU with the BC Ministry of the Environment to provide scientific support in the implementation of their new Water Sustainability Act.</p> <p>4. NRCan's Environmental Geoscience Program's work on background seismicity is mentioned in the Strategic Environmental Assessment of Quebec hydrocarbon, report specifically on Île d'Anticosti (May 2016). In addition, scientists from the Environmental Geoscience Program (EGP) continue providing expertise and sharing knowledge to help the Government of the Northwest Territories (NWT) 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,</p>	<p>this research are being applied to improve management practices on the surrounding 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.</p> <p>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.</p> <p>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</p>
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					including meeting with the Chief Medical Officer of Health for the NWT to get a better understand of the EGP findings.	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.
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### Budgetary financial resources (dollars)

2017-18 Main Estimates	2017-18 Planned spending	2017-18 Total authorities available for use	2017-18 Actual spending (authorities used)	2017-18 Difference (actual minus planned)
27,437,623	27,437,623	32,241,225	32,240,247	4,802,624

The increase between Planned spending and Actual spending is mainly attributed to wage increases due to collective bargaining. The increase is also explained by a realignment of real property expenditures related to special purpose buildings and the Federal Infrastructure Initiative to the appropriate program, in line with TBS guidelines.

### Human resources (full-time equivalents)

2017-18 Planned	2017-18 Actual	2017-18 Difference (actual minus planned)
186	209	23

Information on NRCan's lower-level programs is available in the [GC InfoBase](#).

## 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.

## Results

In 2017–18, NRCan advanced several initiatives to help enable key stakeholders to manage risks against potential hazards posed by natural resource development and changes in the environment. NRCan focused efforts on building capacity for hazard prevention and protection of natural resources. Specifically, NRCan:

- Engaged stakeholders to establish multiple regional integrated assessments across forest ecoregions to determine vulnerabilities to climate change and explore adaptation options with Canada’s forest sector;
- Developed new tools to obtain information on wildfires in real-time from a variety of sensors during the fire season. For example, NRCan released the **Consolidated Fire Detection and Monitoring System (CFDMS)**, which provides fire managers in Canada continuous satellite monitoring for large fires. NRCan now also offers high-resolution remote sensing-based tactical mapping through the Torchlight system, which enables fire managers to maintain precise situational awareness in contentious wildfires such as those in British Columbia’s interior in 2017;
- Completed its scientific contribution to the first phase of the early intervention strategy against Spruce Budworm in Atlantic Canada, including the [Budworm Tracker Citizen Science Program](#).<sup>lxvi</sup> Positive research results show that early intervention can keep Spruce Budworm populations low and substantially minimize forest loss. These results led to the Government of Canada investing \$74 million toward phase 2 of in Budget 2018;
- Provided scientific support for early detection and response to new incidences of Emerald Ash Borer infestation to municipal staff in Quebec City and Winnipeg, where the borer has recently been detected, in addition to ongoing collaboration with stakeholders in previously infected areas of Ontario and Quebec; and
- Conducted research on the Mountain Pine Beetle in newly invaded ecosystems to inform: (1) a collaboration between provincial governments and academia to update the risk assessment of the beetle’s spread in the boreal and eastern pine forests; and (2) the [Forest Pest Working Group](#),<sup>lxvii</sup> under the **Canadian Council of Forest Ministers**, in the development of a strategic approach to slow the spread of the Mountain Pine beetle across Canada.

NRCan continued to advance efforts on climate change adaptation across natural resources sectors and regions by:

- Co-hosting the meeting of Canada’s [Climate Change Adaptation Platform](#)<sup>lxviii</sup> Plenary with the National Roundtable Disaster Risk Reduction;

- Supporting the development of several “State of Play” reports under Canada’s Climate Change Adaptation Platform, which summarize developments in climate change adaptation and identify activities needed to advance adaptation action. These informed the call for proposals for co-funded projects under the **Climate Change Adaptation Program**, launched in August 2017. 32 cost-shared projects were approved at a value of \$7.8 million;
- Through the **Climate Change Geoscience Program**,<sup>lxi</sup> NRCan advanced the state of geoscience knowledge and outreach related to climate change adaptation with 59 knowledge products, 32 publications and reports, and 27 presentations;
- Advanced the development of **Canada in a Changing Climate**,<sup>lxx</sup> the next national assessment that looks at how Canada’s climate is changing, its impact, and how Canada is reducing risk through adaptation. A key milestone was the first joint meeting of the Advisory Committee and Coordinating Lead Authors that was held in Halifax in conjunction with the 2017 meeting of the Climate Change Adaptation Platform Plenary.
  - As a result of the meeting, guidance will be prepared on the inclusion of Indigenous knowledge in the report, to be prepared by a sub-group under the leadership of experts from the Assembly of First Nations and Inuit Tapiriit Kanatami. In addition, a public engagement website was launched in September 2017, which allows visitors to contribute and learn more about the assessment process and team; and
- Launched the **Building Regional Adaptation Capacity and Expertise (BRACE) Program** to support regions in developing the expertise and capacity they need to take action to adapt to climate change.

To build Canada’s capacity for hazard prevention, NRCan:

- Provided funding to strengthen security controls on explosives precursor chemicals, with emphasis on increased inspections, increased S&T on home-made explosives, strengthened regulatory measures, and the expansion of the list of precursor chemicals to include additional chemicals of concern;
- Upgraded 50 station under the renewed **National Earthquake Monitoring Initiative**, bringing the total network upgraded to 58%;
- Completed the Geomagnetic Calibration Facility’s move from Ottawa to Acadia Research Forest, New Brunswick. With the signature of a new 50-year agreement with the United States Geological Survey, this new facility now forms the core of a North American Geomagnetic Calibration Facility;
- Completed a regional assessment of earthquake risk in British Columbia, which provides estimates of potential economic losses from earthquake events; and

- Completed a Reference Manual for a simulator of Geomagnetically Induced Currents (GIC), which will help power system operators understand the potential impacts of geomagnetic storm events on a power grid.

NRCan took steps to protect our oceans, by:

- Conducting research with the Department of Fisheries and Oceans (DFO), through the [Oceans Protection Plan](#),<sup>lxxi</sup> into the behaviour and fate of oil spills. In 2017–18, NRCan collaborated with toxicologists to conduct spill tank tests which is helping spill responders to make decisions for response methods and cleanup; and
- Providing valuable mapping data to support Canada’s Oil Tanker Moratorium Act, which will regulate vessels that transport crude oil or persistent oil to or from ports or marine installations located along British Columbia’s north coast.

NRCan strengthened the safety of natural resources workers by taking steps to amend the Offshore Marine Installation and Structures Occupational Health and Safety Transitional Regulations.



## Results achieved

Expected results	Performance indicators	Target	Date to achieve target	2017–18 Actual results	2016–17 Actual results	2015–16 Actual results
Governments, communities and the private sector manage risks or opportunities to natural resources, infrastructure, and human health	Number of risk assessments (climate change, geohazards, other), policies, regulations, plans, standards (codes) or guidelines developed using NRCan information or services	5 per year	March 31, 2018	<p><b>Results: Not Achieved</b></p> <p>In 2017-18 NRCan completed a <b>regional assessment of earthquake risk in British Columbia</b> and a <b>space weather manual</b>. In addition, NRCan disseminated the results of 21 recently completed climate change adaptation projects to new audiences to support <b>future risk assessment and planning activities</b>. In 2018-19 NRCan is undertaking a study to document the impact of its adaptation projects and activities according to the program's monitoring and evaluation framework.</p>	<p><b>Results: Achieved</b></p> <p><b>A substantial upgrade of the seismic hazard model for Canada</b> was completed and incorporated into the National Building Code of Canada 2015, released in June 2016. NRCan worked with Public Safety Canada to release a <b>forward-looking guidance document</b> on risk assessment needs in Canada. In addition, a <b>guidance document on critical infrastructure and flood mapping</b> was completed. NRCan is actively involved with the North American Electric Reliability Corporation (NERC) on developing <b>new guidelines for electric power utilities to manage geomagnetic disturbances</b>.</p>	<p><b>Results: Achieved</b></p> <p>NRCan expertise was used to develop <b>three new risk assessments</b> on climate change adaptation, including 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. NRCan geohazard knowledge products contributed to <b>five standards and guidelines</b> developed by public and private sector organizations. NRCAN also developed seismic hazard models that were used to inform the National Research Council Canada's 2015-2020 update of National Building Code of Canada.</p>

	<p>Number of active collaborations with the public and private sector that manage risks or opportunities to human population, natural resources and infrastructure health</p>	<p>3 collaboration agreements<sup>1</sup></p>	<p>March 31, 2018</p>	<p><b>Results: Achieved</b></p> <p>1. NRCan entered a new collaborative research and development agreement with Acadia University, Forest Protection Limited, Dalhousie University, University of New Brunswick, Agrifor Biotechnical Services Limited, and Sylvar Technologies for the development and commercialization of naturally-derived semiochemicals for insect pest management.</p> <p>2. The Canadian Forest Service (CFS) collaborates with certain northern municipalities. The collaboration includes the development of a survey of residential homeowners to better understand barriers that exist for homeowner uptake of measures pertaining to living with, and managing, wildfires.</p> <p>3. CFS continues to collaborate with a Canadian provincial/territorial jurisdiction to determine how the variability in burn severity may affect changes in forest cover and impacts on woodland caribou. The collaboration includes studies on the effects of the burn severity on re-burns, fire refugia, vegetation shifts among others.</p>	<p><b>Results: Achieved</b></p> <p>NRCan initiated <b>three new collaborative research agreements</b> with the Canadian Food Inspection Agency to enhance surveillance techniques for damaging invasive alien species in order to mitigate risks of introduction and spread in Canada. Signed <b>four new 'Regional Adaptation Collaborative' agreements</b> to increase the dissemination of program results and to help engage new groups in managing adaptation risks in British Columbia, the Prairie provinces, Ontario, and Quebec</p>	<p><b>Results: Achieved</b></p> <p>Maintained existing networks through delivery of Canada's Adaptation Platform, including a new initiative with Chartered Professional Accountants to inform their membership to address climate change adaptation in their work.</p> <p>New collaboration agreements were established with provinces, territories and other federal departments to enhance 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, a pest threatening ash trees in urban areas of southern Ontario and Quebec.</p> <p>The Ontario Centre for Climate Adaptation Research, Ouranos, and NRCan collaborated on a national conference (Adaptation Canada 2016) to showcase results of the federal adaptation programming, the first collaboration of its kind in 10 years.</p>
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<sup>1</sup> The target for 2017-18 was revised from six to three collaborative agreements to reflect the change in scope in the methodology for this indicator.

## Budgetary financial resources (dollars)

2017–18 Main Estimates	2017–18 Planned spending	2017–18 Total authorities available for use	2017–18 Actual spending (authorities used)	2016–17 Difference (actual minus planned)
70,418,079	70,418,079	77,949,305	73,038,008	2,619,929

The increase between Planned spending and Actual spending is mainly attributed to additional funding received during the year through Supplementary Estimates for Enhancing Explosives Safety and Security, as well as wage increases due to collective bargaining.

## Human resources (full-time equivalents)

2017–18 Planned	2017–18 Actual	2017–18 Difference (actual minus planned)
414	459	45

The increase between Planned FTEs and Actual FTEs is mainly attributed to the hiring related to funding received through Supplementary Estimates.

Information on NRCan's lower-level programs is available in the [GC InfoBase](#).

## 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.

### Results

In 2017–18, NRCan provided up-to-date, comprehensive, and accessible landmass information to facilitate sound socio-economic and environmental decision-making. Specifically, NRCan:

- Released the **North American Land Cover Map**, which provides consistent national-scale information on Canada’s landmass and supports policy discussions on climate change, cumulative impacts, forest and water monitoring, and land use planning. This version of the map — developed in collaboration with American and Mexican scientists — increases the resolution eight-fold and achieves delivery of near-real time satellite imagery from NRCan’s ground station network and satellite imagery archives;
- Disseminated government-wide geospatial data through the **Federal Geospatial Platform (FGP)**.<sup>lxxii</sup> The FGP was successfully operationalized with 11 contributing partner departments and a new collaborative funding model, providing enhanced data quality and an enterprise-wide solution;
- Made available high-resolution coverage of northern Canada at a resolution of five metres on the FGP and **Open Maps**.<sup>lxxiii</sup> This quality of data, which has never before been available to Canadians, has a range of applications and uses, including geological monitoring, mining development, environmental impact assessments, and climate change monitoring; and
- Made LiDAR data of the southern part of Canada available on the FGP and Open Maps. This highly precise data covering 19 of Canada’s 100 largest cities can be used to advance clean technology policy, climate change issues, and floodplain mapping and related emergency management.

#### Did you know?

**High-resolution 3D mapping of northern Canada is essential for many sectors, including mining and environmental organizations.**

High-resolution 3D mapping allows:

- The identification of geological formations, which could help to exploit the potential of the mineral resources or assist in planning road construction.
- Accurate environmental assessments, particularly when combined with knowledge of water supply systems and the location of local Indigenous communities.
- The calculation of volumes of melting Canadian ice and their contribution to sea level rise.

NRCan recently published, in collaboration with the Polar Geospatial Centre, [high-resolution 3D digital mapping for more than 3 million km<sup>2</sup> of northern Canada](#).

NRCan supported effective management of Canada Lands to advance interests of Canada’s natural resource sectors and respond to potential risks for Canadians by:

- Delivering the **Canada Lands Survey System**,<sup>lxxiv</sup> which provides the statutory framework, standards, information systems, and the land survey ground infrastructure that legally identifies and protects the boundaries of property rights and enables land transactions;
- Delivering on survey obligations, as per legislation and agreements under the **First Nations Land Management Program**.<sup>lxxv</sup> This work contributes to meeting land-related

reconciliation initiatives, helps ensure boundary certainty for First Nations, and supports Indigenous communities seeking sectoral self-government; and

- Digitizing more than 100,000 documents to implement digitally signed survey documents, in collaboration with industry and other stakeholders, making them available to other federal departments and some First Nations that are now using electronic approval portals. NRCan continues to actively support First Nations in their efforts to take ownership of their lands by providing their communities with improved services and tools.

NRCan also advanced its objectives through the [Polar Continental Shelf Program](#)<sup>lxxvi</sup> and the [United Nations Convention on the Law of the Sea \(UNCLOS\) Program](#)<sup>lxxvii</sup> by supporting scientific research in the Arctic and contributing to Canadian's sovereignty. In 2017–18, NRCan:

- Supported 115 projects requesting field equipment for federal government work across Canada and 160 projects requiring Arctic logistics support. These included science and operational activities led by more than 15 federal and territorial government departments and agencies and 25 universities;
- Continued its participation in the **UNCLOS Program**, which carried out 100% of its required scientific and technical data and analysis for Canada's Arctic Ocean submission to the United Nations Commission on the Limits of the Continental Shelf (UNCLCS). The scientific data and samples collected for the submission will show Canadian entitlement to vast offshore lands beyond 200 nautical miles, increase knowledge about the geological history of the Arctic Ocean and fundamentally change our understanding of its evolution. The Program is on track to file a full and complete scientifically justified submission delineating the outer limits of Canada's extended continental shelf to the UN's CLCS no later than 2019. A timeline for the review of Canada's submissions has yet to be determined by the CLCS. Eventual recognition of these outer limits will be Canada's last international boundary and give Canada sovereign rights to the living and non-living natural resources on the seafloor and in the subsoil.

## Results Achieved

Expected results	Performance indicators	Target	Date to achieve target	2017-18 Actual Results	2016-17 Actual results	2015-16 Actual results
Stakeholders discover and access geospatial assets to inform decision-making, reporting, operations and research	Satisfaction with discoverability and access to geospatial assets	Improvement over previous reporting period on satisfaction with overall discovery and access	March 31, 2021 <sup>3</sup>	<b>Results: On Track</b> Development of a tool to track access to geospatial assets is on track for launch in April 2019. Baseline for this tool is in test mode. Biennial reporting of stakeholder satisfaction will begin in 2019-2020.	<b>Results: On Track</b> Assessment tool development began in March 2017. On track to establish baseline in 2017-18.	<b>Results: Not available</b> Performance indicator did not exist in 2015-16
Public, private sector and academia use accurate, Government of Canada geo-information for decision-making	Evidence identifying that Canada Lands Survey System activities are meeting stakeholder needs	8	March 31, 2018	<b>Results: Achieved</b> Evidence collected for 2017-18 indicated that stakeholder needs were met.  An information exchange session took place with the Canadian Land Surveyors working in the Province of Quebec. There was a clear indication that all surveyors were extremely satisfied by the services and support offered by NRCan. Extensive engagement with Canada Lands Surveyors and other users of the Survey System at the National Surveyors Conference in Victoria revealed high levels of satisfaction with the services provided by the Branch. In addition, all praised the quality and precision of the data, allowing them to	<b>Results: On track</b> Evidence collected for 2016-17 indicated that stakeholder needs were met.  The new Yukon Land Titles Act officially recognizes the Surveyor General as the Survey Authority. This has resulted in increased business integration with improved service delivery. A study on cadastral datasets in the North showed their widespread usage within the three territorial governments and found the data to be reliable and current.  The study recommended improved communications about Canada Lands Survey	<b>Results: On Track</b> 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. Stakeholders identified areas for improvement including increased alignment with the Yukon Land Titles System.

<sup>3</sup> The target was updated from March 31, 2018 to March 31, 2021 based on the timelines of the tool's launch in 2019, and subsequent reporting stakeholder satisfaction beginning in 2019-20.

				find and access quickly the survey monuments. Under the First Nations Lands Management Framework Agreement, eight First Nations adopted their own Land Code, allowing them to manage their reserve land, resources and environment according to their own values and priorities while also enabling improved economic development.	System services in the North. An industry-focused cost study demonstrated the Canada Lands Survey System to be comparable with survey systems on private or provincial lands. The study recommended more education for surveyors and lands administrators on the process and tools available to further reduce costs.	
Polar Continental Shelf Program (PCSP) clients receive cost-effective logistics support needed to conduct field work safely in Canada's Arctic and Subarctic regions	Level of client satisfaction with mix, quality and cost of support received	85% of clients are either satisfied or very satisfied	March 31, 2018	<b>Results: On track</b> 88% of projects were supported in the 2017 field season. The PCSP supported 115 field equipment requests for work across Canada and 160 projects requiring Arctic logistics support. The client satisfaction survey is planned for 2018–19.	<b>Results: Not available</b> The client satisfaction survey is administered every three years. No survey was conducted in 2016-17. The next survey is planned for 2018-19.	<b>Results: 90%</b> Through a client satisfaction questionnaire administered in 2015-16, <b>90% of respondents</b> indicated they were either satisfied or very satisfied with the mix and quality of logistics support provided by the PCSP.
Governments and other program stakeholders can access a suite of up-to-date, comprehensive geospatial assets	Percentage of landmass foundational data collections with renewed coverage	15% of all data collections are updated or newly produced	March 31, 2018	<b>Results: Achieved</b> Six data layers of 23 (26%) were updated in 2017–2018, including data on geographic place names, elevation, roads, railway, hydrographic (water: lakes, rivers), and the energy infrastructure within the North American Cooperation on Energy Information (NACEI) project.	Not available: Performance indicator did not exist in 2016-17	Not available: Performance indicator did not exist in 2015-16

### Budgetary financial resources (dollars)

2017-18 Main Estimates	2017-18 Planned spending	2017-18 Total authorities available for use	2017-18 Actual spending (authorities used)	2017-18 Difference (actual minus planned)
49,150,177	49,150,177	69,887,609	61,573,503	12,423,326

The increase between Planned spending and Actual spending is mainly attributed to additional funding received during the year through Supplementary Estimates to continue the negotiation and implementation of comprehensive land claims, treaty-related and self-government agreements, and transfers from other government departments, as well as wage increases due to collective bargaining. The increase is also explained by a realignment of real property expenditures related to special purpose buildings and the Federal Infrastructure Initiative to the appropriate program, in line with TBS guidelines.

### Human resources (full-time equivalents)

2017-18 Planned	2017-18 Actual	2017-18 Difference (actual minus planned)
386	353	(33)

The decrease between Planned FTEs and Actual FTEs is mainly attributed to staff departures and delays in planned staffing.

Information on NRCan's lower-level programs is available in the [GC InfoBase](#).

## Internal Services

### Description

Internal Services are those groups of related activities and resources that the federal government considers to be services in support of programs and/or required to meet the corporate obligations of an organization. Internal Services refers to the activities and resources of the 10 distinct service categories that support Program delivery in the organization, regardless of the Internal Services delivery model in a department. The 10 service categories 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.

### Results

In 2017-18, the internal services supported Natural Resources Canada's transition to the new Departmental Results Framework by rolling out the necessary changes to financial, information



management (IM) and information technology (IT) systems, as well as continued efforts to support the Department in advancing the Minister's mandate letter commitments and Government of Canada priorities in the following areas:

### **Open Government and Public Engagement**

As part of its Open Government agenda, NRCan continued its transition to a digital-first model for communications and engagement in 2017–18 by designing and developing several key communications and outreach products and implementing major digital engagement initiatives, nationwide, such as the **Generation Energy** and **Canadian Minerals and Metals Plan**. These initiatives allow the Department to reach more Canadians and engage with them on issues that matter most.

NRCan continued to work with federal partners to support the dissemination of scientific information through the **Federal Science Library (FSL)**, which was accessed by over 22,000 Canadians last year. To continue to contribute to this important tool, NRCan submitted the second annual update of its dataset inventory, bringing the Department's total datasets published to date to 69,000.

### **Results and Delivery**

NRCan saw the completion of its Departmental Results Framework (DRF), which was approved in 2017–18, and it's supporting financial and IM and IT systems. The DRF sets the Department's core responsibilities, expected results and related performance information and will be the basis upon which NRCan will report to Canadians on its performance moving forward. In this regard, the department advanced its work on a data strategy to support its reporting against the DRF.

NRCan continues to implement the Minister's six mandate letter commitments (MLC) and inform the Government of Canada's [Mandate Letter Tracker: Delivering results for Canadians](#), which was launched in November 2017. This year NRCan, in collaboration with other departments, supported the completion of the MLC "Develop a North American clean energy and environment agreement." The other five MLC are on track for completion.

## Workforce and Workplace

NRCan aspires to foster a culture where mental health and wellness are supported in all aspects of the workplace through training, communication and engagement. In 2017–18, NRCan introduced the **NRCan People Strategy**, focused on supporting our workforce and work environment. Three key accomplishments related to the strategy include the delivery of the **NRCan Career and Networking Fair**, which attracted over 3,500 people; the development and piloting of the **NRCan Leader Success Profile**; and the establishment of a human resources **Indigenous Strategy** to support the **Indigenous Reconciliation Action Plan**.

### Gender-Based Analysis Plus (GBA+)

GBA+ is an analytical tool used across the Government of Canada to help identify the impacts of policies, programs and services on diverse groups of women, men and gender-diverse people. Its purpose is to advance gender equality, but it goes beyond gender and includes the examination of identity factors, such as age, education, language, geography, culture, and income. It is one of the key tools the Government of Canada is using to ensure inclusive growth. As a recognized leader on GBA+, in 2017–18 NRCan activities included:

- A gender equity charter that aims to address unconscious bias and remove barriers to career progression, as well as to actively promote career progression and leadership opportunities. The charter was signed on International Women's Day on March 8, 2018.
- Promoting women in science by providing funding opportunities to female scientists interested in pursuing a post-doctoral research position in the field of earth sciences through the Geological Survey of Canada's Alice Wilson Fellowship.
- Announcing the nomination of NRCan's Champion and Co-champion for women in March 2018 to work with partners in promoting equal opportunities for women in natural resource industries
- Ensuring that all new NRCan programs undergo a rigorous GBA+ as part of their Cabinet and Budget process.

In 2017–18, the Department increased efficiency in service delivery by establishing collective staffing processes and introduced a classification pilot to reduce the effort required of managers to create new positions. The Department also focused on safeguarding the integrity of data between its HR information system and Phoenix to minimize pay errors and put extensive focus on improving the pay situation both internally and at the Pay Centre by increasing communications to managers and employees; participating in inter-departmental committees and working groups; and, sharing resources with Public Services and Procurement Canada.

## IM/IT Modernization

To support its innovative clean technology and climate change science agenda, NRCan continued to improve its capacity in scientific computing over the last year. This work included system-wide updates to improve NRCan's cybersecurity resilience by taking steps to reduce cyber risks and launching an initiative to strengthen the key fundamental IM/IT pieces that enable business delivery. The Department was also a key partner and contributed scientific advice, guidance and tools to support the whole of government response to the **2017 BC Urban Interface Wildfire Season**.

## Budgetary financial resources (dollars)

2017-18 Main Estimates	2017-18 Planned spending	2017-18 Total authorities available for use	2017-18 Actual spending (authorities used)	2017-18 Difference (Actual spending minus Planned spending)
138,006,496	138,006,496	159,938,410	143,026,202	5,019,706

The increase between Planned spending and Actual spending is mainly attributed to additional funding received during the year through Supplementary Estimates for Advancing Clean Technology and to support other programs, as well as wage increases due to collective bargaining, offset by a reprofile for the Federal Infrastructure Initiative.

## Human resources (full-time equivalents)

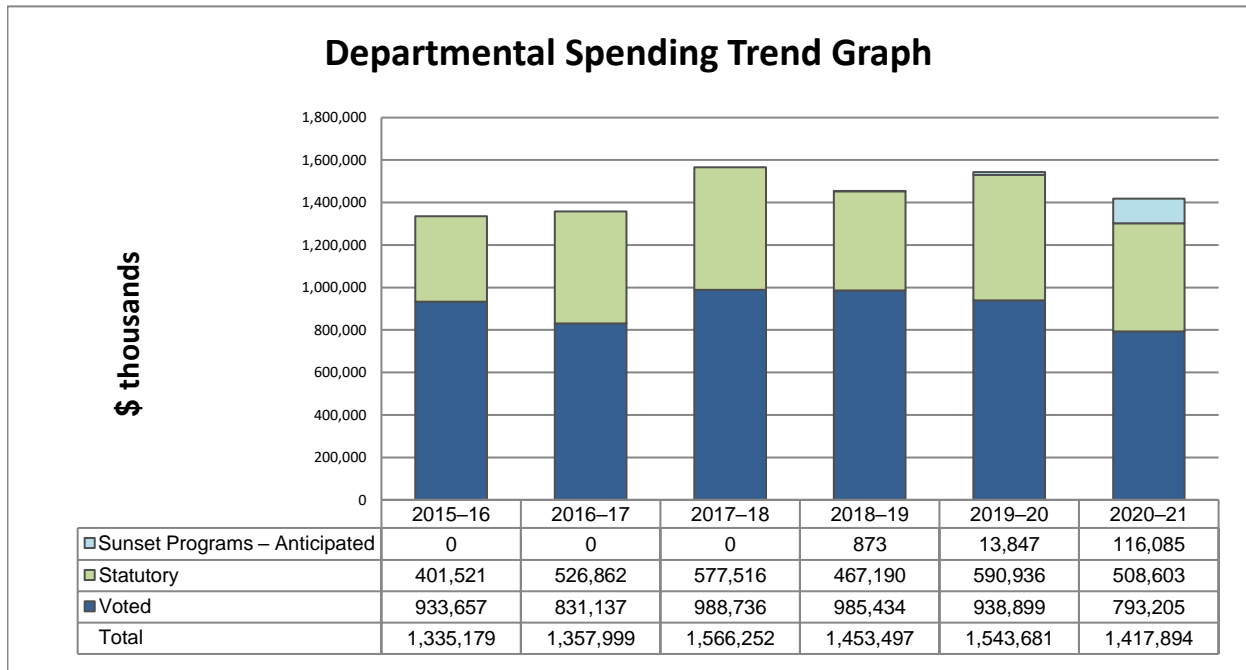
2017-18 Planned full-time equivalents	2017-18 Actual full-time equivalents	2017-18 Difference (Actual full-time equivalents minus Planned full-time equivalents)
922	928	6

Information on NRCan's lower-level programs is available in the [GC InfoBase](#).

## Analysis of trends in spending and human resources

### Actual expenditures

#### Departmental spending trend graph



## Budgetary performance summary for Programs and Internal Services (dollars)

Programs and Internal Services	2017–18 Main Estimates	2017–18 Planned spending	2018–19 Planned spending	2019–20 Planned spending	2017–18 Total authorities available for use	2017–18 Actual spending (authorities used)	2016–17 Actual spending (authorities used)	2015–16 Actual spending (authorities used)
1.1 Market Access and Diversification	60,190,597	60,190,597	121,586,133	146,205,150	82,822,778	69,193,650	70,738,385	75,927,073
1.2 Innovation for New Products and Processes	109,154,844	109,154,844	105,447,956	108,798,087	119,804,678	118,506,415	97,761,228	93,375,233
1.3 Investment in Natural Resource Sectors	73,163,653	73,163,653	66,583,758	58,519,340	79,038,507	79,038,129	74,593,181	68,270,162
1.4 Statutory Programs – Atlantic Offshore	408,998,253	408,998,253	411,491,251	535,940,473	524,634,823	524,634,823	473,430,813	347,989,273
2.1 Energy-Efficient Practices and Lower-Carbon Energy Sources	183,461,546	183,461,546	192,282,837	164,071,051	248,370,347	237,241,683	177,431,795	211,012,423
2.2 Technology Innovation	219,965,182	219,965,182	273,697,154	247,070,016	244,479,484	227,759,555	148,143,884	143,620,407
2.3 Responsible Natural Resource Management	27,437,623	27,437,623	28,403,454	27,562,371	32,241,225	32,240,247	35,319,980	121,598,627
3.1 Protection for Canadians and Natural Resources	70,418,079	70,418,079	65,219,397	66,113,435	77,949,305	73,038,008	79,879,094	73,709,947
3.2 Landmass Information	49,150,177	49,150,177	49,774,538	49,684,775	69,887,609	61,573,503	74,793,210	74,110,670
<b>Subtotal</b>	<b>1,201,939,954</b>	<b>1,201,939,954</b>	<b>1,314,486,478</b>	<b>1,403,964,698</b>	<b>1,479,228,756</b>	<b>1,423,226,013</b>	<b>1,232,091,570</b>	<b>1,209,613,815</b>
Internal Services	138,006,496	138,006,496	138,137,439	125,869,690	159,938,410	143,026,202	125,907,344	125,564,854
<b>Total</b>	<b>1,339,946,450</b>	<b>1,339,946,450</b>	<b>1,452,623,917</b>	<b>1,529,834,388</b>	<b>1,639,167,166</b>	<b>1,566,252,215</b>	<b>1,357,998,914</b>	<b>1,335,178,669</b>

For 2015–16, 2016–17 and 2017–18, the figures represent actual spending (authorities used) as reported in the Public Accounts. From 2015–16 to 2016–17, NRCan expenditures increased slightly, mainly due to an increase in Statutory Atlantic Offshore payments and the implementation of the **Federal Infrastructure Initiative (FII)**, offset by the transfer of responsibility over the **Nuclear Legacy Liabilities Program** and the **Port Hope Area Initiative** to Atomic Energy of Canada Limited and due to reduced spending pertaining to the **ecoENERGY for Biofuels, Wind Power Production Incentive** and **Energy Innovation** programs. From 2016–17 to 2017–18, NRCan expenditures significantly increased, mainly due to a reassessment of royalties paid from prior years resulting in a one-time payment; the 2017–18

salary wage increases and retroactive payments; as well as new or additional spending for the **Green Municipal Fund (GMF), Clean Oil & Gas Demonstrations, Energy Innovation Program** and **Electric Vehicle Infrastructure Demonstrations (EVID)** contribution programs, offset by reduced spending in Statutory Atlantic Offshore payments for royalties related to 2017–18 and the FII.

The 2017–18 planned spending of \$1,340 million was increased during the year by \$299 million resulting in total authorities available for use of \$1,639 million due to the following:

Increases due to:

- A one-time payment for the reassessment of royalties from prior years;
- Funding received through Supplementary Estimates mainly for **GMF, Softwood Lumber Action Plan (SLAP), Indigenous Advisory and Monitoring Committees (IAMC), Youth Employment Strategy (YES)** and **Advancing Clean Technology**;
- The receipt of the 2016-17 operating and capital budget carry forward; and
- The receipt of the funding set aside by the Department to cover retroactive unfunded collective bargaining payouts and the additional funding to cover the 2016–17 and 2017–18 funded portion of the wage increases.

These increases are offset by a decrease due to:

- Reduced requirements for statutory payments under the Atlantic Offshore Accord Acts mainly as a result of lower production and changes in commodity pricing from what was planned.

Of the \$1,639 million total authorities available for use in 2017–18, NRCan spent \$1,566 million. The \$73 million in unspent funding is explained by the following:

- Funding was reprofiled or carried forward into future years for **EVID, Gunnar Mine Remediation**, Soldier Settlement Board mineral rights and to support FII projects; and
- Unspent contribution funds under the **ecoENERGY Renewable Power Program** and **IAMC** and **EVID**. Additional reprofiles may be sought for these lapses.

From 2018–19 to 2020–21, planned spending is projected to be higher than the 2017–18 actual expenditures, excluding the one-time payment for the reassessment of royalties from prior years. This is the result of fluctuations in the economic modeling for the Atlantic Offshore Accounts and the implementation of **Green Infrastructure Phase II**, offset by the sunsetting or decreasing funding profile of existing programs (i.e., **ecoENERGY for Renewable Power, SLAP, FII, Impact Canada, Clean Technology Growth, Targeted Geoscience Initiative, Geo-mapping for Energy and Minerals, Gunnar and YES**). However, as reflected in the graph, the Department anticipates that some of these programs will be renewed or replaced.

## Actual human resources

Human resources summary for Programs and Internal Services  
(full-time equivalents)

Programs and Internal Services	2015–16 Actual full-time equivalents	2016–17 Actual full-time equivalents	2017–18 Planned full-time equivalents	2017–18 Actual full-time equivalents	2018–19 Planned full-time equivalents	2019–20 Planned full-time equivalents
1.1 Market Access and Diversification	254	277	267	304	286	277
1.2 Innovation for New Products and Processes	313	328	289	334	294	291
1.3 Investments in Natural Resource Sectors	399	422	395	417	389	370
1.4 Statutory Programs – Atlantic Offshore	0	0	0	0	0	0
2.1 Energy-Efficient Practices and Low-Carbon Energy Sources	264	265	252	257	314	316
2.2 Technology Innovation	665	653	646	719	653	639
2.3 Responsible Natural Resource Management	244	223	186	209	206	206
3.1 Protection for Canadians and Natural Resources	474	435	414	459	467	462
3.2 Landmass Information	383	387	386	353	390	393
<b>Subtotal</b>	<b>2,996</b>	<b>2,990</b>	<b>2,835</b>	<b>3,052</b>	<b>2,999</b>	<b>2,954</b>
Internal Services	940	906	922	928	933	938
<b>Total</b>	<b>3,936</b>	<b>3,896</b>	<b>3,757</b>	<b>3,980</b>	<b>3,932</b>	<b>3,892</b>

For 2015-16 and 2016-17, the figures represent actual FTEs as reported in Departmental Results Reports. For 2017-18, the planned FTEs are drawn from the 2017-18 Departmental Plan and the 2017–18 actual FTEs reflect the actual FTEs for the year. For 2018–19 and 2019–20, the figures



represent total planned FTEs to support NRCan program activities, as identified in the 2018–19 Departmental Plan.

The decrease between 2017–18 and 2018–19 is mainly explained by the sunsetting of a number of major initiatives, which were explained in the Budgetary Performance Summary section. As new initiatives are undertaken or renewals approved, plans for future FTE requirements will be adjusted accordingly. Overall, NRCan FTE levels remain stable at approximately 3,900 FTEs as reflected in the actual FTE counts of past years.

## Expenditures by vote

For information on NRCan’s organizational voted and statutory expenditures, consult the [Public Accounts of Canada 2017–2018](#).

## Government of Canada spending and activities

Information on the alignment of NRCan’s spending with the Government of Canada’s spending and activities is available in the [GC InfoBase](#).

## Financial statements and financial statements highlights

### **Financial statements**

NRCan consolidated financial statements (unaudited) for the year ended March 31, 2018, are available on the [Departmental website](#).

### **Financial statements highlights**

The highlights presented in this section are drawn from the Department’s consolidated financial statements.

The consolidated financial statements were prepared using the Government of Canada accounting policies, which are based on Canadian public sector accounting standards resulting in figures that may differ from those provided in other sections of the Departmental Results Report prepared on an expenditure basis. A reconciliation between authorities used on an expenditure

basis and the net cost of operations prepared on an accrual basis is set out in Note 3 of the Department's consolidated financial statements.

### **Condensed Consolidated Statement of Operations (unaudited) for the year ended March 31, 2018 (dollars)**

<b>Financial Information</b>	<b>2017-18 Planned Results*</b>	<b>2017-18 Actual Results</b>	<b>2016-17 Actual Results</b>	<b>Difference (2017-18 Actual results minus 2017- 18 Planned results)</b>	<b>Difference (2017-18 Actual results minus 2016- 17 Actual results)</b>
Total expenses	1,410,311,074	1,607,655,801	1,349,957,088	197,344,727	257,698,713
Total net revenues	38,465,077	25,073,848	29,410,248	(13,391,229)	(4,336,400)
Net cost of operations before government funding and transfers	1,371,845,997	1,582,581,953	1,320,546,840	210,735,956	262,035,113

\* The 2017-18 Planned Results are derived from the amounts presented in the [2017-18 Future-Oriented Statement of Operations](#) and included in NRCan's 2017-18 Departmental Plan.

Total NRCan expenses of \$1,608 million in 2017-18 consist of \$903 million in transfer payments mainly to other levels of government under the Atlantic Offshore Statutory programs and to industry across multiple programs along with \$704 million in other program expenses. The NRCan total net revenues of \$25 million in 2017-18 resulted from re-spendable revenues such as those from the Geomatics Canada Revolving Fund.

The increase of \$262 million in the net cost of operations before government funding and transfers in 2017-18 is mainly explained by:

- \$89 million increase in the Technology Innovation program mainly due to the Energy Innovation initiative;
- \$64 million increase in Energy-efficient Practices and Lower-carbon Energy Sources program mainly due to the Federation of Canadian Municipalities for the Green Municipal Fund; and
- \$56 million increase in Atlantic Offshore Statutory programs mainly due to a reassessment of royalties resulting in a one-time payment offset by fewer royalties from lower oil production and pricing.

The above has resulted in an overall increase in transfer payments to industry, non-profit organizations and other levels of government.

For the most part, these explanations also account for the increase of \$211 million to the net cost of operations before government funding and transfers between the planned and actual results.

The chart presenting NRCan's actual expenses by type for 2017-18 is available on the [NRCan website](#).

### **Condensed Consolidated Statement of Financial Position (unaudited) As at March 31, 2018 (dollars)**

Financial Information	2017-18	2016-17	Difference (2017-18 minus 2016-17)
Total liabilities	800,382,482	405,786,013	394,596,469
Total net financial assets	637,331,859	244,655,407	392,676,452
Departmental net debt	163,050,623	161,130,606	1,920,017
Total non-financial assets	361,353,279	334,766,837	26,586,442
Departmental net financial position	198,302,656	173,636,231	24,666,425

Total NRCan liabilities of \$800 million include \$669 million in accounts payable and accrued liabilities payable mainly to other levels of government related to the statutory payments under the Atlantic Offshore Accord Acts. The increase from last fiscal year is mainly attributable to a reassessment of royalty revenue along with increased transfer payments to industry and non-profit organizations.

Total NRCan net financial assets of \$637 million consist of \$636 million of an amount due from the consolidated revenue fund (CRF), which represents amounts that may be disbursed without further charges to the NRCan authorities.

Total NRCan non-financial assets of \$361 million consist of \$360 million of tangible capital assets. The increase of \$27 million from last fiscal year is mainly due to betterments to buildings across Canada under the Federal Infrastructure Initiative.

The increase of \$25 million in the departmental net financial position, which is the difference between the total non-financial assets and the departmental net debt, is mainly attributable to the increase in tangible capital assets.

## Supplementary information

### Corporate information

#### Organizational profile

**Appropriate minister:** The Honourable Amarjeet Sohi, P.C., M.P.

**Institutional head:** Christine Tremblay

#### Ministerial portfolio:

- Atomic Energy of Canada Limited<sup>lxxviii</sup> (AECL);
- National Energy Board<sup>lxxix</sup> (NEB);
- Canadian Nuclear Safety Commission<sup>lxxx</sup> (CNSC);
- Canada-Newfoundland and Labrador Offshore Petroleum Board<sup>lxxxi</sup> (CNLOPB);
- Canada-Nova Scotia Offshore Petroleum Board<sup>lxxxii</sup> (CNSOPB);
- Northern Pipeline Agency<sup>lxxxiii</sup> (NPA); and
- Energy Supplies Allocation Board (ESAB) (inactive).

**Year of incorporation / commencement:** 1994

#### Main legislative authorities:

- Department of Natural Resources Act,<sup>iii</sup> S.C. 1994, c. 41
- Forestry Act,<sup>v</sup> R.S.C., 1985, c. F-30
- Resources and Technical Surveys Act,<sup>iv</sup> R.S.C., 1985, c. R-7
- Energy Efficiency Act,<sup>vi</sup> S.C. 1992, c. 36
- Extractive Sector Transparency Measures Act,<sup>vii</sup> S.C. 2014, c. 39, s. 376

### Reporting framework

NRCan's Strategic Outcome[s] and Program Alignment Architecture of record for 2017–18 are shown below.

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

##### 1.1 Program: Market Access and Diversification

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

1.1.2 Sub-Program: Forest Products Market Access and Diversification

1.1.3 Sub-Program: Energy Market Access and Diversification

##### 1.2 Program: Innovation for New Products and Processes

1.2.1 Sub-Program: Mining Innovation

1.2.2 Sub-Program: Forest Sector Innovation

1.2.3 Sub-Program: Geospatial Innovation

##### 1.3 Program: Investment in Natural Resource Sectors

1.3.1 Sub-Program: Mineral Investment

**1.3.2 Sub-Program:** Targeted Geoscience Initiative

**1.3.3 Sub-program:** Geo-Mapping for Energy and Minerals

**1.3.4 Sub-program:** Geoscience for New Energy Supply

**1.3.5 Sub-program:** Major Projects Management Office Initiative

**1.4 Program:** Statutory Programs – Atlantic Offshore

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

**2.1 Program:** Energy-Efficient Practices and Low-Carbon Energy Sources

**2.1.1 Sub-Program:** Renewable Energy Deployment

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

**2.1.3 Sub-Program:** Alternative Transportation Fuels

**2.1.4 Sub-Program:** Energy Efficiency

**2.2 Program:** Technology Innovation

**2.2.1 Sub-Program:** Materials for Energy

**2.2.2 Sub-Program:** Green Mining

**2.2.3 Sub-Program:** Clean Energy Science and Technology

**2.3 Program:** Responsible Natural Resource Management

**2.3.1 Sub-Program:** Forest Ecosystem Science and Application

**2.3.2 Sub-Program:** Groundwater Geoscience

**2.3.3 Sub-program:** Environmental Studies and Assessments

**2.3.4 Sub-program:** Geospatial Information for Responsible Natural Resource Management

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

**3.1 Program:** Protection for Canadians and Natural Resources

**3.1.1 Sub-Program:** Explosives Safety and Security

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

**3.1.3 Sub-Program:** Forest Disturbances Science and Application

**3.1.4 Sub-Program:** Climate Change Adaptation

**3.1.5 Sub-Program:** Geohazards and Public Safety

**3.2 Program:** Landmass Information

**3.2.1 Sub-Program:** Essential Geographic Information

**3.2.2 Sub-Program:** Canada's Legal Boundaries

**3.2.3 Sub-Program:** Polar Continental Shelf Logistics Support

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

**4.1 Program:** Internal Services

## Supporting information on lower-level programs

Supporting information on lower-level programs is available on [GC InfoBase](#).

## Supplementary information tables

The following supplementary information tables are available on the [NRCan website](#).<sup>lxxxiv</sup>

- ▶ Departmental Sustainable Development Strategy
- ▶ Details on transfer payment programs of \$5 million or more
- ▶ Evaluations
- ▶ Fees
- ▶ Horizontal initiatives
- ▶ Internal audits
- ▶ Response to parliamentary committees and external audits
- ▶ Status report on projects operating with specific Treasury Board approval
- ▶ Status report on transformational and major Crown projects
- ▶ Up-front multi-year funding

## 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 each year in the [Report on Federal Tax Expenditures](#).<sup>lxxxv</sup> 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

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<http://www.nrcan.gc.ca/>

## 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 Plan (plan ministériel)**

A report on the plans and expected performance of an appropriated department over a three-year period. Departmental Plans are tabled in Parliament each spring.

### **Departmental Result Report (rapport sur les résultats ministériel)**

A report on an appropriated department's actual accomplishments against the plans, priorities and expected results set out in the corresponding Departmental Plan.

### **evaluation (évaluation)**

In the Government of Canada, the systematic and neutral collection and analysis of evidence to judge merit, worth or value. Evaluation informs decision making, improvements, innovation and accountability. Evaluations typically focus on programs, policies and priorities and examine questions related to relevance, effectiveness and efficiency. Depending on user needs, however, evaluations can also examine other units, themes and issues, including alternatives to existing interventions. Evaluations generally employ social science research methods.

### **experimentation (expérimentation)**

Activities that seek to explore, test and compare the effects and impacts of policies, interventions and approaches, to inform evidence-based decision-making, by learning what works and what does not.

### **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.

### **gender-based analysis plus (GBA+) (analyse comparative entre les sexes plus [ACS+])**

An analytical approach used to assess how diverse groups of women, men and gender-diverse people may experience policies, programs and initiatives. The “plus” in GBA+ acknowledges that the gender-based analysis goes beyond biological (sex) and socio-cultural (gender) differences. We all have multiple identity factors that intersect to make us who we are; GBA+ considers many other identity factors, such as race, ethnicity, religion, age, and mental or



physical disability. Examples of GBA+ processes include using data disaggregated by sex, gender and other intersecting identity factors in performance analysis, and identifying any impacts of the program on diverse groups of people, with a view to adjusting these initiatives to make them more inclusive.

**government-wide priorities (priorités pangouvernementales)**

For the purpose of the 2017–18 Departmental Results Report, those high-level themes outlining the government’s agenda in the 2015 Speech from the Throne, namely: Growth for the Middle Class; Open and Transparent Government; A Clean Environment and a Strong Economy; Diversity is Canada’s Strength; and Security and Opportunity.

**horizontal initiative (initiative horizontale)**

An initiative where two or more departments are given funding to pursue a shared outcome, often linked to a government priority.

**Management, Resources and Results Structure (structure de 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.

**plan (plan)**

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

**planned spending (dépenses prévues)**

For Departmental Plans and Departmental Results Reports, 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 Departmental Plans and Departmental Results Reports.

**priority (priorité)**

A plan or project 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) or Departmental Results.

**program (programme)** (applies to departments reporting using the Program Alignment Architecture)

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 (programme)** (applies to departments reporting using the Departmental Results Framework)

Individual or groups of services, activities or combinations thereof that are managed together within the department and focus on a specific set of outputs, outcomes or service levels.

**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.

**result (résultat)**

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

**statutory expenditures (dépenses législatives)**

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

**Strategic Outcome (résultat stratégique)**

A long-term and enduring benefit to Canadians that is linked to the organization's mandate, vision and core functions.

**sunset program (programme temporisé)**

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

**target (cible)**

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

**voted expenditures (dépenses votées)**

Expenditures that Parliament approves annually through an Appropriation Act. The Vote wording becomes the governing conditions under which these expenditures may be made.



## Endnotes

- i List of acts and regulations for which the Minister of Natural Resources is responsible, <http://www.nrcan.gc.ca/acts-regulations/59>
- ii Department of Natural Resources Act, <http://laws-lois.justice.gc.ca/eng/acts/N-20.8/>
- iii Resources and Technical Surveys Act, <http://laws-lois.justice.gc.ca/eng/acts/R-7/>
- iv Forestry Act, <http://laws-lois.justice.gc.ca/eng/acts/F-30/>
- v Energy Efficiency Act, <http://laws-lois.justice.gc.ca/eng/acts/e-6.4/>
- vi Extractive Sector Transparency Measures Act, <http://laws-lois.justice.gc.ca/eng/acts/E-22.7/page-1.html>
- vii Natural Resources Canada | About Us <https://www.nrcan.gc.ca/departement>
- viii Generation Energy <http://www.nrcan.gc.ca/20093>
- ix Mission Innovation <https://www.nrcan.gc.ca/energy/resources/mission-innovation/18612>
- x Canada- China Joint Statement on Climate Change and Clean Growth <https://pm.gc.ca/eng/news/2017/12/04/canada-china-joint-statement-climate-change-and-clean-growth>
- xi Canada-Mexico Partnership <http://www.canadainternational.gc.ca/mexico-mexique/cmp-pcm.aspx?lang=eng>
- xii Canada-France Climate and Environment Partnership <https://pm.gc.ca/eng/news/2018/04/16/canada-france-climate-and-environment-partnership>
- xiii WoodWorks! Program of the Canadian Wood Council <http://wood-works.ca/>
- xiv Expanding Market Opportunities Program <http://www.nrcan.gc.ca/forests/federal-programs/13133>
- xv Brock Commons – Tallwood House <http://vancouver.housing.ubc.ca/residences/brock-commons/>
- xvi Generation Energy <https://www.nrcan.gc.ca/20093?lang=en>
- xvii Trans Mountain Expansion Project <http://www.nrcan.gc.ca/energy/resources/19142>
- xviii Line 3 Replacement Project <http://www.nrcan.gc.ca/energy/resources/19188>
- xix Export and Import of Rough Diamonds Act <http://laws-lois.justice.gc.ca/eng/acts/E-18.5/>
- xx Kimberley Process <https://www.kimberleyprocess.com/>
- xxi Extractives Sector Transparency Measures Act <http://laws-lois.justice.gc.ca/eng/acts/E-22.7/page-1.html>
- xxii National Energy Board <https://www.neb-one.gc.ca/index-eng.html>
- xxiii A Forest Bioeconomy Framework for Canada <https://cfs.nrcan.gc.ca/publications?id=39162>
- xxiv Indigenous Forestry Initiative <http://www.nrcan.gc.ca/forests/federal-programs/13125>
- xxv Investments in Forest Industry Transformation <http://www.nrcan.gc.ca/forests/federal-programs/13139>
- xxvi Forest Innovation Program <http://www.nrcan.gc.ca/forests/federal-programs/13137>
- xxvii FPInnovations <https://fpinnovations.ca/>
- xxviii Canadian Wood Fibre Centre <http://www.nrcan.gc.ca/forests/research-centres/cwfc/13457>
- xxix Targeted Geoscience Initiative <https://www.nrcan.gc.ca/earth-sciences/resources/federal-programs/targeted-geoscience-initiative/10907>
- xxx Geoscience for New Energy Supply <http://www.nrcan.gc.ca/earth-sciences/resources/federal-programs/geoscience-new-energy-resources/10913>
- xxxi Geological Survey of Canada <http://www.nrcan.gc.ca/earth-sciences/science/geology/gsc/17100>
- xxxii BOMA Canada Net Zero Challenge <http://bomacanada.ca/awards/netzerochallenge/>
- xxxiii ENERGY STAR certification <https://www.energystar.gov/buildings/about-us/energy-star-certification>
- xxxiv Build Smart – Canada’s Building Strategy [https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/emmc/pdf/Building\\_Smart\\_en.pdf](https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/emmc/pdf/Building_Smart_en.pdf)
- xxxv Market transformation strategies for energy-using equipment in the building sector [https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/emmc/pdf/Market-Transformation-Strategies\\_en.pdf](https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/emmc/pdf/Market-Transformation-Strategies_en.pdf)
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