

2020–21
Departmental Results Report

Natural Resources Canada

Originally signed by

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Minister of Natural Resources

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From the Minister

In a year shaped by a global pandemic, Natural Resources Canada (NRCan) responded with agility and innovation, launching new initiatives and restructuring existing programs to ensure the resource industry’s viability, job creation and workforce transition. This report summarizes many of these efforts, as well as highlighting how the department continued to support the government’s goals of growing our clean technology sector, sustainably developing our natural resources and achieving net-zero emissions by 2050.

In response to the ongoing COVID-19 pandemic, NRCan undertook many activities beyond its traditional roles and responsibilities to contribute to government-wide efforts to protect Canadians. Over the past year, NRCan provided critical geospatial data to the Public Health Agency of Canada (PHAC); published COVID-19–related data on the Open Government Portal; provided protective equipment to industry; transported medical professionals to remote Indigenous communities; exercised flexibility in program delivery; and helped develop federal policy responses.



NRCan also accelerated the development of clean technology and the decarbonization of our economy by launching:

- The Canada Hydrogen Strategy, which provides an investment framework to grow the production, distribution and use of clean hydrogen, both at home and abroad;
- The Small Modular Reactor Action Plan, to help expand Canada’s clean energy sources, diversify access to clean electricity and reduce GHG emissions;
- The \$750-million Emissions Reduction Fund, to support oil and gas firms’ efforts to reduce their methane and other greenhouse gas emissions amid recent price shocks and the ongoing global pandemic;
- The Canada Greener Homes Grant, to help homeowners learn about their residence’s energy performance and improve its energy efficiency and resiliency; and
- A new program to plant two billion trees over 10 years. This program will reduce GHG emissions, create 4,300 green jobs, promote biodiversity and increase forest resilience to climate change while reducing wildfire risks.

NRCan supported initiatives aimed at developing sustainable aviation fuel, providing alternatives to diesel in Indigenous communities, modernizing power grids and increasing female-led innovation in the clean tech sector. The department funded multiple electric vehicle fast chargers and hydrogen and natural gas stations to speed the adoption of low-carbon transportation. And it continued helping Canadians make energy-efficient retrofits, including through the ENERGY STAR® programs.

As a science-based department, NRCan implemented the Digital Accelerator Initiative, which will drive the use of artificial intelligence and advance Canada’s digital transformation. NRCan scientists also kept Canadians safe by providing near-real-time geospatial data on floods, wildfires and earthquakes.

NRCan undertook a number of initiatives to improve the competitiveness of Canada’s minerals sector and improve supply chains. For example, the department played a central role in launching the Federal-Provincial-Territorial Task Team on Critical Minerals and Battery Value Chains. The department also advanced bilateral and multilateral engagements and activities internationally, positioning Canada as a competitive trade and investment partner and as a leader in the transition to the global low-carbon economy.

To advance reconciliation, equity, diversity and inclusion, NRCan has engaged Indigenous and federal partners and promoted awareness of the Truth and Reconciliation Commission’s *Calls to Action* and the UN Declaration on the Rights of Indigenous Peoples — all while strengthening our own policies on diversity and inclusion.

While the past year challenged all Canadians, NRCan can be proud of the initiatives it led and the difference it made. This report is a testament to those achievements.



Results at a glance

Canada's natural resources are important sources of jobs and prosperity, with the sector accounting for approximately 15.1% of gross domestic product (GDP), 47% of total Canadian exported goods and supporting over 1.9 million direct and indirect jobs in 2020. With the onset of COVID-19, Canada's natural resources sector experienced a record 10.7% quarterly decline in GDP during the second quarter of 2020, with resource exports falling 28.4% and employment falling 7.2%. These declines reflect a substantial drop in demand due to a decrease in economic activity in Canada and were also exacerbated by lower international demand from major trading partners like the U.S., the U.K. and Japan.¹ Some gains were experienced later in 2020-21 as government pandemic measures were relaxed^{2,3} but the longer-term impacts of COVID-19 on Canada's natural resources sector remain uncertain.

In the midst of the economic fluctuations and uncertainties in 2020-21, Natural Resources Canada (NRCan) continued to deliver results for Canadians while supporting ongoing stabilization and economic recovery in Canada's natural resources sector.

The Department and the COVID-19 Pandemic

In response to COVID-19, the Department launched new initiatives and retooled many of its existing programs and operations to help ensure the safety of Canadians and support ongoing delivery of results and services. These changes were also in line with the Government of Canada's efforts to address the impact of COVID-19 on Canadians and support economic recovery, while continuing the transition to a low carbon economy.

As such, NRCan supported the delivery of the [Large Employer Emergency Financing Facilityⁱ](#) (LEEFF) by providing analytics on the impact of the pandemic on the oil and gas, mining, and forest sectors. The Department also worked with other government departments (OGDs) on measures such as the [Business Credit Availability Programⁱⁱ](#) and the [Canada Emergency Wage Subsidyⁱⁱⁱ](#) that helped keep various sectors of the Canadian economy functioning during the pandemic, including oil and gas.

¹ *The Daily*, [Natural resource indicators, second quarter 2020](#)

² *The Daily*, [Natural resource indicators, third quarter 2020](#)

³ *The Daily*, [Natural resource indicators, fourth quarter 2020](#)

In the Fall of 2020, the \$750M [Emissions Reduction Fund](#)^{iv} (ERF) was created to support investment and research to reduce emissions, with a focus on methane, from onshore and offshore oil and gas firms in Canada. In its first year, the \$675M Onshore component of the Fund is projected to reduce emissions by at least 3.1 megatonnes of carbon dioxide equivalent.

Through the [Forest Sector Safety Measures Fund](#)^v (FSSMF), NRCan worked with provinces and territories to provide emergency funding for forest sector small and medium sized enterprises (SMEs). This helped boost forest sector viability and preserve forest sector jobs, including for approximately 7,000 tree planters to carry on planting around 600 million trees. In addition, the Department supported government-wide responses by providing critical geospatial information to the Public Health Agency of Canada COVID-19 Situational Awareness Campaign, publishing COVID-19 related data on the Open Government Portal, and supporting the development of federal policy responses.

Internally, NRCan adapted quickly to the COVID-19 situation with robust measures for remote work and employee wellness. The Department implemented a strategy for a gradual approach to re-entry and maintaining operations for effective, ongoing day-to-day activities and program administration.

Overall, the COVID-19 pandemic did not compromise NRCan's ability to deliver on its commitments made to Canadians in the 2020-21 Departmental Plan including greater equity, diversity and inclusion (see textbox). Planned results were achieved in the five priority areas derived from its core responsibilities, mandates and ministerial commitments.

Equity, Diversity and Inclusion at NRCan

In 2020-21, NRCan responded to the Clerk of the Privy Council's call to action on anti-racism, equity and inclusion in the Federal Public Service by, in part, establishing an **Office for Equity, Diversity and Inclusion** (EDI), developing a Diversity and Inclusion Framework and a governance structure to provide overarching strategic direction.

As per the Framework, five pillars were established to address data gaps, set targets for NRCan workforce representation, strengthen EDI in the natural resources sector, advance reconciliation with Indigenous peoples and create tools to embed EDI practices in NRCan's work.

NRCan's sectors and employee networks were mobilized to develop action plans and engage employees across the organization to support a change in culture, increase representation and update NRCan's programs and policies. Gender Based Analysis Plus (GBA Plus) tools were applied when developing new policies, programs and legislation. The Black Employees Advisory Council of NRCan was also newly established, while support was provided to the 11 employee networks whose work helps create a more inclusive environment for all employees at the Department.

For further information on EDI please see the Internal Services section of this Report

Accelerating the adoption of clean technology and supporting the transition to a low carbon future

Transitioning to a low carbon future requires significant investments in clean technology. In 2020-21, NRCan:

- **Accelerated Clean Technology Innovation** – Canada's [Pan-Canadian Framework on Clean Growth and Climate Change](#)^{vi} (PCF) aims to drive innovation and growth by increasing technology development and adoption. Programs under the PCF, such as NRCan's [Green Infrastructure Programs](#),^{vii} contributed to accelerated deployment and market entry of next-

generation clean energy infrastructure. These included NRCan’s [Smart Grid Program](#),^{viii} [Emerging Renewable Power Program](#),^{ix} [Energy Efficient Buildings Research Development and Demonstration \(RD&D\) Program](#),^x [Electric Vehicle and Alternative Fuel Infrastructure Deployment Initiative](#),^{xi} [Zero Emission Vehicle Infrastructure Program](#),^{xii} [Electric Vehicle Infrastructure Demonstration \(EVID\) Program](#),^{xiii} and [Clean Energy for Rural and Remote Communities](#).^{xiv} These programs contributed to advancing Canada’s energy transformation and ensuring achievements under PCF.

As well, the Department advanced the dialogue between the Government of Canada and British Columbia (BC) government to implement the Memorandum of Understanding on the Electrification of the Natural Gas Sector that supports electricity interties for the electrification of natural gas production in BC. NRCan also continued to implement six [Impact Canada Initiative Clean Tech Challenges](#)^{xv} to unlock breakthrough solutions to complex and persistent problems in developing clean technologies, such as sustainable aviation fuels.

Under the pan-Canadian [Green Mining Innovation](#)^{xvi} initiative, progress was made through NRCan’s leadership on the [Mining Value from Waste Program](#)^{xvii} to reprocess mining waste to recover critical and valuable metals which helps reduce environmental, social and economic footprints of mine wastes.

The Department helped drive innovation through the [Energy Innovation Program](#)^{xviii} and the [Program of Energy Research and Development](#)^{xix} by supporting 180 projects for federal scientists and researchers to carry out world-class energy RD&D. NRCan also supported technological innovation through the [Clean Growth Hub](#),^{xx} connecting clean technology producers and adopters with federal programs and services. By fostering ongoing research and innovation in the clean technology sector, the Government of Canada supports GHG emissions reductions and helps Canada meet its climate change targets for a more sustainable future.

To maintain the competitiveness of Canada’s forest sector, the Department advanced the Forest Bio-economy Framework through investments in programs like the [Indigenous Forestry Initiative](#)^{xxi} (IFI) and the [Forest Innovation Program](#)^{xxii} that supports sustainable development and innovation. In collaboration with stakeholders, NRCan also re-established the Canadian Council of Forest Ministers Innovation Working Group to help advance the Framework, recognizing the role the transition to the bio-economy can play in supporting a green recovery from COVID-19.

- **Advanced Canada’s Transition to a Low-carbon Economy** – NRCan continued to build on recommendations of the [Generation Energy Council Report](#)^{xxiii} to help shape Canada’s energy future, and the Government of Canada published its [Strengthened Climate Plan](#)^{xxiv} in 2020, which identified significant investments in areas such as home energy efficiency, smart renewable energy, grid modernization, and low carbon and zero-emission fuel access in Canada to help achieve Canada’s economic and environmental goals.

The [Canada Greener Homes Grant](#)^{xxv} was announced in the 2020 Fall Economic Statement to provide EnerGuide home energy evaluations and grants of up to \$5,000 for energy efficient retrofits for up to 700,000 homes, as well as to support the recruitment and training of EnerGuide energy advisors. The grant helps to increase energy efficiency for Canadian homes, create new jobs, grow Canada’s domestic green supply chain and fight climate change. The Department also continued administering the [ENERGY STAR® for Products Program](#),^{xxvi} which encourages and promotes consumer purchases of high-efficiency products, as well as supported improvements in industrial energy performance and recognized verifiable energy achievements through the [ENERGY STAR® for Industry Program](#)^{xxvii} in Canada. In addition, the Department provided support and advice to the Federation of Canadian Municipalities, for the [Green Municipal Fund](#)^{xxviii} and the launch of the new funding stream for the [Sustainable Affordable Housing](#)^{xxix} initiative to retrofit existing units or build new affordable housing with higher energy performance.

NRCan worked to expand Canada’s portfolio of clean energy sources and boost production and distribution, and diversify access to clean electricity power. In December 2020, the Department launched the [Hydrogen Strategy for Canada](#),^{xxx} a call to action for governments at all levels, and the private sector, to seize the economic and environmental benefits that hydrogen can bring across the country and supported the release of [Canada’s Small and Modular Reactor \(SMR\) Action Plan](#),^{xxxi} which outlined the plan for SMR development, demonstration and deployment. NRCan also advanced electricity dialogues with utilities, four Atlantic Provinces and Quebec to strengthen the Atlantic Regional Transmission Loop and boost the production and distribution of clean electric power, as part of the key elements for implementing the [Clean Power Road Map for Atlantic Canada](#).^{xxxii} These initiatives will help meet Canada’s target for net-zero emission by 2050 and position Canada as a global leader of clean renewable fuels.

Through the [Digital Accelerator](#),^{xxxiii} departmental scientists completed 12 projects and reviewed more than 35 others to apply artificial intelligence and machine learning to a range of issues that impact Canadians, including enabling remote field studies, improving forest monitoring, and predicting electric vehicle demands on electricity infrastructures.

Finally, the Department launched the [Two Billion Trees \(2BT\) Program](#)^{xxxiv} under the Natural Climate Solutions Fund, investing \$3.2B to plant two billion trees over the next 10 years. This will reduce GHG emissions by a projected 12 megatonnes per year by 2050, create an estimated 4,300 jobs, encourage and support Indigenous participation, decrease the risk of wildfire and flooding to rural communities, and support biodiversity.

Improving market access and competitiveness in the natural resource sectors

Nowhere is Canada’s natural advantage in the resource sector more evident than in the export sector. As a supplier of raw materials, the success of Canada’s resource industries depends on its

ability to build and retain new markets in the world economy while ensuring Canada develops its natural resources sustainably. In 2020-21, NRCan:

- **Established and enhanced international agreements and partnerships** – The Department advanced the [Canada-U.S. Joint Action Plan on Critical Minerals Collaboration](#)^{xxxv} to promote Canadian and American mutual interest in critical minerals, including building supply chains, developing new business-to-business relationships, improving mineral discovery and promoting sound global mineral governance. This work helps attract foreign investments and grow Canada’s domestic industry.

At the Energy Mines Ministers Conference (EMMC) in 2020, Ministers agreed to launch a task team to build an all-Canadian Critical Minerals and Battery value chain. The task team has already released an evergreen list of critical minerals, analyzed policies to position Canada in global markets and developed an international engagement approach.

The Department worked to enhance market integration, free trade and the competitive position of Canada’s natural resources sector by leveraging existing trade agreements such as the Canada-U.S.-Mexico Agreement (CUSMA), the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and the Canada-EU Comprehensive Economic and Trade Agreement. NRCan also sought to unlock market opportunities by working with other government departments to advance modern trade agreements with new and priority partners.⁴

To further support businesses in the natural resources sector that want to export their goods, services and technologies to global markets, the Department advanced bilateral and multilateral engagements and activities with partners. This included strategic partnerships, MOUs and High-Level Energy Dialogues with countries such as the U.S., Mexico, the EU, Japan, India and Germany, positioning Canada as a competitive trade and investment partner and leader in the transition to the global low carbon economy. The Department also worked to strengthen international multilateral partnerships and collaboration through active participation in key fora such as the Cambridge Energy Research Associates (CERA) Week, the International Energy Agency (IEA), the G7 and G20, the Berlin Energy Transition Dialogue, and the International Renewable Energy Agency (IRENA), among others.

Canada’s highlights on the international stage included having leadership roles in the IEA’s Clean Energy Transitions Summit, the first Ministerial-level meeting dedicated entirely to the clean energy future; the Net-Zero Summit, the first ministerial-level meeting focused on the global pathway to net zero; and the newly-established Global Commission on People-Centred Energy Transitions, launched to work towards ensuring a just and inclusive transition. The Department also provided funding for the IEA’s Clean Energy Transition Programme to assist emerging economies with their energy transitions.

⁴ Priority partners include organizations and countries such as MERCOSUR, the UK, Indonesia and ASEAN.

In addition, NRCan also participated in the 11th Clean Energy Ministerial (CEM), building on Canada’s legacy as the hosts of CEM10 in 2019. Notable highlights for this Ministerial included launching two new work streams – the CEM Biofuture Platform Initiative and the Global Commercial Vehicle Drive-to-Zero Campaign, as well as chairing and moderating a successful pre-event entitled Empowering People in Our Clean Energy Transition, committing to explore launching a new work stream on this topic in the future.

In its second year of membership in IRENA, Canada sought to increase Canadian participation and content in IRENA’s activities. Significant progress has been achieved, with Canada now actively participating in five new Collaborative Frameworks on green hydrogen, hydropower, countries with high shares of renewable energy, the geopolitics of the energy transformation, and offshore renewables.

NRCan also helped Canada advocate for clean technology internationally by providing ongoing in-kind support to the virtual Mission Innovation (MI) Secretariat, participating in the Fifth MI Ministerial (MI 2.0), taking on the vice-chair role on the MI Steering Committee and reporting at the sixth MI Ministerial that Canada had exceeded its targeted investments in clean technology. The Department also collaborated with 30 federal organizations to encourage the delivery of and reporting on clean energy RD&D.

- **Promoted Responsible Development and Use of Canada’s Natural Resources Domestically and Internationally** – NRCan, through the [Canadian Minerals and Metals Plan^{xxxvi}](#) (CMMP) released the Update to Action Plan 2020 at EMMC to demonstrate progress on the six initiatives. These pan-Canadian initiatives operationalize the goals of the CMMP: to improve the competitiveness of Canada’s minerals and metals industry; position Canada for long-term success in a clean, digitized, global economy; and, ultimately, establish Canada as the leading mining nation. In addition, the Action Plan reported on the effects of COVID-19 on the minerals and metals sector and highlighted initiatives taken by governments and industry to support economic recovery post-COVID-19. Also as part of the CMMP, NRCan’s Geological Survey of Canada worked on a Pan-Canadian Geoscience Strategy with provinces and territories to develop Canada’s geological resources responsibly including critical minerals, produce better data to find future mines, lower exploration risk, boost competitiveness, support land-use decisions, and enhance public safety by reducing risks from natural hazards.

The Department invested a further \$135M starting in 2020-21 in the [Targeted Geoscience Initiative^{xxxvii}](#) (TGI) and [Geo-Mapping for Energy and Minerals^{xxxviii}](#) (GEM-GeoNorth) for longer-term research and engagement with provinces, territories and Indigenous governance organizations. These two programs support mining sector competitiveness and community engagement in land-use planning.

To sustain the Northern economies and contribute to the exercise of sovereignty in Canada’s North, NRCan worked with Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) to identify growing and changing demands for the [Polar Continental Shelf](#)

[Program^{xxxix}](#) (PCSP). While PCSP suspended the 2020 Arctic field season due to COVID-19, the program was able to shift its expertise to support the movement of nurses into remote First Nation communities in northern Ontario, Manitoba and Alberta. As some restrictions within the Territories eased, the PCSP was able to provide a limited return to work for projects led by Northern partners within their respective Territory.

The Department also participated in the development of the next phase of the [Arctic and Northern Policy Framework^{xl}](#) (ANPF) led by Crown-Indigenous Relations and Northern Affairs Canada, focusing on implementation, investment strategies, and governance. The Framework sets out a long-term, strategic vision that will guide the Government of Canada's activities and investments in the Arctic to 2030.

Further, NRCan advanced the development of major infrastructure and strategic resource projects to enhance the competitiveness of Canada's natural resource sectors, including providing support to the Indigenous Advisory and Monitoring Committees (IAMCs) for TMX and Line 3 pipelines. This provided a venue for building relationships and engaging in dialogue between Métis Nation, First Nations, government, and the Canada Energy Regulator, in order to advance reconciliation.

- **Supported Legislative and Policy Changes** – The Department worked with the Impact Assessment Agency, the province of Newfoundland and Labrador (NL) and the Canada-Newfoundland and Labrador Offshore Petroleum Board to facilitate the impact assessment process for offshore exploratory drilling.

Supporting resource communities and workers in the transition to a low carbon economy

The transition to a low carbon economy continues to change the nature of work in many resource sectors. The Department will work with all stakeholders to advance legislation to support the future and livelihood of workers, including Indigenous peoples, in this transition. In 2020-21, NRCan:

- **Supported workers and communities impacted by the phase-out of coal-fired electricity** - Informed by the Task Force on Just Transition for Canadian Coal Power Workers and Communities, NRCan continued supporting workers and communities through the low-carbon energy transition to foster future skills, and create inclusive cultures.
- **Defended Firms, Communities and Workers** – NRCan defended forest sector workers and communities against unfair trading practices by supporting Global Affairs Canada in litigation under NAFTA Chapter 19, CUSMA Chapter 10, and at the World Trade Organization.

The Department also helped advance the Federal Government's economic response to COVID-19 by investing over \$15M in the [Science and Technology Internship Program^{xli}](#), part of Canada's Youth Employment and Skills Strategy, to help build a skilled and diverse workforce, creating more than 600 jobs and training opportunities in science, technology,

engineering, and mathematics and other related fields for youth aged 15 to 30. The Program is intended to promote equity, diversity and inclusion by targeting 50% participation from employment equity groups including women, Indigenous peoples, visible minorities and people living with disabilities.

Advancing reconciliation, building relationships, and sharing economic benefits with Indigenous peoples

The Government of Canada is committed to strengthening its relationship with Indigenous peoples based on the recognition of rights, respect, cooperation, and partnership. In 2020-21, NRCan:

- **Addressed the Impact of the COVID-19 Pandemic in Indigenous and Remote Northern Communities** - NRCan engaged Indigenous associations, businesses, communities, and national-level organizations in the natural resources sector to identify gaps in federal funding and ensure that proposed programming considers the unique and disproportionate impact that the COVID-19 pandemic has on Indigenous peoples, communities, and businesses.
- **Supported the sharing of Indigenous Knowledge** – NRCan implemented multiple initiatives to ensure that Indigenous communities had improved access to the Department’s data sources. This included developing a how-to guide with OGDs so that Indigenous communities can discover, analyze, and visualize relevant data using the Government of Canada’s [Open Maps Portal](#),^{xlii} expanding the flood mapping framework guidelines to include more community engagement; and developing culturally appropriate and accessible online geospatial curriculum to establish geospatial policy instruments in support of Indigenous data sovereignty.

To further include Indigenous voices in NRCan priorities, the Department initiated an internal reflective process called, “Pathways to Reconciliation,” to work together to shift the way the Department operates and collaborates to advance reconciliation meaningfully.

- **Advanced Capacity Building and Economic Development** – The Department announced up to \$12M in funding over two years for the Indigenous Natural Resource Partnerships Program to increase participation from Indigenous communities and organizations in British Columbia and Alberta in economic opportunities in oil and gas infrastructure development. To support Indigenous-led economic development in Canada's forest sector, NRCan also completed the 2020 call for proposals to the [Indigenous Forestry Initiative](#),^{xliii} with a record 112 proposals seeking \$75M in funding.
- **Promoted Opportunities for Participation in Energy Infrastructure Development** - Through the Indigenous Advisory and Monitoring Committees (IAMCs) for [TMX](#)^{xliv} and [Line 3](#)^{xlv} pipelines, relations continued to be built between the Métis Nation, First Nations, governments, the Canada Energy Regulator and proponents. IAMC created opportunities for dialogue on issues and challenges, and offered ways to work towards reconciliation and

implementation of the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

To support Indigenous communities in their transition from diesel to clean, renewable and reliable energy, two initiatives moved forward in 2020-21:

- For [Impact Canada’s Indigenous Off-Diesel Initiative](#),^{xlvi} 14 contribution agreements, worth up to \$500,000 each, were signed, and one \$800,000 prize grant was awarded for a project in the implementation phase.
- The Green Infrastructure: [Clean Energy for Rural and Remote Communities Program](#)^{xlvii} is supporting 93 renewable electricity, bioheat and capacity building projects, which will install 16.3 megawatts of renewable electricity and 7.9 megawatts (thermal equivalent) of bioheating capacity.

Protecting Canadians from the impacts of natural and human-induced hazards

Serious **natural and human-induced hazards** can have dramatic impacts on the lives of Canadians, the security of Canada’s critical infrastructure, and the overall economy. In 2020-21, NRCan:

- **Improved Monitoring of Natural Hazards** - NRCan helped protect Canadians from the effects of natural hazards, including flooding, by providing federal scientific and geospatial coordination with provinces, territories, academic institutions and the private sector. The Department supported the Government of Canada’s [Emergency Management Strategy](#)^{xlviii} and overall federal efforts for enhanced emergency management capabilities.

In addition, the Department mobilized recommended federal actions under the [Canadian Wildland Fire Strategy](#)^{xlix} and as part of federal investments under the Emergency Management Strategy (for wildfire resilience), including investing \$5M towards the development of a Wildland Fire Research Network.

In NRCan’s role as scientific leaders in protecting Canada’s forest from pests, the Department provided forest managers across Canada with foundational science to counter the effects of the [emerald ash borer](#)ⁱ, [hemlock woolly adelgid](#), [mountain pine beetle](#),ⁱⁱ and [spruce budworm](#)ⁱⁱⁱ in natural, rural and urban forests.

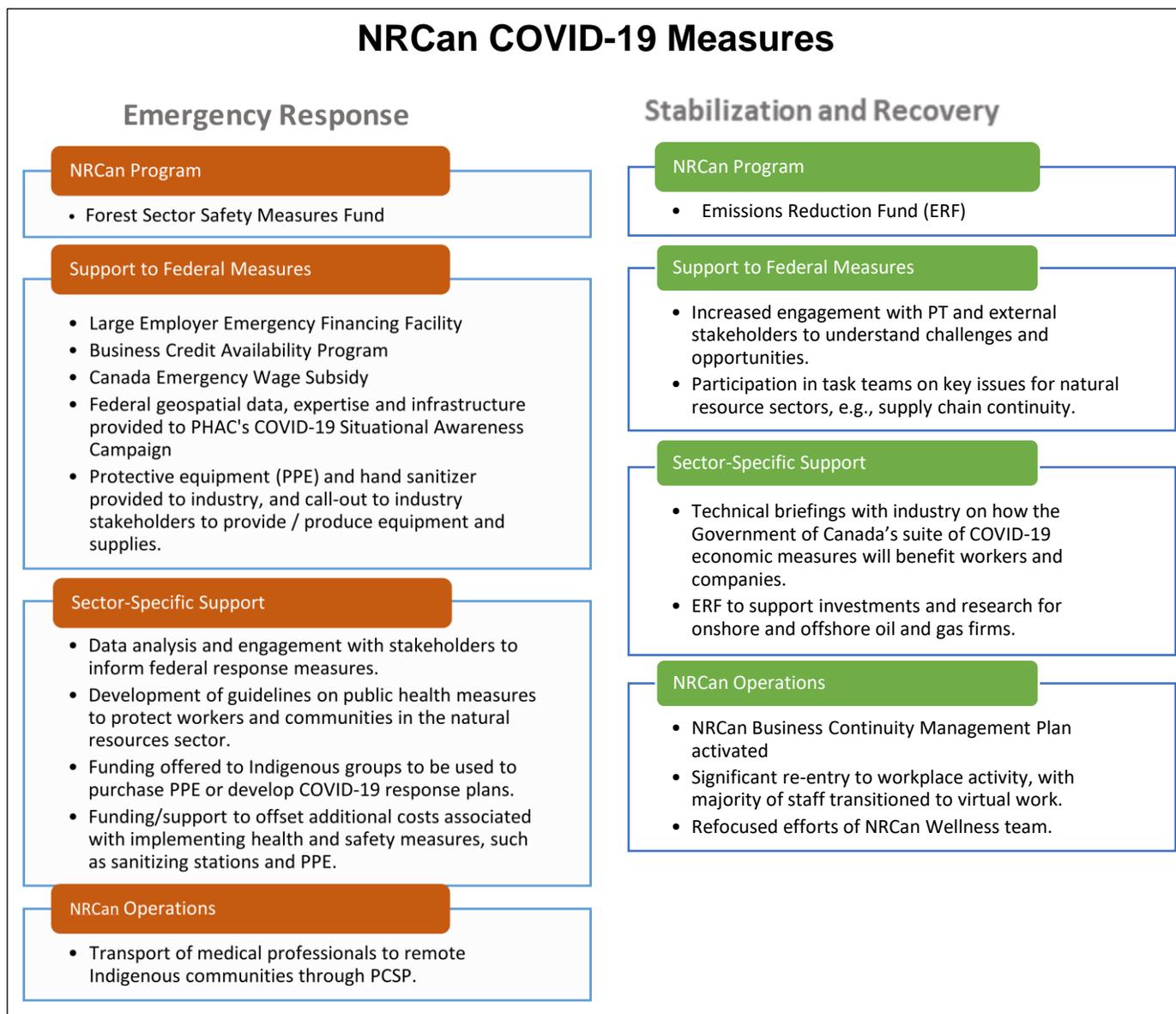
Recognizing that large earthquakes are a significant threat, NRCan updated the seismic hazard models for the National Building Code and released the 6th Generation Seismic Hazard Model of Canada for the 2020 edition of the National Building Code. The Department continued to implement the national Earthquake Early Warning System to provide timely warnings of a major earthquake in high-risk areas that could affect critical infrastructure.

- **Strengthened Regulations and Security around Explosives and Cyber-security** – As Canada’s regulator for explosives, NRCan furthered the process to amend the regulated list of explosives precursor chemicals to include newly identified chemicals of concern. The

Department also initiated a multi-year project to review, modernize, and renew the *Explosives Act*, regulations and associated guidelines.

NRCan played an active role in shaping Canada’s security and resilience by contributing to the implementation of the [National Cyber Security Strategy](#).^{liii} The Department also advanced the development of a Canada-U.S. Framework for Collaboration on Cybersecurity in the Energy Sector to enhance the security and resilience of cross-border energy infrastructure.

2020-21 marked an unprecedented time due to the impacts of COVID-19. NRCan supported its employees and stakeholders through disruptions by adapting and innovating its programs and operations to ensure the ongoing delivery of its mandate and priorities for Canadians. The table below highlights some of the COVID-19 measures that the Department implemented or supported in response to the global pandemic and actions to support ongoing stabilization and recovery for Canada’s natural resources sector.



For more information on Natural Resources Canada's results achieved, see the "Results: what we achieved" section of this report.

2020-21 Actual Spending	2020-21 Actual Full-Time Equivalents
\$1,401,833,512	4,325

2020–21 Results Story — as per NRCan’s Departmental Results Framework

NRCan CORE RESPONSIBILITIES

Natural Resource Science and Risk Mitigation

Lead foundational science and share expertise for managing Canada’s natural resources, reducing the impacts of climate change and mitigating risks from natural disasters and explosives.

Innovative and Sustainable Natural Resources Development

Lead the transformation to a low-carbon economy by improving the environmental performance of Canada’s natural resource sectors through innovation and sustainable development and use.

Globally Competitive Natural Resource Sectors

Advance and promote market access, inclusiveness and competitiveness for Canada’s natural resource sectors, in support of jobs and economic growth.

DEPARTMENTAL ACTUAL RESULTS | What has the department achieved in 2020–21?

Canadians have access to cutting-edge research to inform decisions on the management of natural resources

- Scientific products related to natural resources were accessed an average of **385,939** times quarterly by Canadians
- NRCan provided scientific and technical expertise to **100%** of environmental assessment processes
- Stakeholders acknowledged using NRCan’s scientific and technical products **30,974** times in making their decisions
- The department offered **189** training and development initiatives to ensure Indigenous knowledge complemented NRCan expertise
- 21%** of annual updates contributed to making NRCan foundational geospatial data current

Communities and officials have the tools to safeguard Canadians from natural hazards and explosives

- 100%** of notification for hazardous natural events within Canada were issued in a timely manner
- 100%** of emergency geomatics services were provided to Canadians in a timely manner to assist during floods
- The Canadian Wildland Fire Information System had an uptime of **97%** during the wildfire season
- 73%** of inspections of licenced explosives sites were rated safe. NRCan conducts rigorous and timely follow-up on any facility that does not achieve a satisfactory rating

Communities and industries are adapting to climate change

- NRCan products and expertise on adaptation were accessed **25,858** times quarterly by communities and industry
- 57%** of Canadian communities and **32%** of industries have taken steps to adapt to climate change as per survey completed in 2018

Natural resource sectors are innovative

- 69%** of NRCan-funded innovation projects resulted in new intellectual property, standards or regulations based on interim results
- 37%** of completed NRCan-funded clean energy innovation projects advanced along the innovation scale
- 22%** of innovative mining technologies developed by NRCan moved towards being ready for commercial use
- 100%** of innovative forest products and decision tools informed by NRCan research contributed to the environmental sustainability of Canada’s forests

Clean technologies and energy efficiencies enhance economic performance

- NRCan-funded clean technology demonstrations with economic goals are underway, and will report in **2026**
- For every **\$1** that NRCan invested in energy innovation projects, NRCan leveraged an additional **\$2** from partner organizations
- 66.73** petajoules annual energy savings resulted from adoption of energy efficiency codes, standards and practices

Canada’s natural resources are sustainable

- NRCan continues to work towards improving the percentage of electricity generated from non-O&G emitting sources. In 2018-19 this number was **82%** (2020 results not yet available)
- 21** projects were completed in 2020-21 to support renewable energy projects and 93 projects are being supported through the Clean Energy for Rural and Remote Communities Program
- Sustainable harvesting occurred as **156.2** million m³ total wood was harvested versus total sustainable wood supply of 217.9 million m³, as per State of Canada’s Forest Report 2020 (data from 2018)
- 1,089** electric vehicle charging stations, **22** natural gas refueling stations and **15** hydrogen refuelling stations were under development or completed
- 1.85** megatonnes of CO₂ reduction in greenhouse gas emissions resulted from NRCan-funded clean technology demonstrations
- 8.33%** of NRCan’s projects on innovation and sustainable development engaged Indigenous communities, organizations or governments

Access to new and priority markets for Canada’s natural resources is enhanced

- Canada’s market share to the U.S. was **24.6%** and **1.5%** globally for imports of natural resources
- The value of assets owned by Canadian natural resource companies abroad was **\$225 Billion** in 2019-20 (2020-21 results are not yet available)
- NRCan led **59** international missions and other engagements supporting the development or expansion of trade and investment in natural resources

Canadians are engaged in the future of the new and inclusive resource economy

- 21** pilot analytical products were developed with provinces and territories and released to Canadians
- 63.27%** of NRCan’s projects supported participation of Indigenous communities, organizations or governments in Canada’s natural resource economy

Enhanced competitiveness of Canada’s natural resource sectors

- 100%** of resource development project decisions were on target as per timelines in 2019-20 (Program sunset in March 2020)
- 22** initiatives were enabled by NRCan to strengthen the security and resilience of Canada’s critical energy infrastructure
- NRCan’s economic and investment data was accessed **420,835** times quarterly





Results: what we achieved

Core Responsibilities

Natural Resource Science and Risk Mitigation

Description: *Led foundational science and shared expertise for managing Canada’s natural resources, reducing the impacts of climate change and mitigating risks from natural disasters and explosives.*

This Core Responsibility supported the advancement of the following **Strategic Priorities:**

- Protecting Canadians from the impacts of natural and human-induced hazards
- Accelerating the adoption of clean technology and supporting the transition to a low-carbon future
- Advancing reconciliation, building relationships, and sharing economic benefits with Indigenous peoples

This Core Responsibility also contributed to the achievement of the [Mandate Letter Commitments](#) of the Minister of Natural Resources:

- Invest in protecting trees from infestations and, when ecologically appropriate, help rebuild our forests after a wildfire;
- Support research and provide funding so that municipalities have access to domestic sources of climate-resilient and genetically diverse trees that will increase the resilience of our urban forests;
- Operationalize the plan to plant two billion incremental trees over the next 10 years as part of a broader commitment to natural climate solutions;
- Work with the provinces and territories and Indigenous peoples to complete all flood maps in Canada;
- Monitor and identify any additional assistance the Polar Continental Shelf Program may require to respond to growing demand; and,
- Work with partners to advance legislation to support the future and livelihood of workers and their communities in the transition to a low-carbon global economy.

NRCan is a science-based department with approximately 60% of its total expenditures (excluding statutory expenses) devoted to science and technology activities, and approximately 47% of its employees working in related areas. The Department collaborates with other federal departments, provincial, territorial and local governments, Indigenous peoples, academic institutions and industry to conduct science and research.

In 2020-21, activities were undertaken to reduce the impacts of climate change, mitigate risks from natural hazards, support regulatory functions, promote innovation, advance pre-commercial technology and improve the economic well-being of Canadians. The Department also provided expert advice and guidance to decision makers. NRCan continued to grow its scientific knowledge and capacity, drawing on multiple ways of learning, including from Indigenous Knowledge.

The Department also continued to adapt to changes brought on by COVID-19 and use the resulting innovation to continue delivering its mandate.

NRCan’s science and technologies ensured Canadians had access to cutting-edge research to inform decisions on natural resource management

In 2020-21, NRCan continued to provide **public access to geospatial data and scientific publications**, helped broaden and deepen geospatial knowledge and expanded Canadians’ understanding of the cumulative effects and the impacts of development activities in Canada. Canadians continued to benefit from the use of NRCan’s scientific and technical advice provided in 100% of the environmental impact assessments undertaken, as in previous years. Further, Canadian stakeholders acknowledged using NRCan’s scientific and technical products in decision making 30,974 times, higher than last year’s 30,957, and surpassing the target of 30,250.

The Department and Environment and Climate Change Canada (ECCC) were co-leads in the delivery of an online [Open Science and Data Platform](#),^{liv} leveraged through the [Federal Geospatial Platform](#),^{lv} giving access to 125,000 products with search capability by topic (e.g. biodiversity, climate change, economy and industry) and by development activities (e.g. forestry, mining, energy). The Platform also delivered geospatial services, such as the Emergency Geomatics Services, that provided **near-real time mapping information** to support floods and other disasters response. As a consequence, the percentage of emergency geomatics services provided to Canadians in a timely manner to assist specifically during floods was 100%. Critical geospatial data was also provided to help track and respond to COVID-19 to support the Public Health Agency of Canada’s COVID-19 Situational Awareness Campaign and in response to the Government of Canada’s call to action to publish COVID-19 related data.

On making its foundational geospatial data current, NRCan made updates to 21% of its data in 2020-21, surpassing the target of 20%. Canadians accessed scientific products related to natural resources originating from the Department’s website 365,935 times, a decrease from the 504,242 times products were accessed in 2019-20, mainly due to the slow down in many activities caused by COVID-19.

To advance integration of **Indigenous Knowledge** and flood mapping consistency and to align with Canada's open dissemination with Indigenous data sovereignty principles, the Department invested in Indigenous capacity building and engagement, and held 189 training and development initiatives in 2020-21 to further incorporate Indigenous Knowledge with NRCan science.

In collaboration with the European Space Agency, an Open Geospatial Consortium Pilot project was completed in 2020-21 to develop and test standards-based approaches that will enable the user-to-the-data vision. The project leveraged European and Canadian cloud systems, along with other earth observation datasets (e.g., Sentinel, RADARSAT-2).

Species at risk, including the threatened [woodland caribou](#),^{lvi} continue to be important to the natural resources sector and NRCan. To support conservation and protection, NRCan co-led the Habitat Restoration Working Group as an active member of the [National Boreal Caribou Knowledge Consortium](#),^{lvii} and collaborated with ECCC and others to develop the [Canadian Conservation and Land Management Knowledge Portal](#)^{lviii} to share information on **boreal caribou, habitat restoration and wetland management**. The Department also used simulations and spatial imagery to research the impacts of natural and human related disturbances, including climate change, on boreal caribou habitat and populations.

Funding was provided to five Indigenous community-led projects to further capacity-building for habitat mapping and monitoring, restoration planning and prioritization, and participation in caribou range planning processes. In particular, this funding helped develop and implement community driven approaches to conservation efforts built on Indigenous Knowledge, employing community members, including youth.

Working to **restore public trust** in regulatory processes and environmental assessments of natural resource projects continued to be an important focus for the Department. The Joint Review Panel Hearing for the Grassy Mountain Coal Project in Alberta was completed in 2020-21, with the Geological Survey of Canada (GSC) providing scientific advice virtually due to COVID-19 restrictions. The GSC also provided ongoing hydrogeological contributions to the [Trans Mountain Expansion Project](#)^{lix} in British Columbia.

To support the **Canadian mining industry's** contributions to Canada's economy, NRCan works to advance green, innovative technologies that improve the mining sector's environmental practices, productivity and competitiveness. To strengthen economic recovery, ensure competitiveness and support greater community engagement in land-use planning, the Department invested \$135M over seven years in Canada's two flagship geoscience programs, the [Targeted Geoscience Initiative](#)^{lx} and the [Geo-Mapping for Energy and Minerals](#).^{lxi 5}

To set the foundation for research, 34 TGI studies will support longer-term research beginning in 2021-22, focused on enhancing understanding of the processes that have formed Canada's **critical minerals** and other economically important mineral deposits. [GEM-GeoNorth](#)^{lxii} launched a dialogue with 10 provinces and territories and nearly 60 Indigenous governance

⁵ Since 2008, the Geo-Mapping for Energy and Minerals (GEM-GeoNorth) Program has provided the exploration industry and northern communities with valuable tools to explore Northern Canada.

organizations to co-develop research priorities, building on strong relationships established over the past 12 years. This dialogue will guide the program in providing new, public geoscientific data, knowledge and maps for northern Canada, focusing on natural resource economic development areas, and related infrastructure, in the context of a changing climate.

NRCan continued to work on a Pan-Canadian Geoscience Strategy with provinces and territories as committed to under the [Canadian Minerals and Metals Plan^{lxiii}](#) Action Plan 2020. The objective is to produce better data to find future mines, lower exploration risk, boost competitiveness, support land-use decisions, and enhance public safety by reducing risks from natural hazards.

Canada's new [Arctic and Northern Policy Framework^{lxiv}](#) (ANPF)⁶ helps to enable a **vibrant and sustainable northern region**. In 2020-21, NRCan contributed to the development of the next phase of the ANPF, focusing on implementation, investment strategies and governance. This will ensure collaboration and impactful investments in the short and long-term in the North.

The Department supported **Inuit employment** through the [Polar Continental Shelf Program^{lxv}](#) (PCSP), a whole-of government approach that provides logistics to enable Arctic science activities deliver on government priorities.

For the first time in PCSP's history, the 2020 Arctic field season was suspended to ensure the safety of northern communities, clients and staff during the pandemic. As some restrictions eased, the PCSP was able to support a limited number of projects led by northern partners within their respective territory. The Program also shifted its logistics and operations expertise to better serve Canadians during COVID-19, including supporting the movement of over 1,000 nurses into remote First Nations communities in northern Ontario, Manitoba and Alberta.



Northern Arctic, Canada

To increase participation in the [First Nation Land Management Framework Agreement^{lxvi}](#) and facilitate the **transition away from the *Indian Act***, NRCan continued to work with Indigenous partners, Crown-Indigenous Relations and Northern Affairs Canada, and Indigenous Services Canada to establish the Gwich'in Land Claim Implementation Program. Through this program, NRCan will support effective governance for the Gwich'in People over their lands, including by surveying 87 parcels of land covering more than 28,000 km². Through the [First Nations Land Management Program^{lxvii}](#) 59 land descriptions and 72 comprehensive research reports of First Nations Lands were completed in 2020-21, supporting the devolution of land management responsibilities from the federal government to the governing Band Council of First Nations.

⁶ Canada's new Arctic and Northern Policy Framework was launched on September 10, 2019, by CIRNAC. This framework was co-developed with Indigenous, territorial and provincial partners, and 25 federal government departments and agencies.

NRCan contributed to safeguarding Canadians from natural hazards and explosives through research and the development of tools

In 2020-21, NRCan used innovative science and technology, including through satellite data, to anticipate, monitor, and model natural hazards emergencies.

Timely public warnings and information enables communities to respond more effectively to natural hazards. In 2020-21, NRCan continued to operate monitoring systems designed to manage and adapt to the increasing occurrence of natural hazards and emergencies. As part of its responsibilities, the Department issued notification of hazardous natural events within Canada, in a timely manner, 100% of the time.

Satellite data was further used in conjunction with synthetic aperture radar⁷ imagery to derive near-real time, broad-view flood information to support emergency response during major flooding events. NRCan also contributed to the whole of government cyclical planning and seasonal **assessment for flood risk** across Canada, and provided subject matter expertise and situational awareness on earthquakes, wildfires and floods, the three major natural risks in Canada, at various emergency management committees.

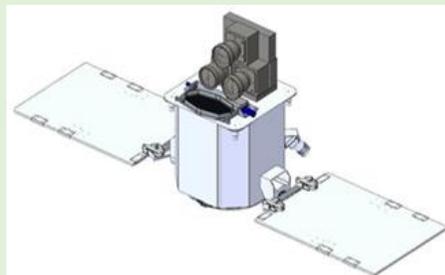
The threat of **forest fires** continues to rise and pose a significant risk to Canadians. NRCan undertook a number of activities in 2020-21 to help respond to this potential danger, including completing a detailed design phase for **WildFireSat**^{lxviii} (see textbox) with partners of the wildfire earth observation satellite mission. WildFireSat will help position Canada as a world leader in global wildfire earth observation.

The Government of Canada's **Emergency Management Strategy**^{lxix} (EMS) aims to protect Canadians from the effects of natural hazards and responds to provinces and territories' calls for increased federal investment in wildfire science and innovation. As part of this strategy, NRCan invested \$5M to develop a Wildland Fire Research Network to promote innovation in fire management to reduce the risks of wildland fire. The Department also provided timely access to wildland fire information through the **Canadian Wildland Fire Information System**,^{lxx} which helped mitigate the risk of fire through

WildFireSat: A Canadian Solution for Future Wildfire Monitoring

The gap in satellite wildfire monitoring at high latitudes has been recognized internationally as a limitation for effective global wildfire, smoke and carbon emissions monitoring. Canada's high latitudes limit us in benefitting from geo-stationary weather satellites that provide good coverage over the tropics and mid-latitudes.

WildFireSat (WFS) is a feasible and unique Canadian solution to delivering near real-time monitoring and tracking of wildland fires. WFS is an innovative and dedicated space-based system using the latest innovative science and technology in Canada. NRCan, in collaboration with Environment and Climate Change Canada and the Canadian Space Agency, is playing a leading role in its development. Although in early stages, the objective is for WFS to develop into a fully operational Canadian and global mission in the future that will help keep Canadians and our livelihoods safe.



WildFireSat concept image

⁷ Synthetic aperture radar (SAR) bounces a microwave radar signal off the Earth's surface to detect physical properties.

responsive measures. The uptime of this system in 2020-21 was estimated to be 97% and on target.

In addition to operating the [Canadian Hazards Information Service^{lxxi}](#) (CHIS), NRCan also began implementing a national Earthquake Early Warning System by conducting stakeholder engagement, identifying hundreds of sensor sites and installing software on NRCan systems. Upon completion, this system will provide seconds to minutes of warning of a major earthquake in high-risk areas that might affect critical infrastructure.

NRCan also delivered science and program activities that assisted forest managers and communities understand, monitor and limit the **damage caused by pests**. This included investing \$10.5M to deliver the third year of the Spruce Budworm Early Intervention Strategy Phase II Program, which resulted in spruce budworm populations throughout Atlantic Canada remaining below outbreak levels.

To limit the eastward spread and mitigate the negative impacts of the mountain pine beetle in Alberta and across Canada, the Department also implemented the first year of the Support for Mountain Pine Beetle Management in Alberta Program in collaboration with the Government of Alberta. As a result, more than 7.8M hectares of forested lands were surveyed aerially and 62,678 trees infested by the mountain pine beetle were removed.

The Department also conducted research to support risk assessment, surveillance, rapid response and longer-term management of the emerald ash borer and hemlock woolly adelgid found in natural, rural and urban forests.

To maintain safe trade and **market access for Canadian forest products** and safeguard our forest resources internationally, NRCan supported and addressed forestry quarantine issues through scientific analysis, discussion and collaborative research with the Canadian Food Inspection Agency. This work is critical to ensure that import regulations for internationally traded wood commodities (particularly Canadian commodities) are scientifically justified.

As Canada's regulator for **explosives**, NRCan protected the safety and security of Canadians and all workers in the Canadian explosives industry from the potential dangers of explosives and their precursor chemicals (restricted components) through licensing, inspection, and educational programs. In 2020-21, the percentage of inspections of explosives rated safe was at 73%, which is lower than 83% in 2019-20 but higher than the target of at least 70%. This was due

Science at NRCan: Impacts of COVID-19

NRCan's labs were effectively closed for 4-5 months during the first wave of the pandemic until a return to the workplace was safe for employees. While some of NRCan's fieldwork and scientific projects underway had to be delayed or cancelled, technical and scientific writing productivity increased as scientists analyzed previously acquired data. NRCan's scientists worked to find innovative ways to continue their projects remotely, some carrying out their research activities from home. In this way, the Department's world class research continued during early COVID-19 related lockdowns.



NRCan scientists continued to conduct research on forest health and pest infestations from their homes.

predominantly to COVID-19 which restricted travel, resulting in a decrease of in-person inspections. NRCan also supports explosives and related industries through its role as an explosives research centre of expertise. NRCan ensures that manufacturers, importers, exporters, and vendors of explosives, as well as those who store explosives or sell explosives precursor chemicals, comply with Canada's *Explosives Act and the Explosives Regulations*. In 2020-21, NRCan furthered the process to amend the regulated list of explosives precursor chemicals to include newly identified chemicals of concern, resulting in the approval of four additional precursor chemicals.

NRCan led activities to help ensure that communities and industry are adapting to climate change

To address the complex and cross cutting issue of climate change, the Department continued to keep abreast of the rapid pace of science and technological innovation by investing in research, development, and deployment of projects that advance solutions to this pressing environmental challenge.

NRCan invested \$3.2B in the [Two Billion Trees \(2BT\) Program](#)^{lxxii} to **plant two billion trees** over the next 10 years that will reduce greenhouse gas emissions by a projected 12 megatonnes per year by 2050. The 2BT program is a nature-based solution that will in part help communities adapt to climate change by decreasing the risk of wildfire and flooding to rural communities, including Indigenous communities across Canada.



Canada's forests

The Department continued to lead Canada's [Climate Change Adaptation Platform](#),^{lxxiii} bringing together jurisdictions and sectors to foster greater collaboration on emerging adaptation issues. In 2020-21, the Platform's plenary held two meetings, one of which showcased Métis approaches to adaptation and opportunities for further collaboration. The other meeting included discussion on how to **integrate racial equity and social justice** into adaptation actions and workforce competencies that are required to support adaptation in Canada.

To enable greater climate change adaptation, NRCan supported training and knowledge exchange activities to increase the capacity of organizations, professionals, and communities to undertake actions. The [Building Regional Adaptation Capacity and Expertise \(BRACE\) Program](#)^{lxxiv} continued its work with the provinces to support the development and delivery of a range of climate change adaptation courses.

Communities and industries are adapting to climate change in various ways. In 2020-21, Canadians accessed NRCan's products and expertise on adaptation 25,858 times, lower than 46,085 times recorded in 2019-20, a decline that is attributed mainly to the slow down in all activities as a result of COVID-19.

NRCan co-led with Innovation, Science and Economic Development Canada (ISED) the [Clean Growth Hub](#),^{lxxv} a government-wide service that **connected clean technology producers and adopters to federal clean technology programs** and services, in order to foster an environment that supports technological innovation. To date, over 2,000 clients have been served by the Clean Growth Hub. Similar efforts to advance development and deployment opportunities were undertaken through support from the United Nations Climate Technology Centre and Network, which helped provide business opportunities and partnerships to Canadian producers located in developing countries that specialize in clean technology. The Department is also working with ISED through the Net-zero Accelerator initiative to fund projects that will help transform the economy for clean and long term growth.

NRCan is leading [Canada in a Changing Climate: Advancing our Knowledge for Action](#),^{lxxvi} the national assessment of **how and why Canada’s climate is changing**, the impacts of these changes on our communities, environment, and economy, and how Canadians are adapting. Following the successful release in April 2019 of the first report in the series [Canada’s Changing Climate Report](#),^{lxxvii} the chapters of the *Regional Perspectives Report* are being released on a rolling basis, starting with the Prairie Provinces chapter that was released in December 2020. The *National Issues Report*^{lxxviii} was released as a full volume in June 2021.

As the Canadian representative for the Arctic Spatial Data Infrastructure, NRCan continued to collaborate with **circumpolar nations** to develop strategies that provide data and analytics to monitor and mitigate the changes to Arctic lands and waters that are accelerated by climate change.

NRCan also re-established the [Canadian Council of Forest Ministers](#)^{lxxix} Climate Change Working Group to **advance adaptive and sustainable forest practices** and to support provincial and territorial collaboration on sustainable forest management that takes into account a changing climate. In 2020-21, the Working Group sponsored a special series of climate change webinars designed for practical forestry applications in adaptation and mitigation, delivered broadly through the Canadian Institute of Forestry and Forestry Adaptation Community of Practice platforms.

The Department invested \$434,000 through the [Forest Climate Change Program](#)^{lxxx} for regional integrated assessments and science-based adaptation tools. These projects were undertaken in collaboration with end-users to facilitate climate change adaptation planning and decision-making in the forestry sector and forest-based communities. Scientists undertook regional assessments in five vulnerable regions across Canada: Newfoundland and Labrador, the Maritimes, the Eastern Boreal, the Northwest Territories and the Western Boreal.

NRCan will continue to support efforts by the Minister of Fisheries, Oceans and the Canadian Coast Guard to develop a comprehensive **Blue Economy Strategy** aligned with Canada’s economic recovery and focused on growing Canada’s ocean economy to create employment and opportunities for the ocean sector and coastal communities, while advancing reconciliation and conservation objectives. In 2020-21, the Department helped prepare for public engagement that will assist in determining the scope of the strategy. NRCan is collaborating with other federal

departments to begin public consultations on establishing the Canada Water Agency intended to help keep our water safe, clean, and well managed.

Gender-based analysis plus

Natural Resources Canada continued to use Gender-Based Analysis Plus (GBA Plus) to rigorously assess all NRCan initiatives for potential impacts or implications on diverse populations of Canadians. The use of GBA Plus allowed the Department to identify, assess and eventually address potential and existing barriers in NRCan programs, leading to inclusive and equitable opportunities and outcomes.

Under this Core Responsibility, the Polar Continental Shelf Program (PCSP) adopted and implemented measures to track gender data among program users. The application of a GBA Plus lens supported the program in identifying ways to reduce unintended bias based on gender and promote equity, diversity and inclusion in scientific research. Further, with the support of GBA Plus, the program updated its review criteria for university-based applications to include **Equity, Diversity, and Inclusion (EDI)** measures to ensure equity seeking groups are not disadvantaged in the selection process. These measures will help ensure PCSP services are equally available to men, women, minority groups, and Indigenous peoples; encourage equity, diversity and inclusion in science; promote Indigenous peoples as partners within research; and foster the next generation of researchers. In addition, through the **Enabling Arctic Science in Canada initiative**, the Polar Continental Shelf Program was able to meet a growing demand for Arctic science and innovation research.

In addition, the Core Geospatial Data program aims to inspire girls into science, technology, engineering and maths (STEM) and facilitates Indigenous inclusion projects. In 2020-21, Natural Resources Canada, in collaboration with the federal, provincial and territorial members of the Geographical Names Board of Canada, released an interactive map entitled **Recognizing Women with Canadian Place Names**, which highlights the many **significant and diverse accomplishments of women** in Canada, commemorated through place names. Further, the Minister of Natural Resources Canada appointed an Indigenous Advisor to the Geographical Names Board of Canada (GNBC) to provide advice to the GNBC on Indigenous cultural perspectives, engagement and inclusion. The program also recognizes the need for NRCan to take Indigenous data sovereignty principles into consideration when developing projects and initiatives. Training, guidance documents and knowledge products have been made available to support Indigenous communities in the governance of their data resources.

Experimentation

In 2020-21, NRCan explored options to design experiments to assess the effect of investment in scientific publishing for achieving immediate open access on the impacts of scientific publications. However, due to shifting priorities, experimentations with scientific publications were not pursued. NRCan continues to explore options for experimentation to support the delivery of results associated with natural resource science and risk mitigation.

2030 Agenda for Sustainable Development

NRCan's planned activities under this Core Responsibility support Canada's efforts to address the United Nation 2030 Agenda and the achievement of several of the following Sustainable Development Goals (SDG).

In support of **SDG 13 - Climate Action, Canada's Climate Change Adaptation Platform**, NRCan:

- provided **technical expertise on climate change adaptation** to the United Nations Framework Convention on Climate Change processes, under the Climate Change Adaptation Platform, as both a member of Canada's negotiation team, and one of three developed countries contributing to the Least Developed Countries Expert Group, which assists developing countries in the development and implementation of their national adaptation plans.
- worked with partners to increase knowledgebase and improve the ability to **predict and manage risks of wildfires** through the Wildfire Risk Management Program. The Department, along with its partners, also continued to work on WildFireSat by completing Phase A, which is the detailed design phase of the innovative wildfire earth observation satellite mission.
- worked on the Canadian Forest Fire Danger Rating System by refining the characterization of forest fuel structures that influence fire behaviour to improve **wildfire risk assessment** and help ensure the safety and security of Canadians. The aforementioned activities support SDG 3 (Good Health and Well-Being). NRCan also completed the first phase of changes to its world-renowned Canadian Forest Fire Weather Index System, a system that has been unchanged for more than 50 years, and which is used in countries around the world.

In support of **SDG 11 - Sustainable Cities and Communities**, NRCan:

- invested \$5M over 5 years through the Emergency Management Strategy to develop a Wildland Fire Research Network in collaboration with the Natural Sciences and Engineering Research Council of Canada.

Additional information about how NRCan activities are supporting the United Nations' 2030 Agenda and Sustainable Development Goals are reflected under the [NRCan 2020-23 Departmental Sustainable Development Strategy](#).^{lxxxi}

Results achieved

Departmental results	Performance indicators	Target	Date to achieve target	2018–19 Actual results	2019–20 Actual results	2020–21 Actual results
Canadians have access to cutting-edge research to inform decisions on the management of natural resources	Number of times scientific products related to natural resources are accessed by Canadians	At least 500,000 quarterly average	March 2021	482,745	504,242	365,935
	Percentage of environmental impact assessments demonstrating use of scientific and technical advice provided by NRCan	100%	March 2021	100%	100%	100%
	Number of times stakeholders acknowledge using NRCan's scientific and technical products in making their decisions	At least 30,250	March 2021	26,142	30,957	30,974
	Number of training and development initiatives that enable NRCan to incorporate Indigenous knowledge in conjunction with NRCan science	At least 35	March 2021	69	121 ⁸	189

⁸ Since the 2019-20 Departmental Plan, NRCan has revised the methodology to more accurately count the number of training and development initiatives that enable NRCan to incorporate Indigenous Knowledge in conjunction with NRCan science. This is reflected in the higher result achieved from the previous year.

	Percentage of annual updates to make NRCan foundational geospatial data current	At least 20% average annual updates towards full refresh over 5 years	March 2021	Not available ⁹	Not available ⁹	21%
Communities and officials have the tools to safeguard Canadians from natural hazards and explosives	Percentage of hazardous natural events within Canada for which a notification was issued in a timely manner	At least 90% (100% by March 2023)	March 2021	100%	97%	100%
	Percentage of emergency geomatics services provided to Canadians in a timely manner to assist during floods	At least 95%	March 2021	100%	100%	100%
	Percentage uptime of the Canadian Wildland Fire Information System during the wildfire season	At least 97%	March 2021	95%	97%	97%
	Percentage of inspections of explosives rated safe ¹⁰	At least 70% (90% by March 2025)	March 2021	64.2%	82%	73%
Communities and industries are adapting to climate change	Number of times NRCan products and expertise on adaptation are accessed by Canadians	At least 35,000 quarterly average	March 2021	20,272	46,085	25,858

⁹ Historical information is not available for all previous years for this indicator given that the indicator and its methodology were amended starting in 2020-21.

¹⁰ A 'safe' rating indicates an inspection rated "satisfactory or better". NRCan conducts rigorous and timely follow up on any facility that does not achieve a satisfactory rating.

	Percentage of Canadian communities and industries that have taken steps to adapt to climate change	At least 60% for communities At least 40% for businesses	March 2023	57% for communities 32% for businesses (from 2018 survey)	57% for communities 32% for businesses (from 2018 survey)	57% for communities 32% for businesses (from 2018 survey)
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Budgetary financial resources (dollars)

2020–21 Main Estimates	2020–21 Planned spending	2020–21 Total authorities available for use	2020–21 Actual spending (authorities used)	2020–21 Difference (Actual spending minus Planned spending)
214,015,248	214,015,248	236,756,135	207,697,165	(6,318,083)

Human resources (full-time equivalents)

2020–21 Planned full-time equivalents	2020–21 Actual full-time equivalents	2020–21 Difference (Actual full-time equivalents minus Planned full-time equivalents)
1,226	1,206	(20)

Financial, human resources and performance information for Natural Resources Canada's Program Inventory is available in [GC InfoBase](#).^{lxxxii}



Innovative and Sustainable Natural Resources Development

Description: *Led the transformation to a low carbon economy by improving the environmental performance of Canada’s natural resource sectors through innovation and sustainable development and use.*

This Core Responsibility supported the advancement of the following **Strategic Priorities:**

- Accelerating the adoption of clean technology and supporting the transition of a low-carbon future
- Improving market access and competitiveness in Canada’s resource sectors
- Supporting resource communities and workers in a low carbon economy
- Advancing reconciliation, building relationships, and sharing economic benefits with Indigenous peoples

This Core Responsibility also contributed to the achievement of the [Mandate Letter Commitments](#) of the Minister of Natural Resources:

- Work with partners to implement, as appropriate, the recommendations of the Generation Energy Council Report, including smarter use of energy, switching to clean power, using more renewable fuels, and producing cleaner oil and gas, including in the offshore. Work with partners to implement the Canadian Minerals and Metals Plan and to develop strategies to help strengthen the competitiveness and overall health of Canada’s forest sector;
- Install up to 5,000 additional charging stations along the Trans-Canada Highway and other major road networks and in Canada’s urban and rural areas;
- Work to position Canada as a global leader in clean technology, including in critical minerals;
- Work in partnering with provinces, territories, and Indigenous peoples to advance the electrification of Canadian industries through new, zero-carbon clean electricity generation and transmission systems and grid modernization, making Canada home to the cleanest mills, mines and factories in the world;
- Support the transition of Indigenous communities from reliance on diesel-fueled power to clean, renewable and reliable energy by 2030;
- Make Energy Star certification mandatory for all new home appliances starting in 2022;
- Launch a national competition to create four long-term funds to help attract private capital that can be used for deep retrofits of large buildings such as office towers; and,
- Work to operationalize a plan to help Canadians make their homes more energy efficient and climate resilient. This will include providing free energy audits to homeowners and landlords, up to \$40,000 in interest-free lending for retrofits that will save Canadians money on their energy use, a cash incentive for borrowers to maximize their energy savings, and creating a Net Zero Homes Grant of up to \$5,000 for newly built homes that are certified net zero-emissions.

Canada's natural resources sector continues to generate billions of dollars for the Canadian economy, serving as a source of prosperity for Canadians. Innovative and sustainable natural resource development is key to maintaining this trend for generations to come and to transition Canada to a low carbon future. In 2020-21, the Department supported innovative, competitive and sustainable clean technology research, development and demonstration (RD&D) across the energy, mining and forest sectors, leveraging new digital methods and tools such as artificial intelligence (AI) and big data, and continued to engage with Indigenous communities across the country on numerous projects. Although historical information is not available, in 2020-21, the percentage of NRCan's projects on innovation and sustainable development that engaged Indigenous communities, organizations or governments stood at 8.3%. Canada's transition to a low carbon future is also being achieved by encouraging Canadian households and industry to become more energy efficient.

NRCan worked to ensure that the natural resource sectors were innovative

NRCan continues to support pre-commercial technologies towards commercial readiness. In 2020-21, 37% of funded clean energy innovation projects advanced along the innovation scale.¹¹ The program is currently mid-cycle and therefore did not yet meet the target, as results fluctuate based on program funding cohorts, yielding low results early in the program cycle and higher results as projects are completed.

In 2020-21, 69% of NRCan funded innovation projects resulted in new **intellectual property, standards or regulations**. Additionally, 100% of innovative forest products and decision tools informed by the Department's research contributed to the environmental **sustainability of Canada's forests**, and 22% of innovative mining technologies developed by the Department moved towards being ready for commercialization. This result is slightly below its annual target as the development of technologies was slowed down due to the pandemic.

Successfully transitioning to a low carbon future requires innovative solutions to complex technological issues. Through its Clean Technology Challenges, part of the [Impact Canada Initiative](#),^{lxxxiii} NRCan continued to support initiatives for sustainable aviation fuel, alternatives to diesel in Indigenous communities, new rock crushing technologies for mining, modernizing power grids, female led innovation in the cleantech sector, and battery innovation. In July 2020, the Department announced the five finalists of the \$4.5M Impact Canada Charging the Future Challenge, the finalists continued to develop testable prototypes of their innovative battery technologies and competed to advance Canada's best battery technology from the lab to market.

¹¹ Results for technology readiness levels (TRLs) are assessed and reported at the end of the project. As many projects are still ongoing, this result represents a fraction of the full program portfolio and serves only as an indicator of progress to date. In addition, results fluctuate based on program funding cohorts, yielding low results early in the cycle, and high results at project completion and the following reporting year.

Recognizing that Canada’s forest sector remains a driver in Canada’s economy, NRCan helped the sector respond and adapt to the emerging COVID-19 challenges in innovative ways (see textbox). As a **bioeconomy** can play a strong role as an added source of sustainable development and innovation, NRCan re-established the Canadian Council of Forest Ministers Innovation Working Group. Federal, provincial and territorial Deputies and Ministers were engaged at four meetings in the last year, advancing the Forest Bio-economy Framework. Calls for proposal were also launched for the **Indigenous Forestry Initiative**^{lxxxiv} to support Indigenous participation in forestry-related opportunities and the **Forest Innovation Program**^{lxxxv} (FIP) that focuses on research, development and technology transfer.¹²

NRCan’s support for sustainable and innovative resource development also extended to the mining sector where, working in collaboration with partners through **Green Mining Innovation**,^{lxxxvi} the Department funded several **green mining technologies**. These included a sustainable gold extraction process to recover and recycle cyanide in gold extraction, and a program to assist mining operations decontaminate and recycle wastewater and improve water efficiency.

NRCan supported clean technologies and energy-efficiencies that enhanced economic performance

Digital innovation continues to be critical in reducing costs, increasing productivity and enhancing safety in a growing technology-intensive natural resources sector. **Big data** and **AI** are two important tools and techniques to achieving these goals.

Through the **Digital Accelerator Initiative**,^{lxxxvii} departmental scientists pursued activities in **AI and machine learning techniques** that helped improve forest monitoring, predict electric vehicle (EV) demands on electricity infrastructure, and improve accessibility to the Green Homes Homeowner Management System portal. Additionally, the Department hosted more than 30 sessions of the Synthetic Intelligence Forum, which brought together experts from various disciplines to discuss AI and digital transformation strategies, and signed a collaborative

Innovation at NRCan during COVID-19

In response to COVID-19, NRCan funded the development of a prototype for low-cost, non-surgical, disposable masks made from responsibly harvested 100% Canadian wood fibre. The Department also supported the development of a sustainable filter for single-use facemasks made from eco-friendly, biodegradable Canadian forest fibre.

Additionally, through the Forest Sector Safety Measures Fund, NRCan provided up to \$30M in funding to offset additional costs associated with COVID-19 safety measures, such as sanitizing stations and personal protective equipment for SMEs in the forest sector, helping to preserve an expected 7,000 jobs for planting 600 million trees.



Ready for delivery to first responders.

¹² In 2020-21, FIP funded 13 projects across Canada that among other benefits will help de-risks wood fibre supply and digitize the upstream portion of the forest products value chain.

agreement with Microsoft Canada to tackle shared climate objectives, a first of its kind for the Government of Canada.

Making Canadian homes more **energy efficient** remains essential in Canada’s push towards a low carbon future and helps in making homes more comfortable and more affordable to maintain, as well as creating employment. The 2020 Fall Economic Statement announced \$2.6B over 7 years for NRCan to provide up to 700,000 grants of up to \$5,000 to help homeowners make energy-efficient improvements to their homes through the **Canada Greener Homes Grant**. These grants will be paired with an EnerGuide home energy evaluation and the overall funding will support the recruitment and training of energy advisors to meet the expected increased demand for their services. A web portal¹³ will help recruit and train these energy auditors, especially for provinces and territories that opt-in to the program.

At the **municipal level**, working with Infrastructure Canada and Environment and Climate Change Canada, the Department provided support and advice to the Federation of Canadian Municipalities in delivering on Budget 2019’s \$1B investment in the **Green Municipal Fund**^{lxxxviii} (GMF). In 2020, GMF launched the Sustainable Affordable Housing stream as well as the Community Efficiency Financing Offer to support home energy retrofits, helping municipal and non-profit affordable housing providers undertake energy efficient retrofits and construct **net-zero new buildings**. This investment is also supporting six of seven Low Carbon Cities Canada (LC3)¹⁴ climate centres.

Four projects related to buildings RD&D were also completed under the Energy Innovation Program (EIP), including Sifton’s Helio Project, Canada’s first mixed-use net-zero-energy high-rise, which is now fully occupied and producing 65% less green house gas (GHG) than a comparable traditional building. The Department also continued to accelerate the development and adoption of **net-zero-energy-ready codes and technologies** and provide cost-effective building solutions through the **Energy Efficient Buildings RD&D Program**.^{lxxxix} The Program issued a third call for proposals, focusing on deep retrofits and local building codes and announced funding to the Canadian Home Builders’ Association to demonstrate **net-zero-energy technologies for residential buildings**^{xc} in British Columbia, Alberta, Ontario and Saskatchewan, covering all major Canadian climate zones. The Program also continued to support the Local Energy Efficiency Partnerships (LEEP) initiative, which aims to foster the construction industry’s capacity and confidence in net-zero energy ready (NZER) technologies.¹⁵

¹³ The web portal was developed by NRCan and launched in May 2021.

¹⁴ LC3’s mission is to help cities reach their full carbon emissions reduction potential while unlocking co-benefits such as improved public health, increased mobility options, local job creation, and economic value. LC3 is a partnership between the Federation of Canadian Municipalities (FCM) and seven urban climate centres (LC3 Centres) in the Metro Vancouver region, Edmonton, Calgary, the Greater Toronto & Hamilton Area, Ottawa, the Montreal Metropolitan Community and the Halifax Regional Municipality.

¹⁵ In 2020-21, the LEEP initiative delivered 22 workshops and forums across Canada and developed several documents and tools, such as a cost-benefit tool for NZER housing.

In 2020-21 the Department continued to administer various ENERGY STAR® programs for industry, certification, benchmarking tools, and products (see textbox). Collaboration with partners in capital, research, and knowledge sharing is essential for Canada to achieve net zero status by 2050. For 2020-21, the ratio of partner investments to government spending in NRCan-funded energy innovation projects stood at 2:1, which continues to surpass the target of 1:1 funding, however decreased from 2019-20 due to the financial impact of COVID-19 on partner investments. To help reach this goal, the [Energy Innovation Program^{xci}](#) (EIP) supported 34 external RD&D projects aimed at reducing GHG emissions while increasing competitiveness, affordability and reliability in Canada’s energy sector. Of the funded projects, 10 were under the Breakthrough Energy Solutions Canada (BESC)¹⁶ and two under the Canadian Emissions Reduction Innovation Network (CERIN), an initiative co-delivered with Alberta Innovates. One CERIN project, for example, is developing [pathways to generate biojet from a range of lipid feedstocks^{xcii}](#) including waste materials from the restaurant and rendering industries. As part of the BESC program, NRCan also hosted the first **Accelerator session** in December 2020, and delivered Tech to Market support for BESC finalists to help Canadian companies grow and fund the development of technologies.¹⁷

NRCan’s **Canmet energy, mining and materials research facilities** continued to advance new technologies and materials, create jobs and generate intellectual property in Canada. These ongoing research projects continued to: investigate industrial process electrification options, advance novel solutions for energy use in Canada’s North for the Department of National Defence, deploy Model Predictive Control (MPC) to reduce buildings’ GHG emissions, provide cost-impact analysis to inform the proposed new Canadian Model Building Energy Codes, test



ENERGY STAR®
NRCan continued to administer the many **ENERGY STAR®** programs and activities, including:

ENERGY STAR® for Industry Program: 15 industrial facilities registered for Industry Challenge in 2020-21. Two facilities were recognized as an ENERGY STAR® Achiever.

ENERGY STAR® Certification: Energy Performance Indicator benchmarking tools became available across eight industrial sectors in 2020-21, supporting the annual ENERGY STAR® Certification component including automobile, cement, fertilizer, steel.

ENERGY STAR® for Products Program: In 2020, six product specifications were updated including windows, doors and skylights, and heat and energy recovery ventilators.

ENERGY STAR® Portfolio Manager benchmarking tool: Canadian content enhancements brought the total up to 10 building types for which 1-100 ENERGY SCORES performance scores are available, as well as 26,000 buildings are captured in the tool; equal to one-third commercial building floor space in Canada.

¹⁶ A joint initiative of NRCan; Breakthrough Energy, led by Bill Gates and influential global investors; and the Business Development Bank of Canada that was launched at Mission Innovations 4th Ministerial meeting in May 2019. BESC will provide up to \$40M to help Canadian firms develop and commercialize clean energy technologies with potential for significant greenhouse gas emissions reductions (0.5GT/year globally).

¹⁷ The Tech to Market initiative is intended to support proponents in raising capital from investors such as the Business Development Bank of Canada and Breakthrough Energy Ventures.

electric mining vehicles to develop a standardized performance test and research the corrosion of materials used in nuclear storage. NRCan’s Canmet energy, mining and materials research centres conducted applied research on the future processes, pathways, technologies and materials needed to help transform Canada to a low-carbon economy.

NRCan also continued to fund world class energy research at its Canmet research centres and other federal research facilities through the EIP and the [Program of Energy Research and Development](#)^{xciii} (PERD). The Department supported 180 energy RD&D projects in areas such as clean electricity, sustainable bioenergy, and value-added advanced materials for the energy, transportation and manufacturing sectors.

In 2020-21, NRCan signed a new \$2.26M, 3-year collaboration agreement with the “Ministère de l’Énergie et des Ressources naturelles du Québec” to investigate the most impactful industrial process electrification options, optimal forest biomass utilization in industrial processes and modeling of decarbonisation scenarios taking into account the resources availability.

NRCan also worked to deploying Advanced Control Strategies, Model Predictive Control (MPC), for optimizing building and energy district system operation to decrease their GHG emissions. This is performed through Greening Government Fund projects with the Canadian Space Agency, the Department of National Defence and the National Research Council. These projects will demonstrate the benefits of MPC to have it replicated in federal facilities and more generally in Canadian buildings and energy district systems.

Clean technology RD&D in the energy, mining and forestry sectors was supported under the [Clean Growth Program](#)^{xciv} (CGP). By the end of 2020-21, 43 CGP projects were underway and three were completed, including demonstration of a full-scale prototype for a [novel closed-loop geothermal system](#)^{xcv} near Sylvan Lake, Alberta.

The Department maintained its lead role in the [Mining Value from Waste Program](#),^{xcvi} a pan-Canadian initiative under the [Green Mining Innovation](#)^{xcvii} that focuses on **reducing the environmental, social and economic footprints of mine wastes** in support of the transition to a **circular economy**. Work included reprocessing mining waste to recover critical and valuable metals and data base of sites. Through the Canadian Mining Science and Engineering Laboratory Network, NRCan further facilitated the collaboration of key stakeholders of the mining innovation ecosystem to accelerate innovation of three research and development projects related to energy saving and enhanced waste and water management.

NRCan helped ensure Canada’s natural resources were sustainable

The Department continued to implement programs to support the Pan-Canadian Framework on Clean Growth and Climate Change (PCF) to fight climate change and **build a more sustainable and resilient economy**. This included the [Green Infrastructure^{xcviii}](#) stream of the [Investing in Canada Plan^{xcix}](#) that supported demonstration and deployment of clean energy infrastructure through the [Smart Grid Program^c](#), [Emerging Renewable Power Program^{ci}](#) (ERPP), and the [Clean Energy for Rural and Remote Communities^{cii}](#) (CERRC) program (see textbox). Twenty-one CERRC projects were completed in 2020-21, with 93 projects overall being supported towards the program’s 2024 target. The \$100 million Smart Grid Program promoted the modernization of grid infrastructure by funding the demonstration of promising, near-commercial smart grid technologies and the deployment of smart grid integrated systems across Canada. Twenty-two projects are being supported, including five new projects announced in 2020-21, such as the [London Hydro West 5 Project^{ciii}](#) which is enabling the development of the **West 5 Net-Zero Energy community** and microgrid in London, Ontario.

The ERPP funded initiatives that supported three emerging renewable technologies (geothermal, in-stream tidal and bifacial solar) helping to expand the portfolio of commercially viable renewable energy sources in Canada.

With a view to begin a widespread transformation of the electricity sector needed to help Canadians and businesses switch to clean power, NRCan also developed the \$964M Smart Renewables and Electrification Pathways Program to advance smart renewable energy and grid modernization projects (launched in April 2021).

The Clean Energy for Rural and Remote Communities Program

The CERRC program is intended to help rural and remote communities, including Indigenous communities, reduce their reliance on diesel fuel for heat and power, support community-driven clean energy solutions and create jobs and opportunities.

After two rounds of intake, 93 renewable electricity, bioheat and capacity building projects are overall being supported towards the program’s 2024 target. New projects underway include installing a combined heat and power bioheat system in Kluskus, BC, including battery energy storage. Located in northeast Alberta, the Fort Chipewyan Solar Project, also began operations in 2020. At 2.42 MW, with a 1.5 MWh battery, it is the largest off-grid solar project in Canada.

The Gull Bay First Nation Diesel Offset Micro Grid was the first demonstration project to be completed. It demonstrates the integration of a 300-kW high-penetration solar photovoltaic system into the existing diesel microgrid in Kiashke Zaaging Anishinaabek/Gull Bay First Nation, along with a controller and 550kWh of battery energy storage.

This project offsets approximately 170,000 litres of diesel fuel and 471 tonnes of CO₂ emissions per year and, to date, has resulted in 200 hours of training in trades and over 5000 hours of employment for Indigenous peoples.



Chief of Kiashke Zaaging Anishinaabek / Gull Bay First Nation Wilfred N. King stands with National Chief Perry Bellegarde, AJ Esquega, Cara Sanders and Darrell Brown at the Gizis Energy Solar Storage Micro Grid Facility’s Project Celebration Ceremony.
(Photo used with permission from Kiashke Zaaging Anishinaabek / Gull Bay First Nation)

The Impact Canada [Indigenous Off-Diesel Initiative^{civ}](#) (IODI) also made progress towards transitioning 14 remote Indigenous communities/regions off diesel as a primary source of energy. In 2020-21, 14 contribution agreements worth up to \$500,000 each were signed for Phase 2 of IODI to support Energy Champions¹⁸ and their communities to develop community energy plans, carry out engagement, identify and deliver clean energy training, and develop an implementation plan for clean energy. One prize grant of \$800,000 was given out to the first champion, who moved to the project implementation phase.

NRCan also helped **Canadians and Canadian businesses switch to clean power** as part of the beginning of a widespread **transformation of the electricity sector**. As of 2019, when the latest data was available, the percentage of Canadian electricity generated from non-GHG emitting sources stood at 82%. The Department supported implementation of the [Clean Power Road Map for Atlantic Canada^{cv}](#) and advanced a BC–Canada electricity intertie dialogue to help implement the 2019 [Memorandum of Understanding on the Electrification of the Natural Gas Sector.^{cvi}](#) As a result, the Department advanced electricity dialogues with utility companies, four Atlantic Provinces, and Quebec, to strengthen the Atlantic Regional Transmission Loop. An [Interim Report: Towards A Clean Power Roadmap for Atlantic Canada^{cvi}](#) was released in August 2020.

Further, NRCan supported four major **tidal projects** in Atlantic Canada, including a project to build a tidal turbine array using sub-sea tidal technology in Petit Passage in the Bay of Fundy in partnership with Nova Innovation. To help connect surplus clean power to regions transitioning away from coal and help transform how Canada powers its economy and communities, NRCan is supporting the Canada Infrastructure Bank’s (CIB) work to implement the Clean Power stream of its \$10B Growth Plan. The CIB has allocated \$2.5B over the next three years under this stream to support investments in clean power infrastructure, including renewable generation, district energy systems, energy storage, and strategic interties and transmission projects. NRCan is supporting this work through dialogues with provinces, territories and utilities to support clean power projects, such as the Atlantic Loop.

Expanding the portfolio of clean energy sources will not only mean supporting innovative scientific research, it is also a channel for engaging with stakeholders. Working with partners, NRCan implemented recommendations from the [Canadian Small Modular Reactor \(SMR\) Roadmap^{cvi}](#) by releasing the [Small Modular Reactors^{cix}](#) (SMRs) Action Plan that responded to the 53 recommendations of the Roadmap. NRCan also developed the Federal Government chapter of the SMR Action Plan, which provides 27 specific concrete actions for the Government of Canada. The SMR Action Plan website was also launched, bringing together over 115 chapters from partners and providing description of over 500 actions and commitments. This work helps to expand Canada’s clean energy sources, diversify access to clean electricity power and reduce GHG emissions.

¹⁸ Champions are individuals who’s proposals to the IODI are successfully chosen via an external Indigenous jury reviews. The person must reside in, or have strong and ongoing ties to, an Indigenous remote community that is currently reliant on diesel fuel for power and/or heat.

To continue to manage radioactive waste in a responsible, safe, and environmentally friendly manner, NRCan engaged with Indigenous peoples, the general public, stakeholders, experts, and other interested parties to review and modernize Canada’s Radioactive Waste Policy^{cx} for future generations. This will ensure that Canada has a strong radioactive waste policy in place that is based on the best available science, continues to meet international practices, and reflects the values and principles of Canadians. NRCan led engagement sessions with the support of other federal government departments who are responsible for the management of radioactive waste in Canada.

The Department undertook its first [Five-Year Review of the \\$1B liability limit^{cx}](#) for power reactors under the *Nuclear Liability and Compensation Act*. The Department engaged with key stakeholders, including operators, insurers, and the public, to ensure a range of views were captured, and to build on Canada’s experience, regulatory leadership, and global reputation in the space of nuclear liability.



The Department also continued to make progress on **low carbon transportation**, approving projects in 2020-21 that will deliver 2128 additional electric vehicle (EV) chargers (bringing the total to 5869) seven hydrogen stations (bringing the total to 15); and one natural gas station (bringing the total to 22).

Additionally, NRCan supported real-world demonstrations of next-generation **innovative EV and hydrogen charging infrastructure**

projects across Canada by funding the [Electric Vehicle Infrastructure Demonstration Program^{cxii}](#). As of 2020-21, Phases 1 and 2 of the EVID program have supported 29 projects aimed at providing innovative solutions that address technical and non-technical barriers. Eight projects were successfully completed in 2020-21, with two new projects approved. New announcements also included support for updating codes and standards for electric and alternative fuel vehicles and infrastructure, and to demonstrate and assess the benefits of EV integration into the Nova Scotia electrical grid. Through ongoing investments by the Department, it is projected that by 2026, 33,500 EV chargers and 10 hydrogen refueling stations would have been built across the country. These investments resulted in the construction of 2,724 EV chargers in 2019-20 and 4,600 EV chargers in 2020-21.

To help fulfill the goal of **transforming the Canadian oil and gas industry** into the cleanest global petroleum sector, the Department launched the \$750M [Emissions Reduction Fund^{cxiii}](#) which is intended to assist onshore and offshore oil and gas operations. Private industry has already shown significant interest in the ERF. In its first year, the \$675M Onshore component of the Fund has approved projects that are projected to reduce emissions by at least 3.1 megatonnes of carbon dioxide equivalent.

Access to **independent and credible information on energy data** can be crucial in helping both public and private sectors make informed and unbiased decisions and formulate strategic plans. In 2020-21, the Canadian Centre for Energy Information (CCEI) launched its website, bringing together over 500 energy information products from over 50 organizations. The CCEI also engaged provinces, territories, external experts, and stakeholders to identify gaps in energy data and develop a work plan to address shared energy priorities. The work plan was approved by the CCEI's Steering Committee and will serve as a basis for further improvements to energy information.

Several initiatives were further announced and pursued to **make Canada's mining and energy sectors clean, innovative, energy efficient and sustainable** at the virtual [Energy and Mines Ministers' Conference^{cxiv}](#) in September 2020 (see textbox). Further, NRCan launched the **Hydrogen Strategy for Canada** on December 16, 2020, as the culmination of more than three years of analysis and stakeholder consultations, nationally and internationally. The Hydrogen Strategy for Canada is a call to action that outlines significant economic and environmental opportunities, and provides a series of recommendations that cement hydrogen as a key pillar of Canada's energy transition and climate action. Implementation of its recommendations by governments at all levels and the private sector can poise Canada to reduce GHGs by more than 190 megatonnes, from some of the hardest to abate sectors of the economy, and generate more than \$50B in revenue and 35,000 jobs domestically, while also positioning Canada as a supplier of choice for clean hydrogen and the technologies that use it, capturing a significant portion of the estimated \$11.7T global hydrogen market in 2050.

Energy and Mines Ministers' Conference (EMMC) 2020

EMMC is an annual gathering of federal, provincial and territorial (FPT) ministers responsible for energy and mining portfolios where shared priorities are discussed for collaborative action to advance energy and mining development. In 2020, EMMC was co-chaired virtually by NRCan Minister and the Deputy Premier and Minister of Energy, Mines and Resources for Yukon.

EMMC 2020 established the federal, provincial and territorial (FPT) Hydrogen Working Group and an FPT Task Team on Critical Minerals and Battery Value Chains, and advanced FPT collaboration on the development and deployment of small modular reactors. The update to Action Plan 2020 for the Canadian Minerals and Metals Plan was also released, which identified new areas of collaboration on critical minerals and batteries. As well, the Department implemented processes for engaging national and regional Indigenous organizations ahead of and during EMMC 2020, and supported engagement with Indigenous leaders on natural resource issues and opportunities for Indigenous economic participation to help shape departmental policy-making on clean growth.

Gender-based analysis plus

NRCan continued to use the GBA Plus lens to assess the inclusive nature of NRCan programs and for determining potential and existing barriers that need to be addressed.

In 2020-21 the **Electricity Resources Program** was modified to facilitate greater Indigenous involvement and ownership on clean energy projects in order to build capacity to support community renewable energy projects. The program is able to track those **projects that are led by First Nation, Inuit, and Métis communities** and whether or not projects are located in those distinct communities. Additionally, data collected has enabled the program to monitor and report on program impacts by gender and diversity. Annual data collection and reporting templates for certain programs, such as the Smart Grid Program and Emerging Renewable Power Program, have also been evaluated to **collect gender-disaggregated data** to align with program goals. Further, training and hiring metrics are now collected at gender-disaggregated levels and align with Statistics Canada terminology (e.g., female, male and gender diverse).

Through consultation, research and analysis, NRCan’s Office of Energy Research and Development and the Renewable and Electrical Energy Division developed a GBA Plus framework for program design and delivery, which aims to further the inclusion of an intersectional lens in program operations. It outlines key considerations and questions for each step of program design, implementation and evaluation, and seeks to support program operations to **identify gaps and opportunities** as they relate to advancing **diversity and inclusion**.

The Impact Canada Initiative Women in Cleantech Challenge continued to support the creation of six new clean technology companies **founded and run by women**. In 2020-21, the six finalists continued the Challenge’s intensive 2.5-year program, receiving business advice and the financial and technical support they need to grow and succeed as entrepreneurs, including the opportunity to validate and de-risk their technology with the help of federal labs and researchers.

Experimentation

Through 2020-21, NRCan completed experiments that sought to test new approaches to **encourage the uptake of energy efficient actions** by Canadians around their homes, leveraging digital tools such as artificial intelligence, social media and nudge messaging. One of NRCan’s experiments explored the use of a multi-channel social media campaign that promoted homeowner actions by utilizing a challenge format – **the Green Your Routine Challenge**. The results from the experiment demonstrated that Canadians had significant interest engaging via social media vs. traditional channels (web/phone/email) and that learning about energy savings requires community based commitment which is more effective across multiple social platforms. NRCan also conducted a quasi-experiment leveraging artificial intelligence via a “live” web-deployed **Chatbot named “Dr. House”** (currently located on the Energy Efficiency for homes portion of the NRCan website). This exercise was designed to determine the value in providing real time responses to questions from Canadian homeowners, and observing their usage to improve the accuracy of responses. The key learnings from this experiment were tied to capturing information from the types of questions asked, which can be leveraged to inform policy development and service quality. The use of a Chatbot allowed NRCan to evaluate how new/emergent tools, which contain a technology component, can be improved based on user

feedback. A second release of the tool is being planned, incorporating new questions and answers gathered in the initial experiment.

NRCan also completed phase 2 of an experiment with Hotsplex, a leading marketing insights firm to research, design and **test messaging around fuel efficiency and vehicle class** to determine how best to nudge behaviour towards the purchase of lower-emitting vehicles. Building off the findings of phase 1, the second phase deployed 6 test messages on a sample of 3200 consumers using an online questionnaire to assess which of 3 themes (affordability, spaciousness, and status quo disruption) could most effectively nudge consumers to shift to smaller, more fuel-efficient vehicles. The results found that while affordability messaging had an immediate impact on vehicle selection, savings were easier for participants to understand. Messaging around disrupting status quo preferences for SUVs is most effective when directly addressing how sedans and other small vehicles can fulfill the role of their larger, less efficient SUV counterparts. Project findings will be used to inform future messaging and communication material around purchasing fuel-efficient vehicles, fuel consumption, and energy efficiency more generally.

2030 Agenda for Sustainable Development

NRCan's planned activities under this Core Responsibility support Canada's efforts to address the United Nation 2030 Agenda and the achievement of several of the following Sustainable Development Goals (SDG).

In support of **SDG 7 - Affordable and Clean Energy, Target 7.2: by 2030 increase substantially the share of renewable energy in the global energy mix** - NRCan:

- worked on the Clean Energy for Rural and Remote Communities Program, which supports community-led renewable energy and capacity building projects aimed at reducing reliance on diesel and other fossil fuels for heat and power.
- supported the Smart Grid Program by continuing to invest \$100M to support demonstration and deployment.
- supported remote Indigenous communities to reduce diesel as a primary energy source through the Impact Canada Indigenous Off-Diesel Initiative. These projects are key enablers to increase the hosting capability of renewable generation, leverage additional capacity from existing infrastructure, and increase resiliency.

Target 7.3: By 2030, double the global rate of improvement in energy efficiency, NRCan:

- worked collaboratively with international partners to increase energy efficiency and accelerate the clean energy transition. This includes most recently by joining the Three Percent Club, a global alliance of public and private sector organizations seeking to improve energy intensity at a rate of at least three percent per year.

In support of **SDG 9 - Industry, Innovation and Infrastructure**, NRCan:

- continued work towards supporting the establishment of a coast-to-coast network of fast-chargers for electric vehicles and alternative fuel stations along the national highway systems, key freight corridors and in major metropolitan areas. As well, supporting the deployment of new zero-emission vehicle charging and hydrogen refuelling stations in more targeted locations, including public places, on-street, multi-unit residential buildings, workplace, and infrastructure projects for mass transit, urban delivery and fleet applications. This programming supports Canada’s commitment to foster greater uptake of zero emission vehicles.

Additional information about how NRCan activities support United Nations’ 2030 Agenda and Sustainable Development Goals are reflected under the [NRCan 2020-23 Departmental Sustainable Development Strategy](#).^{cxv}

Results achieved

Departmental results	Performance indicators	Target	Date to achieve target	2018–19 Actual results	2019–20 Actual results	2020–21 Actual results
Natural resource sectors are innovative	Percentage of NRCan-funded innovation projects that result in new Intellectual Property (IP), standards or regulations	At least 5% of projects will have IP or an impact on codes, standards or regulations by project completion (typically 3-4 years)	March 2021	65%	30% ¹⁹	69% ²⁰
	Percentage of innovative forest products and decision tools informed by NRCan research that contribute to the environmental sustainability of Canada’s forests	At least 90%	March 2021	Not available ⁹	Not available ⁹	100%

¹⁹ This indicator tracks progress on results at the completion of NRCan-funded projects in 2019-20. As many projects are still ongoing, the figure represents a fraction of the full program portfolio and serves only as an indication of progress to date.

²⁰ This indicator tracks progress on results at the completion of NRCan-funded projects in 2020-21. As many projects are still ongoing, the figure represents a fraction of the full program portfolio and serves only as an indication of progress to date.

	Percentage of NRCan-funded clean energy innovation projects advancing along the innovation scale	At least 50% of research, development and demonstration projects advance one level on the technological readiness scale by project completion (typically 3-4 years)	March 2024	90%	77%	37% ²¹
	Percentage of innovative mining technologies developed by NRCan that move towards being ready for commercial use	At least 25%	March 2021	25%	Not available ⁹	22%
Clean technologies and energy efficiencies enhance economic performance	Percentage of NRCan-funded clean technology demonstration projects achieving their economic goals	At least 50% success rate measured by project completion (typically 3-4 years)	March 2026	Not available ²²	Not available ²³	Not available ²⁴
	Ratio of partner investment to government spending in NRCan-funded energy innovation projects	At least 1:1 ratio of partner investment to NRCan investment	March 2021	3.1:1	3:1	2:1
	Total annual energy savings resulting from adoption of energy	Annual savings of at least 600 petajoules (PJ)	March 2030	26.7PJ	35.6PJ	66.7PJ

²¹ Results for technological readiness levels (TRL) are assessed and reported at the end of the project. As many projects are still ongoing, the figure represents a fraction of the full Program Portfolio and serves only as an indication of progress to date.

²² This indicator tracks progress on results at the completion of NRCan-funded projects. No projects with economic goals were completed during 2018-19.

²³ This indicator tracks progress on results at the completion of NRCan-funded projects. Not enough projects with economic goals were completed in 2019-20 to meaningfully report on this indicator.

²⁴ This indicator tracks progress on results at the completion of NRCan-funded projects. As the program was extended through 2021-22 due to the COVID-19 pandemic, not enough projects that report on this indicator were completed in 2020-21 to meaningfully report.

	efficiency codes, standards and practices					
Canada's natural resources are sustainable	Percentage of Canadian electricity generated from non-GHG emitting sources	At least 90%	March 2030	82%	Not available ²⁵	Not available ²⁵
	Number of renewable energy projects in remote communities and off-grid industrial operations	At least 100	March 2024	0 ²⁶	1 ²⁷	21 ²⁸
	Amount of wood harvested compared to the sustainable supply	Harvest is less than sustainable supply	March 2021	155 million m ³ total harvest versus total wood supply of 223 million m ³ (SoF, 2018 – data from 2016)	155 million m ³ total harvest versus total wood supply of 220 million m ³ (SoF, 2019 – data from 2017)	156.2 million m ³ total harvest versus total wood supply of 217.9 million m ³ . (SoF 2020 – data from 2018)

²⁵ Data for Fiscal Year 2020-21 is not available as electricity statistics are only available on a calendar year-basis. On December 31, 2019, the percentage of non-emitting electricity was 82%. There is no data available yet for calendar year 2020. The next data update is expected to be available by June 2022. Additionally, reporting has been impacted due to the delayed availability of statistics amid the COVID-19 pandemic.

²⁶ This is a new indicator implemented in 2018-19, which measures the number of completed renewable energy projects in remote communities and off-grid industrial operations. While no projects were completed in 2018-19, NRCan selected 53 projects for funding in the Clean Energy for Rural and Remote Communities Program towards the 2024 target.

²⁷ This indicator measures the number of completed renewable energy projects in remote communities and off-grid industrial operations in 2019-20. While one project was completed in 2019-20, NRCan selected 35 additional projects for funding in the Clean Energy for Rural and Remote Communities Program towards the 2024 target.

²⁸ This indicator measures the number of completed renewable energy projects in remote communities and off-grid industrial operations in 2020-21. While 21 projects were completed in 2020-21, 93 projects are being supported through the Clean Energy for Rural and Remote Communities Program towards the 2024 target.

	Number of low-carbon recharging and refueling stations under development or completed	At least 1000 electric vehicle charging stations At least 22 natural gas refuelling stations At least 15 hydrogen refuelling stations	March 2024	Electric vehicle charging stations = 526 Natural gas refuelling stations = 12 Hydrogen refuelling stations = 6	Electric vehicle charging stations = 837 Natural gas refuelling stations = 21 Hydrogen refuelling stations = 8	Electric Vehicle charging stations = 1,089 Natural gas refuelling stations = 22 Hydrogen refuelling stations = 15
	Reduction in greenhouse gas emissions resulting from NRCan-funded clean technology demonstrations	Clean Growth Program: Between 0.3 - 0.7 Mt of direct annual GHG reduction, dependent on projects received, success of projects and on-going operation at full production capacity Energy Innovation Program: Between 4.25 Mt of direct annual GHG reductions and a combined total 10-16 Mt of GHG direct and indirect reductions per year	March 2026 (Clean Growth Program) March 2030 (Energy Innovation Program)	Clean Growth Program: Not available ²⁹ Energy Innovation Program: 1.32 Mt/year ³⁰	Clean Growth Program: Not available ³¹ Energy Innovation Program: 1.61 Mt/year ³⁰	Clean Growth Program: Not available ³² Energy Innovation Program: 1.85 Mt/year ³⁰
	Percentage of NRCan's projects on innovation and sustainable development	To be determined in 2020-21 ³³	March 2021	Not available ⁹	Not available ⁹	8.3%

²⁹ This indicator tracks progress on results at the completion of NRCan-funded projects. No projects were completed during 2018-19, as projects were at the early stages of implementation.

³⁰ On track for 2030 target. Projects are just now underway and only represent a small percent of the final target.

³¹ Demonstration projects can only report on GHG emissions once demonstrations are fully operational and emissions have been assessed. Some projects experienced delays in 2019-20 due to the COVID-19 pandemic.

³² Results are only reported once GHG emission reduction estimates have been assessed and validated at project completion and/or during the five-year follow up period. Program duration was extended through 2021-22 due to the COVID-19 pandemic

³³ The target will be determined based on 2020-21 baseline data.

	that engage Indigenous communities, organizations or governments					
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Budgetary financial resources (dollars)

2020–21 Main Estimates	2020–21 Planned spending	2020–21 Total authorities available for use	2020–21 Actual spending (authorities used)	2020–21 Difference (Actual spending minus Planned spending)
610,218,394	610,218,394	870,141,125	560,924,909	(49,293,485)

Human resources (full-time equivalents)

2020–21 Planned full-time equivalents	2020–21 Actual full-time equivalents	2020–21 Difference (Actual full-time equivalents minus Planned full-time equivalents)
1,581	1,650	69

Financial, human resources and performance information for Natural Resources Canada's Program Inventory is available in [GC InfoBase](#)^{cxvi}.



Globally Competitive Natural Resource Sectors

Description: *Advanced and promoted market access, inclusiveness and competitiveness for Canada's natural resource sectors, in support of jobs and economic growth.*

This Core Responsibility supported the advancement of the following **Strategic Priorities:**

- Accelerating the adoption of clean technology and supporting the transition of a low-carbon future
- Improving market access and competitiveness in Canada's resource sectors
- Supporting resource communities and workers in a low-carbon economy
- Advancing reconciliation, building relationships, and sharing economic benefits with Indigenous peoples

This Core Responsibility also contributed to the achievement of the [Mandate Letter Commitments](#) of the Minister of Natural Resources:

- Identify opportunities to support workers and businesses in the natural resource sectors that are seeking to export their goods to global markets. This includes working to construct and complete the twinning of the Trans Mountain Pipeline;
- Work with partners to implement the Canadian Minerals and Metals Plan and to develop strategies to help strengthen the competitiveness and overall health of Canada's forest sector;
- Work to position Canada as a global leader in clean technology, including in critical minerals;
- Work to develop a new national benefits-sharing framework for major resource projects on Indigenous territory;
- Ensure the efficient and effective implementation of the Canadian Energy Regulator Act; and,
- Work with partners to advance legislation to support the future and livelihood of workers and their communities in the transition to a low-carbon global economy.

Canada remains a destination of choice for foreign investors given its expansive natural resources and a sector that continues to drive Canada's economic growth. The natural resources sector experienced challenges in 2020-21, including infrastructure constraints, cyclical downturns in price, and trade uncertainties. Throughout these unprecedented times, NRCan continued to strive to enhance access to new and priority markets for Canada's natural resources, strengthen competitiveness and sustainability, and ensure that all Canadians are engaged in the future of the new and inclusive resource economy.

NRCan worked to enhance access to new and priority markets for Canada's natural resources

Infrastructure is essential for diversifying Canada's export markets and for enhancing the competitiveness of the natural resources sector. As such, NRCan continued to work closely with the [Trans Mountain Expansion Project](#)^{cxvii} federal partner departments in 2020-21 to coordinate engagement with Indigenous groups to support ongoing implementation of the TMX Project. To date, NRCan has engaged with 126 communities, hosted six workshops and 84 bilateral meetings as well as other federally-led TMX specific workshops. The Department has also worked closely with federal departments, provinces, federal and provincial regulators, and the Trans Mountain Corporation (TMC) to coordinate and advance federal regulatory authorizations and permitting for the TMX Project.

Implementation was coordinated for the eight **accommodation measures** and 16 recommendations for the TMX Project. Of these, NRCan led and/or supported the delivery of three accommodation measures: the Terrestrial Studies Initiative, the Terrestrial Cumulative Effects, and the Aquatic Habitat Restoration Fund (AHRF) capacity funding. The Department is committed to streamlining processes and reducing administrative burden for the delivery of funding, in an effort to improve service delivery, advance reconciliation and ensure Indigenous groups are able to access appropriate funding in a timely manner. NRCan also monitors progress on TMX construction, compliance with regulatory conditions, and provides assistance when needed.

In addition, the Department supported the Minister as Crown consultation coordinator in leading Indigenous consultations in order to seek a decision for the \$ 2.3B NOVA Gas Transmission Ltd., (NGTL) 2021 System Expansion Project, the NGTL North Corridor Expansion Project and the NGTL Edson Mainline Expansion Project. NRCan also supported the Keystone XL, Enbridge Line 3 and Enbridge Line 5 projects through submissions to U.S. regulators, and co-led the federal response with Global Affairs Canada to the Michigan threat to close Line 5. Further, NRCan advanced the approval of an export license for Alta Gas LPG Ltd. to complement its existing license and double the volume of propane permitted to be exported from its export terminal. This license helped position Canada as a competitive supplier of propane to international markets, particularly in Asia, where demand for North American propane is increasing.

In ensuring that access to new and priority markets for Canada’s natural resources is enhanced, the number of NRCan international engagements that support the development or expansion of trade and investment in natural resources rose from 42 in 2019-20 to 59 in 2020-21 surpassing the target of at least 40. This increase of engagement, compared to prior years, is likely attributable to the accessibility of virtual events.

Regulatory stability is key to investment planning and decision-making for both foreign and domestic investors, especially in the energy sector where investments are in the hundreds of millions of dollars. The Department continued to support the effective implementation of the *Canadian Energy Regulator Act*^{cxviii} and the *Impact Assessment Act*^{cxix} by securing over \$134M over five years, and an additional \$23M in ongoing funding to the *Canada Energy Regulator*^{cxx} (CER) to stabilize both core operations and an enterprise-wide data and information innovation initiative. These efforts continued work to restore public trust in regulatory processes and impact assessments of natural resources development.

To **strengthen Indigenous participation** in the implementation process of the Acts, NRCan assisted CER in updating the participant Funding Program Terms and Conditions and, through the Indigenous Advisory and Monitoring Committee for TMX, helped facilitate joint learning and information sharing between Indigenous communities, the Government of Canada, and federal regulators.

The Department worked with stakeholders, including the Impact Assessment Agency of Canada (IAAC) and completed a Regional Assessment (RA) of Offshore Oil and Gas Exploratory Drilling East of Newfoundland and Labrador. This assessment included a Ministerial Regulation with robust mitigation measures for protecting Canada’s environment.

Improving **market access**, market integration, **free trade** and Canada’s competitive edge are crucial to ensuring that Canada fully capitalizes on **global opportunities** to sell our commodities and services, and invest abroad. As such, the Department worked with Global Affairs Canada (GAC) and other government departments (OGD) to leverage existing agreements such as the Canada-U.S.-Mexico Agreement, the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and the Canada-EU Comprehensive Economic and Trade Agreement.

In 2020-21, Canada’s share of U.S. and global imports of natural resources was at 24.6% and 1.5% respectively, which is slightly lower than 26.8% for U.S. and 1.5% for global imports in 2019-20, but higher than the target of at least 24.4% for U.S. and at least 1.3% for global imports. Canada’s market share for resource goods in the U.S. dropped in 2020-21, primarily due to pandemic trends (lockdowns and supply chain bottlenecks) resulting in an increase in mining imports from other countries.

Seeking to secure further economic opportunities for Canada’s natural resources sector, NRCan helped advance **modern trade and investment agreements** with new and priority partners (e.g. MERCOSUR, UK, Indonesia and ASEAN). NRCan also sought to further support rules based international trade by actively engaging in monitoring and addressing a number of trade and

investment related matters and engaging with the World Trade Organization (WTO) and its various mechanisms and Committees.

Additionally, NRCan worked to **strengthen international partnerships and collaboration**, seeking to advance shared objectives including increasing energy security and accelerating the low carbon transition. For example, the Department participated in the International Energy Agency (IEA) Clean Energy Transitions Summit, the first IEA ministerial-level meeting entirely dedicated to the clean energy future, and the IEA’s newly-formed Global Commission on People-Centred Energy Transitions. The IEA ministerial was also an opportunity for Canada to influence recommendations in advance of the 2021 United Nations Climate Change Conference (COP26).

NRCan also participated in other international fora including the LNG Producer-Consumer Conference (Japan), Cambridge Energy Research Associates (CERA) Week, the G7 and G20 where **key Canadian positions were negotiated on energy and compromises were brokered among members to achieve consensus communiqués**. With respect to the International Renewable Energy Agency (IRENA), Canada actively participated in five new Collaborative Frameworks and successfully bid to become a member of the IRENA Council for the 2021-22 biennium. NRCan participated in the Berlin Energy Transition Dialogue (Germany) and, the 11th Clean Energy Ministerial where two new areas of work on biofuels and commercial electric vehicles were launched. In 2020-21 NRCan also helped lay the foundation for work under the CEM on a just and inclusive energy transition.

International cooperation and leadership through fora like Mission Innovation (MI) is central to **attaining a global reduction in greenhouse gas (GHG) emissions** and for Canada to meet its GHG emission reduction targets. At the Fifth MI Ministerial in September 2020, NRCan helped shape the forum’s next phase (MI 2.0) to define three sector-specific “Missions” for public-private action and investment in clean energy solutions: green powered future, zero-emissions shipping and clean hydrogen. Also, at the sixth MI Ministerial in June 2021, Canada announced that it had exceeded its pledge under MI to double federal investments in clean energy RD&D from a baseline of \$387M in 2014-15 to \$775M by 2019-20, with a total investment to date of \$786.8M.

As well, the Department participated in dialogues with partners such as the EU, Germany, India, Japan, Mexico and the U.S., pursuing the development and implementation of strategic action plans focused on strengthening bilateral

Canada-US Memorandum of Understanding (MoU) on Energy Cooperation

Collaboration in 2020-21 with the U.S. culminated in a signed MoU between NRCan and the U.S. Department of Energy.

This MoU underlines a joint interest in achieving net-zero emissions by 2050 and a way forward to sustainable and equitable energy transition, clean energy innovation, connectivity and low-carbon transportation. Areas of collaboration will include:

- Strengthening critical energy infrastructure and cybersecurity;
- Supporting smart grids development;
- Enhancing production, distribution and use of clean fuels;
- Creating new and updating existing energy efficiency standards;
- Advancing technology development and deployment for carbon capture, use and storage; and,
- Ongoing research and development on clean energy technologies through the Joint Action Plan on Critical Minerals.

energy cooperation and advancing commercial opportunities. Notably a Memorandum of Understanding (MoU) on energy partnership was signed with Germany and with the U.S. (for U.S. see textbox). Engagements progressed in 2020-21 to implement recommendations of the [Resources of the Future^{cxxi}](#) and [Clean Technology Economic Strategy Tables^{cxiii}](#) which are determining opportunities to improve competitiveness and unlock future growth for Canadians.

Ensured that Canadians are engaged in the future of the new and inclusive resource economy

To support and enable the engagement of Canadians in the future of the new and inclusive resource economy, several steps were taken in 2020-21, including the development of 21 joint products released to Canadians in collaboration with provinces and territories, which is higher than 15 in 2019-20 and exceeds the target of at least 17. Additionally, the percentage of NRCan's projects that support participation of Indigenous communities, organizations or governments in Canada's natural resource economy was at 63.27% in 2020-21.

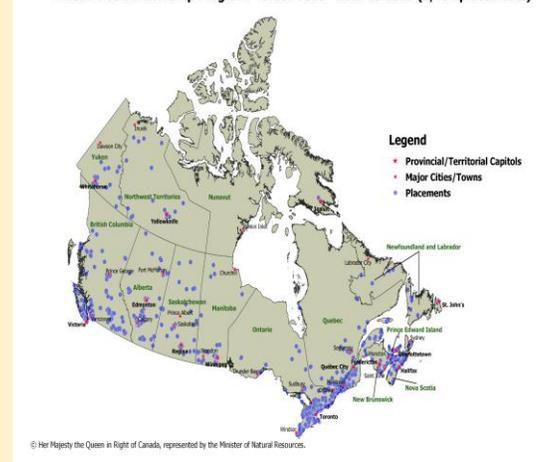
In support of an inclusive and diverse workforce that is skilled in **science, technology, engineering and maths** (STEM), NRCan's Science and Technology Internship Program (see textbox) will help Canada maintain a competitive advantage and attract investments, particularly as it looks to recover from COVID-19 impacts, while demonstrating global leadership in resource sustainability and supporting progress toward its net zero emissions goal by 2050. Informed by the [Task Force on Just Transition for Canadian Coal Power Workers and Communities^{cxiii}](#), the Department continued **supporting workers and communities to foster future skills and create inclusive cultures**. This included hosting three Just Transition/Future Skills Working Group meetings to build connections between departments on policies and programs to strengthen this work as it relates to the energy sector. To further support workers and communities impacted by the phase-out of coal-fired electricity, the \$150M Canada Coal Transition Initiative-Infrastructure Fund was approved in August 2020 and projects are starting to roll out. To date, 53 projects have been approved totalling over \$59M. Additionally, the Department provided, with Other Government

NRCan Invests in Canada's Youths

As part of Canada's Youth Employment and Skills Strategy, NRCan's Science and Technology Internship Program invested over \$15M in 2020-21 to create 683 jobs and training opportunities in STEM fields for youth in the energy, forestry, mining, earth sciences and clean technology sectors.

An inclusive and diverse workforce that is skilled in science, technology, engineering and maths will help Canada maintain a competitive advantage and attract investments, particularly as it looks to recover from COVID-19 impacts, while demonstrating global leadership in resource sustainability and supporting progress toward its net zero emissions goal by 2050.

NRCan's S&T Internship Program - Green Jobs - 2017 to 2021 (2,454 placements)



NRCan Green Job Placements under the Science and Technology Internship Program (2017 – 2021)

Departments (OGDs), \$1.7B in funding to the governments of Alberta, Saskatchewan and British Columbia and repayable funding to Alberta’s Orphan Wells Association for remediation, and a funding of \$320M to support jobs and investments in the offshore oil and gas industry in areas such as safety improvements, maintenance and upgrades of existing offshore infrastructure.

To further increase diversity in STEM fields, NRCan supported Employment and Social Development Canada in its work with the Future Skills Council by providing data and trends analysis on gender and underrepresented groups in the energy sector to inform future policy decisions. Through the Indigenous Natural Resource Partnerships Program (INRP), the Department supported Indigenous communities and organizations in increasing their participation in economic opportunities associated with oil and gas infrastructure development in British Columbia and Alberta. Program design of the renewed INRP included a new preferential assessment criteria to increase the participation of underrepresented groups, including Indigenous women.

Further, the Department established long-term funding agreements with National Indigenous Organizations to support engagement and capacity needs, creating mechanisms for constant, ongoing dialogue, increasing both Indigenous participation in the natural resource sectors and the benefits that will accrue to Indigenous communities from the involvement in economic activities.

NRCan also helped workers in the mining sector by supporting Finance Canada and Innovation, Science, and Economic Development in delivering LEEFF and co-leading the LEEFF Forestry & Mining Sector Tiger Team. This work provided relief to Canadian businesses experiencing **liquidity challenges** due to COVID-19.

In the forest sector, NRCan re-established the Canadian Council of Forest Ministers Innovation Working Group to advance the [Forest Bioeconomy Framework](#).^{cxxiv} Still on advancing the Forest Bioeconomy Framework, the Department launched calls for proposal for the Investments in Forest Industry Transformation Program to bridge the gap between new product development, commercialization and ensure a more competitive and resilient forest sector, the [Indigenous Forestry Initiative](#)^{cxxv} to **support Indigenous-led forest-based economic development**, and the [Expanding Market Opportunities Program](#)^{cxxvi} to develop international and domestic markets for Canadian forest products. To date, NRCan funded 52 new and on-going Indigenous forestry and manufacturing initiatives. Further programs and activities for Canadian Trade Commissioners, Investment Managers, and Heads of Mission stationed in key countries was established to present Canada’s work with Indigenous peoples and communities on resource development projects and the associated implications for Foreign Direct Investment. NRCan also supported several demonstration projects under the [Green Construction through Wood Program](#).^{cxxvii} Of these, 16 projects have funding agreements in place, including eight demonstration projects that have been publicly announced.

In addition, NRCan continued to defend the Canadian forest sector against unwarranted duties on softwood lumber (U.S.), SC Paper (U.S.) and Newsprint (India), by supporting GAC in litigation under NAFTA Chapter 19, CUSMA Chapter 10, and at the World Trade Organization.

NRCan enhanced the competitiveness of Canada’s natural resource sectors

To enhance and enrich the competitiveness of Canada’s natural resource sectors, NRCan undertook 22 initiatives to strengthen the security and resilience of Canada’s critical energy infrastructure in 2020-21.

Moreover, the Department’s economic and investment data were accessed 420,835 times in 2020-21, higher than 379,032 times in 2019-20 and higher than the target of at least 300,000 times quarterly average, all quarters were above the target.

The global push towards a low carbon future is **increasing the demand for critical minerals** that are used in the electric vehicle, clean technology, communications and defence industries. With the abundance of critical minerals in Canada, the Department continues to engage with both local and foreign partners to strengthen Canada’s position as a leading producer and supplier of sustainably mined minerals.

In 2020-21, the Canada-U.S. Joint Action Plan on Critical Minerals Collaboration was established to advance Canadian and American mutual interest in **securing supply chains for critical minerals** needed for manufacturing. Efforts under the Action Plan will also contribute to the diversification of Canada’s market for natural resources, which will help mitigate against uncertainty within the rapidly transforming natural resources sector and address trade barriers.

To position Canada as a **supplier of choice in European value chains for critical minerals**, NRCan joined the European Raw Materials Alliance, and Canada became a full member of the expanded trilateral EU-U.S.-Japan Conference on critical minerals in order to participate in multilateral discussions on critical minerals, align policies and identify investment opportunities.

To improve further the **competitiveness of Canada’s minerals and metals industry**, the Department released the Update to Action Plan 2020 under the [Canadian Minerals and Metals Plan^{cxxviii}](#) at the Energy and Mines Ministers’ Conference, which showcased the progress on each of the six initiatives: develop a pan-Canadian geoscience strategy, increase Indigenous procurement, update the National Orphaned/Abandoned Mines Initiative, collaborate on innovation challenges, create a mineral literacy hub and Canadians of Mining campaign, and help establish a Canada Brand for Mining. During this time, a pilot local procurement checklist was developed with aims to increase Indigenous procurement in the minerals and metals sector; approval for a mineral literacy hub was secured; and work to better understand brand development strategies, approaches, and costs for the Canada Brand for Mining was completed.

In addition, the Department invested \$135M over seven years to renew the [Geo-Mapping for Energy and Minerals Program^{cxxix}](#) and the [Targeted Geoscience Initiative^{cxxx}](#) for deeper exploratory methods to identify new supply sources, enhance sustainable minerals development and land use decision, provide accessible geoscience data and reduce public safety risks associated with resource development and geohazards.

Also through the CMMP, the Department strengthened the mining sector's competitiveness and sustainability through funding research in mining innovation and intellectual property performance, mining and the circular economy, mining and infrastructure in the North and Canada's minerals sector and its carbon competitiveness. To support building a more inclusive mining sector and promoting sustainable mineral development activities in remote communities across Canada, NRCan funded projects in support of greater mineral literacy for youth, Indigenous peoples, and underrepresented groups.

Transitioning to a low carbon future globally is also shifting the focus on a cleaner production and consumption of fossil fuel. For this reason, NRCan continued to work with stakeholders to implement legislative, regulatory and policy changes required under the Canadian Energy Regulator Act for sustainably produced oil and gas. In 2020-21, 14 regulations were amended and 37 policy issues of concern were addressed following engagement with over 100 Indigenous groups, provinces, territories, industry and other stakeholders.

Protecting Canada's **critical infrastructure from cyber attacks** remained a priority to NRCan in 2020-21. To support this priority, the Department contributed to the implementation of the National Cyber Security Strategy and advanced the development of a Canada-U.S. Framework for Collaboration on Cybersecurity in the energy sector to enhance the security and resilience of cross-border energy infrastructure. Collaboration was also strengthened with federal, provincial and territorial partners to support and enhance critical energy infrastructure protection.

In addition, NRCan co-chaired the Energy and Utilities Sector Network (EUSN), a public-private forum, to share intelligence and best practices to **increase the sector's critical infrastructure resilience**. The Department also worked with trusted partners to provide tools and advice to assist the energy sector to protect critical infrastructure, and detect, mitigate and respond to evolving cyber threats. Finally, NRCan administered the Cyber Security and Critical Energy Infrastructure Program to fund R&D projects to address gaps in Industrial Control System cyber security in the energy sector. Projects funded included the development of a model that will help Canadian companies identify, assess and manage cyber risks associated with operational equipment, and supported the development and design of new methods for cyber threat identification using artificial intelligence and machine learning.

Working with partners to protect Canada's marine environment, the Department completed three resource assessment reports for the Marine Conservation Targets in 2020-21, collecting data that will contribute to conservation targets of 25% by 2025. Further, the Department participated in the 2021 Spill Prevention and Response Forum, held by the Canada-Newfoundland and Labrador Offshore Petroleum Board, the Canadian Association of Petroleum Producers (CAPP) and One Ocean, which explored various themes related to **spill prevention and response** and recent changes in the regulatory environment.

The [GEM-GeoNorth Program](#)^{cxxxix} launched a dialogue to co-develop research priorities with 10 participating provinces and territories and nearly 60 Indigenous governance organizations. This dialogue will guide the program in **providing new, public geoscientific data and knowledge**

and maps for northern Canada, focusing on natural resource economic development areas and related infrastructure in the context of a changing climate. Also, the Department participated in the development of the next phase of the Arctic and Northern Policy Framework (ANPF) launched in 2019, focusing on implementation, investment strategies and governance that will further enable a vibrant and sustainable northern region.

For generations, the **forest sector** has served as a source of livelihood for many Canadians, particularly those in remote and rural communities. As part of a second phase of a Bioplastics Challenge to reduce pollution, NRCan helped two small businesses reduce pollution by turning forest-based residue into sustainable domestic plastic material. Further, NRCan engaged stakeholders through the Canadian Council of Forest Ministers (4 meetings held within the last year) to support an inclusive recovery of the forest sector during COVID-19, also launching consultations with New Brunswick’s forest operators to assess forestry operations modernization opportunities with geomatics data and standards.

Further, the Department focused on supporting product and market diversification in Canada’s Forest Sector through the Investments in Forest Industry Transformation (IFIT) Program. The Program provided funding support for 19 innovative projects that will help diversify Canada’s forest sector and advance the growing forest-based bioeconomy.

Gender-based analysis plus

Under this Core Responsibility, GBA Plus helped the **Forest Competitiveness Program** identify gaps and disparities in the representation and participation of diverse groups, including women across the forest sector. In this regard, the program undertook efforts to improve data collection of program recipients by gender and diversity to inform analysis on policies and programs moving forward. The program also implemented ways to improve diversity and inclusion among recipients and their beneficiaries by requiring all applicants and recipients to have a gender and inclusion work plan in place.

The **Indigenous Advisory and Monitoring Committee (IAMC) for TMX and Line 3** facilitated joint learning, information sharing and the collaborative development of advice and programming with Indigenous communities, the Government of Canada, and federal regulators to advance reconciliation and facilitate more inclusive and equitable opportunities and outcomes for Indigenous peoples. In addition to this, the IAMC-TMX is working to address gender-based violence and the Calls for Justice from the Final Report of the National Inquiry into Missing and Murdered Indigenous Women and Girls.

Further, under this core responsibility NRCan finalized a novel HR recruitment pilot program called “STEM the GAP”. STEM the Gap is a pilot program, which **redresses imbalances in gender and Indigenous representation** at NRCan and in the STEM disciplines in general by enabling women and Indigenous people who hold a bachelor’s degree in science or engineering

to re-enter the STEM workforce following an absence of five years or more. As a re-entry program, it provided an opportunity for those who are not eligible for most other recruitment programs. This targeted HR initiative is the first re-entry program in the Government of Canada and received over a hundred applications.

GBA Plus continued to serve as one of the key lenses through which NRCan promotes diversity and inclusion in policies, programs, initiatives and services. In the planning and execution of international engagement activities, GBA Plus considerations are at the forefront of the Department's attention. Efforts are taken to ensure discussions on inclusivity.

Experimentation

NRCan conducted an experiment with the Clean Growth Hub with the objective to increase client engagement on the Hub's quarterly newsletters. The language within the emails sent were tested, with half the emails conveying language with simplicity, and the other half of the emails conveying salience, emotion, urgency, and benefit. The results from this experiment showed that emails with simpler language may be more effective at encouraging recipients to click on a link to read the whole newsletter than salient, relevant, and urgent language. These results should be interpreted with caution because of technical feasibility challenges that affect the validity of the results. NRCan continues to actively explore ways to engage in experimentation within this area of responsibility.

2030 Agenda for Sustainable Development

NRCan's planned activities under this Core Responsibility support Canada's efforts to address the United Nation 2030 Agenda and the achievement of several of the following Sustainable Development Goals (SDG). NRCan, in support of:

SDG 7 - Affordable and Clean Energy, and SDG 9 - Industry, Innovation and

Infrastructure: by providing advice to support decision-making that promotes the safe, secure and sustainable production and transportation of petroleum resources through collaboration with international partners on our critical energy infrastructures.

- engaged in **bilateral dialogues with EU, Germany and Japan** to establish and advance collaboration. Such dialogues ensure mutual understanding of respective objectives and provide foundations to future collaboration or investments to support decarbonisation and energy security objectives.
- launched the Hydrogen Strategy for Canada, that is a call to action for governments at all levels, and the private sector, to seize the economic and environmental opportunities that hydrogen presents across the country, while positioning Canada to be a supplier of choice to the world for clean hydrogen and the technologies that use it.
- provided funding support and advice to the IEA's Clean Energy Transitions Programme to help advance transitions in developing economies, facilitate knowledge sharing and

cooperation for access to clean energy science, technology and innovation, as well as provide guidance on the implementation of enabling environments (policy, regulatory, market) that mobilize more financial resources for clean energy projects.

- contributed to G20 outcomes that had a sustained focus on advancing progress toward achieving SDG7 through information sharing, awareness building, and guidance to member countries.
- worked with the International Renewable Energy Agency (IRENA) to launch a global platform to transition remote communities to renewable energy.
- researched **natural oil dispersion and degradation** pathways in fresh water conditions during spill simulations using various oils including conventional crude, different formulations of diluted bitumen, and finished fuel products, increasing the understanding of how oil and its degraded products evolve in the water with time.
- participated in an international working group that aims to improve the performance of **oil spill behavior** numerical models currently used by the spill response community.
- developed the **Emissions Reductions Fund Program** to help onshore and offshore oil and gas companies investing in green solutions to reduce GHGs and retain jobs in the sector.
- worked with Finance Canada and Newfoundland and Labrador to deliver \$320M to support offshore energy jobs and emissions reductions in areas such as safety improvements, maintenance and upgrades of existing offshore infrastructure.

SDG 8 - Decent Work and Economic Growth:

- worked to **promote access to employment**, as well as **safe and secure working environments for Indigenous employees** and contractors through the Indigenous Advisory and Monitoring Committee (IAMC). This is being done by providing communities affected by the Trans Mountain Expansion Project with access to community capacity development funding, as well by supporting conversations with Indigenous partners, the federal government, regulators and the proponents that address Indigenous priorities and interests in relation to a safe and secure working environment.

SGD 9 - Industry, Innovation and Infrastructure:

- maintained the competitiveness of the natural resource sectors in helping to deliver LEEFF in response to the liquidity challenges of Canadian businesses caused by COVID-19.
- supported Finance Canada and Canada Revenue Agency in extending the timelines for spending the Flow-through Shares capital the mining companies raised by 12 months to protect jobs and safe operations of junior mining exploration and other flow-through share issuers challenged by COVID-19.

SDG 14 - Life Below Water - and SDG 17 - Partnerships for the Goals:

- The Indigenous Advisory and Monitoring Committee (IAMC) for Trans Mountain (TMX) is supporting discussions between Indigenous communities, the federal government and

regulators to advance the collaboration between the government and Indigenous marine communities in safeguarding marine and coastal environments, in particular in relation to an anticipated increase in tanker traffic due to the Trans Mountain Expansion. NRCan's petroleum and mineral resource and economic assessments have been used by other departments to inform marine conservation decisions. Funding to support these activities has been extended to 2025-26 in support of the 2025 marine conservation targets.

- continued to share results of resource assessments with Indigenous peoples and other stakeholders to **inform land use decisions regarding the conservation of marine and coastal areas** through the Marine Conservation Targets Initiative. This is in line with the UN SDG goal of conserving at least 25% of coastal and marine areas by 2025.

SDG 15 - Life on Land:

- helped facilitate the forest sector in **transitioning to a sustainable circular bioeconomy**, which supports sustainable forest management practices, uses resources more efficiently, designs advanced bioproducts to remain in use longer, and recovers materials for new products or for reintegration back into nature.
- through the Indigenous Forestry Initiative (IFI), NRCan supported economic development through increasing Indigenous participation in forestry-related opportunities, businesses, careers and governance.

SDG 15 - Life on Land and SDG 17 - Partnerships for the Goals:

- The Indigenous Advisory and Monitoring Committee (IAMC) for Trans Mountain (TMX) and Line 3 supported the co-development of IAMC Indigenous Monitoring Programs, thereby increasing Indigenous participation in federal regulatory activities. The IAMC Indigenous Monitoring Programs focus on shared interests in the protection of lands and waters, pipeline safety and respect for Indigenous knowledge, values and perspectives.

SDG 17 – Partnerships for the Goals:

NRCan actively participated in and advocated for continued international collaboration via multilateral international events, initiatives and platforms that bring the world together to advance shared sustainable development objectives. For example:

- Canada (led by NRCan) is a founding member of the Clean Energy Ministerial (CEM) and has demonstrated ongoing leadership within that organization to advance a sustainable, green energy transition. In 2020-21, the Department built on Canada's legacy as CEM10 host by:
 - Launching two new work streams: (1) CEM Biofuture Platform Initiative, and (2) Global Commercial Vehicle Drive-to-Zero Campaign.
 - Chairing and moderating a successful pre-event entitled Empowering People in Our Clean Energy Transition, and committing to explore launching a new CEM work stream on this topic.
 - Participating in seven side events, during which NRCan demonstrated ongoing leadership in hydrogen, nuclear, women in energy, electric vehicles, biofuels, the importance of a people-centred transition, and energy management.

- NRCan continued to lead Canada’s support to the Technology Mechanism of the UNFCCC and the Paris Agreement. Collaboration under this mechanism focuses on technology development and transfer towards ensuring that countries have the capacity and tools needed to support implementation of Nationally Determined Contributions.

Additional information about how NRCan activities support United Nations’ 2030 Agenda and Sustainable Development Goals are reflected under the [NRCan 2020-23 Departmental Sustainable Development Strategy](#).^{cxxxii}

Results achieved

Departmental results	Performance indicators	Target	Date to achieve target	2018–19 Actual results	2019–20 Actual results	2020–21 Actual results
Access to new and priority markets for Canada's natural resources is enhanced	Canada's share of U.S. and global imports of natural resources	Canada's market share in the U.S. = At least 24.4% of total U.S. imports (in value) Canada's market share in the world (non-U.S.) = At least 1.3% of the total world imports (in value)	December 2020	24.8% (U.S.) 1.4% (global imports)	26.8% (U.S.) 1.5% (global imports)	24.6% (U.S.) 1.5% (global imports)
	Increase in value of assets abroad owned by Canadian natural resource companies	At least \$220.4B<	December 2020	\$227.7B	\$225B	Not available ³⁴
	Number of NRCan international engagements that support the development or expansion of trade and investment in natural resources	At least 40	March 2021	39	42	59
Canadians are engaged in the future of the new and inclusive resource economy	Number of joint products developed in collaboration with provinces and territories and released to Canadians	At least 17	March 2021	18	15	21

³⁴ Compilation of 2020-21 Industry data is not available before July 2022 and will be reported in subsequent reports.

	Percentage of NRCan's projects that support participation of Indigenous communities, organizations or governments in Canada's natural resource economy	To be determined in 2020-21 ³⁵	March 2021	Not available ⁹	Not available ⁹	63.27%
Enhanced competitiveness of Canada's natural resource sectors	Percentage of resource development project decisions on target as per timelines	To be determined in 2020-21 ³⁶	March 2021	100%	100%	Not available ³⁷
	Number of initiatives enabled by NRCan to strengthen the security and resilience of Canada's critical energy infrastructure	At least 14	March 2021	Not available ³⁸	Not available ³⁸	22
	Number of times NRCan's economic and investment data are accessed	At least 300,000 quarterly average	March 2021	133,147	379,032	420,835

³⁵ The target will be determined based on 2020-21 baseline data.

³⁶ 2020-21 target is not available for this indicator as the Major Projects Management Office Initiative funding sunset in March 2020.

³⁷ Actual results are not available for 2020-21 as the Major Projects Management Office Initiative funding sunset in March 2020.

³⁸ Historical information is not available for all previous years, for this indicator was newly added to Natural Resource Canada's Departmental Results Framework starting in 2020-21.

Budgetary financial resources (dollars)

2020–21 Main Estimates	2020–21 Planned spending	2020–21 Total authorities available for use	2020–21 Actual spending (authorities used)	2020–21 Difference (Actual spending minus Planned spending)
425,892,047	425,892,047	512,965,774	470,921,143	45,029,096

Human resources (full-time equivalents)

2020–21 Planned full-time equivalents	2020–21 Actual full-time equivalents	2020–21 Difference (Actual full-time equivalents minus Planned full-time equivalents)
436	494	58

Financial, human resources and performance information for Natural Resources Canada's Program Inventory is available in [GC InfoBase](#)^{cxxxiii}.

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 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:

- ▶ Acquisition Management Services
- ▶ Communication Services
- ▶ Financial Management Services
- ▶ Human Resources Management Services
- ▶ Information Management Services
- ▶ Information Technology Services
- ▶ Legal Services
- ▶ Material Management Services
- ▶ Management and Oversight Services
- ▶ Real Property Management Services

NRCan's Internal Services aided the Department to advance the Minister's Mandate Letter commitments and Government of Canada priorities. By providing corporate support, NRCan's Internal Services ensured programs were equipped with the tools required to deliver results to Canadians despite the challenges of COVID-19.

Supported Science in an Open and Accountable Government

Progress was made throughout 2020-21 to implement NRCan's [Scientific Integrity Policy](#)^{cxxxiv} (SIP). A process for addressing allegations of breaches to scientific integrity was developed and approved, creating for the first time a specific process for **addressing potential scientific misconduct**. Guidelines for elements like the public communication of science and dissemination of scientific findings were also developed via intradepartmental roundtables. NRCan compares favourably to other science-based departments (SBD) in terms of compliance to SIP policies, and the Department continues to share best practices and learnings in this area.

The Department's innovative approach to the Federal Science Expenditures and Personnel Survey (FSEP) was also recognized by the Office of the Chief Science Advisor, Statistics Canada and other SBDs. By gathering and analyzing program level data, NRCan brought a new level of **insight to science expenditure trends** under FSEP. In 2020-21, NRCan co-led with ECCC on the delivery of the [Open Science and Data Platform](#)^{cxxxv} (OSDP), an innovative online tool providing Canadians with a growing repository of environmental data and scientific publications that help build understanding on the cumulative effects of human activities and natural processes on the environment. OSDP leveraged the [Federal Geospatial Platform](#)^{cxxxvi} and

its public facing site, [Open Maps](#),^{cxxxvii} which brings together open federal, provincial and territorial geospatial data to enable users to explore location-based data on the Government of Canada’s open Government Portal. OSDP’s data provided improved access to provincial and territorial data, historical time series data and maps, surveys, satellite Earth observations and scientific models to enhance dialogue and interaction with knowledge suppliers and users.

To help meet the Government of Canada’s commitments under [the 4th Biennial Open Government Partnership Action Plan \(2018-20\)](#),^{cxxxviii} NRCan supported the [Roadmap for Open Science](#)^{cxxxix} and coordinated the development of the **NRCan Open Science Action Plan**. This Action Plan reflects the Department’s open science culture and presents a phased approach for making NRCan science open and readily available to Canadians. Key objectives include making NRCan’s science articles and publications openly accessible by January 2022 and January 2023, respectively, while respecting privacy, security, ethical considerations and protecting intellectual property. This objective is consistent with the Model Policy on Scientific Integrity and the Government of Canada’s Directive on Open Government. Aligning with the Data Strategy Roadmap for the Federal Public Service, the Action Plan also includes strategies and tools to fully implement the “Findable, Accessible, Interoperable and Reusable” (or “FAIR”) data principles by January 2025.

The Department also promoted Open Government and [Canada’s 2018-2020 National Action Plan on Open Government](#),^{cxl} giving Canadians access to over 4,000 federal, provincial, and territorial government datasets through the Open Government portal. NRCan also collaborated with the Chief Science Advisor of Canada through the Departmental Science Advisors Network to advance cross-cutting Government of Canada science priorities.

Emergency Management and Cybersecurity

In support of the Government national security and emergency management agenda, the Department **contributed to Canada’s National Risk Profile** being developed by Public Safety Canada and provided subject matter expertise and situational awareness at Emergency Management Committees on three major risks in Canada: earthquakes, wildfires and floods.

The Department also invested in a model for Canadian companies to **identify, assess and manage cyber risks** for operational equipment, supported the development and design of new methods for **cyber threat identification** using artificial intelligence and machine learning, collaborated with the U.S. and other international partners to **protect cross-border energy infrastructure**, and advanced cooperation on the **protection of critical energy infrastructure** within and across governments, industry and academia domestically.

Strengthened Federal Science and Renewed NRCan’s Laboratory Infrastructure

To strengthen federal science under Laboratories Canada whole of government initiative. The Laboratories Canada strategy is creating world class research centres across the nation to keep

Canada at the forefront of new discoveries, spark innovative ways of doing research and deliver on research priorities. In partnership with the National Research Council, NRCan launched virtual science events with **TerraCanada** partners to highlight how NRCan and its partners are working to advance the collaborative nature of government science ahead of future co-location and laboratory sharing. NRCan submitted proposals successfully for the Experimentation and Innovation Fund championed by Laboratories Canada. These pilots have the objective of enhancing the IM and IT enabling infrastructure needed to support the future of science and technology. NRCan also finalized the site selection for all TerraCanada locations, completed the master programming and started the detailed functional programming required to better define and enhance collaborations with other federal science partners for the future design of the TerraCanada laboratories.

Workforce and Workplace

With COVID-19 and the resulting pandemic lockdowns in 2020-21, NRCan **transitioned to a remote work environment** for most employees. Operations focussed on ensuring the ongoing effectiveness of regular, day-to-day activities for business continuity. For example, NRCan introduced additional collaboration tools to enable the remote workplace while ensuring proper handling of secure documents through training, awareness and additional documentation. Tools and protocols aligned with public health advice were developed for **safe and gradual re-entry to the workplace for essential workers** to resume in-building and scientific fieldwork while protecting employee health and safety. Regular and frequent communications including live events and all-staff messages provided employees with up-to-date information on key concerns like COVID-19 related leave. Robust measures including the acceleration of the Department digital transformation agenda were also implemented to support remote work and employee wellness.

The results of the **2020 Public Service Employee Survey** demonstrated employees overall felt very supported during the pandemic and that NRCan took adequate steps to support their mental health during the COVID-19 pandemic.

With the passing of Bill C-65, a new regime of **prevention and resolution of harassment and violence in the workplace** came into force on January 1, 2021. The Department reviewed its programs and procedures, and collaborated with partners to develop a new Harassment and Violence Prevention policy. This policy complies with the new regulations, outlining necessary steps to prevent and respond effectively to harassment and violence in the workplace while supporting managers, victims and survivors.

The Department also made significant progress in modernizing and harmonizing NRCan's Research Scientist (SE-RES) career progression process. The changes addressed three areas: simplified governance and evaluation process; balanced evaluation criteria; and considerations

for **equity, diversity and inclusion** by Career Progression Committees. These changes have been included in a revised draft of the NRCan RES Progression Handbook.

To enhance Indigenous participation, the Department supported Inuit employment through the Polar Continental Shelf Program (PCSP) by collaborating with Pilimmaksaivik (Federal Centre of Excellence for Inuit Employment in Nunavut) and Nunavut Arctic College's Trades Program to employ one intern through the Inuit Learning and Development Project. Two trade apprentices were also identified to work at the PCSP's Resolute facility. Both initiatives are ongoing and expected to continue to provide **employment opportunities for Inuit and Northerners** in the future. Further, the Department transitioned the Circle of Nations Learning Centre from a physical space in Ottawa to a virtual forum to provide cultural literacy training and programming to NRCan staff and employees across the public service. During 2020-21, NRCan Executives took part in the "Allyship and Reconciliation Workshop" hosted by the Department's Circle of Nations Learning Centre that focused on providing the tools for creating and maintaining healthy relationships with Indigenous employees, stakeholders, and communities.

Moving towards reconciliation requires us to **develop relationships with Indigenous peoples**, learn how they define this concept, and be flexible and continually adapt as Canadians make progress together. NRCan initiated an internal reflective process, "**Pathways to Reconciliation**," to create a space for employees to work together and change the way the Department operates and collaborates to advance reconciliation meaningfully. Under the guidance and wisdom of the Elder-In-Residence for NRCan's Northern Forestry Centre, NRCan employees convened together through a sharing circle to establish the foundation for a future work plan and identify next steps to **transform the way the Department works**.

In January 2021, NRCan's New Mental Health and Workplace Wellness Strategy 2020-23 was launched to promote supportive mechanisms for building competencies and equip managers in supporting employees' mental health. The Mental Health and Wellness Ambassador's Network was also launched to increase engagement and awareness across sectors and regions, leveraging resources to build and sustain a **psychologically healthy, safe, and inclusive workplace**. The Department also launched a monthly speaker series (e.g., Power Up! / Atouts pour tous!) on maintaining a healthy lifestyle. Experts were invited to speak on subjects such as **grief and bereavement, and post-traumatic stress disorder**. A panel discussion on Managing Mental Health in a Virtual Team was also offered to all employees via the Manager's Community Network.

In 2020-21, NRCan initiated work to make progress on equity, diversity and inclusion by establishing an **Office for Equity, Diversity and Inclusion**, mobilizing a governance structure and resources to make progress on 5 pillars: Data Foundations, NRCan Workforce Representation, Natural Resource Sector Workforce Representation and Competitiveness, Advancing Reconciliation with Indigenous Peoples and Developing a Complete EDI Lens to assist with incorporating EDI principles and practices into all aspects of NRCan's work to create better outcomes for Canadians. Mobilizing employees across sectors and employee networks,

NRCan positioned itself to develop an action plan with clear deliverables to make concrete progress on shifting to a culture of inclusion, becoming more representative of Canada's population and evaluating and updating programs, policies, processes and services. The Department also continued to mobilize to support employee networks in creating a more inclusive and welcoming work environment such as:

- Indigenous Employees Network (IEN);
- Visible Minorities Advisory Council (VMAC);
- Black Employees Advisory Council of NRCan (BEACON);
- PRIDE Network;
- Persons with DisAbilities Network (PWDAN);
- Young Professionals Network (YPN);
- Managers' Community;
- Administrative Professionals Network (APN);
- Gender-Based Analysis Plus (GBA+) Network;
- Policy Analyst Recruitment and Development Program (PARDP) Network; and.
- Innovation, Experimentation and Change Leadership Community.

A new **D&I Talent Acquisition** strategy was approved to support new culturally sensitive staffing approaches to address barriers and leverage NRCan's D&I principle of enabling inclusiveness by design. Targets were set to reduce gaps in employment equity by 50% in 2023 and eliminate all gaps by 2025. These targets will be revisited annually along with the actions in the strategy to allow for course correction.

The Department offered Positive Space training to all employees in both English and French as well as numerous learning sessions and dialogues on anti-racism, unconscious bias, microaggressions and cultural competence. A department-wide virtual Awareness Session was held on GBA Plus and Diversity and Inclusion in which 156 NRCan employees participated. Additionally, the Department initiated the development of an NRCan Plan for Accessibility and mobilized employees to create the NRCan Accessibility Advisory Council.

On **recruitment**, the Department revisited its hiring processes due to advances in technology, global competition for talent, high retirement eligibility and an intergenerational workforce. As a result, NRCan invested in virtual assessment tools such as an applicant tracking system, a virtual interview platform, digital exams, and e-scheduling to automate the recruitment and selection processes. Hiring managers were also supported in their attendance at virtual recruitment fairs and in their use of Teams and Zoom for interviews.

The **Student Hiring Challenge** was launched in the summer of 2020 to encourage managers to continue recruiting students despite COVID 19 by exploring different ways of working. Salary subsidization was available to managers whose students worked on projects that helped NRCan adapt to the post-pandemic workplace. The Student hiring challenge resulted in 17 additional hires.

For overall governance on EDI strategies, talent acquisition, talent management, sponsorship, and employee networks, NRCan engaged the **EDI Advisory Council** to advance meaningful ways to attract and retain new and existing talent reflecting Canada's diversity. A second targeted Student Hiring Initiative was launched to recruit students in the **Federal Student Work Experience Program (FSWEP)**, **Indigenous Summer Experience Program** and the **Employment Opportunities for Students with Disabilities**. Over 85 candidates were interviewed and 24 were hired. This program was well received by managers throughout NRCan who were eager to get summer students on board as quickly as possible.

In addition, a Sponsorship Program was initiated to help equity-seeking group employees³⁹ bridge the gap in reaching the Executive level. The Talent Management initiative will support equity-seeking group employees at all non-executive levels achieve their short-term career objectives. Additionally, support was provided by the EDI HR team to review and provide advice to hiring managers on job advertisements and assessment strategies where the process was targeted to equity-seeking groups.

Experimentation

The Department conducted an **experiment on its Policy Analyst Recruitment and Development Program (PARDP)** to enhance the recruitment of economists. The option for candidates to answer an economist-oriented research and analysis question was included to test if this change would lead to more successful economist candidates. This experiment demonstrated how to change candidates' characteristics without changing the experience criteria or running separate processes.

During the initial PARDP application process of 2019-20, the interrogative wording ("Are you...") was changed to a self reflective wording ("I am./I am not.."), resulting in an increase in response rate for self-identification from 44% to 93% from the previous year with an employee equity (EE)⁴⁰ group. Based on the success of this self-identification experiment the approach was scaled up in 2020-21. This experiment contributes to increasing inclusiveness in the NRCan workforce and the approach can be applied in other similar situations for more accurate self-identification. Additional data on EE provides the Department with an understanding of where gaps exist and enables informed action to increase the representation from particular groups and eliminate such gaps. Results have been shared broadly with other departments, and will inform future recruitment campaigns.

³⁹ Under the Employment Equity Act, the Government is required to strive to meet representation levels, based on estimated workforce availability, for the four employment equity designated groups (equity-seeking groups): women, Aboriginal peoples, persons with disabilities and members of visible minorities.

⁴⁰ Self-identification in the federal public service is a process by which employees signal that they belong to one or more EE groups (Indigenous, women, visible minority, or with a disability). This allows the federal public service to measure if it is representative of the Canadian population and helps understand where the Government of Canada can improve.

Budgetary financial resources (dollars)

2020–21 Main Estimates	2020–21 Planned spending	2020–21 Total authorities available for use	2020–21 Actual spending (authorities used)	2020–21 Difference (Actual spending minus Planned spending)
128,888,904	128,888,904	182,439,634	162,290,295	33,401,391

Human resources (full-time equivalents)

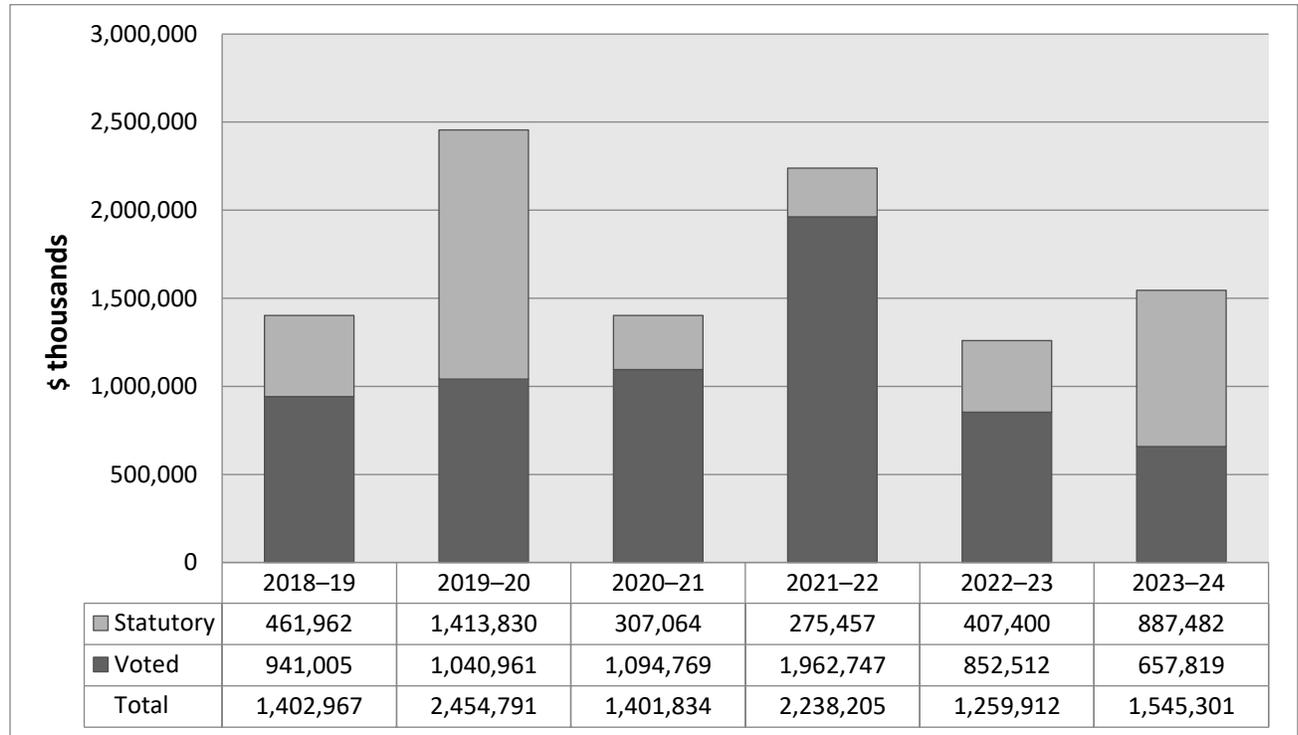
2020–21 Planned full-time equivalents	2020–21 Actual full-time equivalents	2020–21 Difference (Actual full-time equivalents minus Planned full-time equivalents)
1,036	975	(61)

Analysis of trends in spending and human resources

Actual expenditures

Departmental spending trend graph

The following graph presents actual and planned (voted and statutory) spending over time.



Planned spending in Voted authorities from 2021-22 to 2023-24 is declining, mainly as a result of reduced funding profiles for major initiatives and sunseting programs. Sunseting programs could be renewed pending future budgetary decisions. Outcomes of such decisions will be reflected in the Department’s future budget exercises and Estimates documents.

Planned spending in Statutory authorities is increasing from 2021-22 to 2023-24, mainly as a result of the Atlantic Offshore Accounts. Statutory payment obligations under these accords are largely driven by oil and gas prices, production levels and anticipated corporate income taxes related to offshore operations. The planned spending is based on the Department's economic modeling forecasts prepared in the fall of 2020.

Budgetary performance summary for Core Responsibilities and Internal Services (dollars)

Core responsibilities and Internal Services	2020–21 Main Estimates	2020–21 Planned spending	2021–22 Planned spending	2022–23 Planned spending	2020–21 Total authorities available for use	2018–19 Actual spending (authorities used)	2019–20 Actual spending (authorities used)	2020–21 Actual spending (authorities used)
1. Natural Resources Science and Risk Mitigation	214,015,248	214,015,248	252,369,016	216,485,092	236,756,135	208,683,836	207,688,086	207,697,165
2. Innovative and Sustainable Natural Resources Development	610,218,394	610,218,394	1,400,422,672	379,307,710	870,141,125	483,259,791	1,498,877,063	560,924,909
3. Globally Competitive Natural Resource Sectors	425,892,047	425,892,047	435,880,248	515,270,049	512,965,774	561,781,790	595,634,877	470,921,143
Subtotal	1,250,125,689	1,250,125,689	2,088,671,936	1,111,062,851	1,619,863,034	1,253,725,417	2,302,200,026	1,239,543,217
Internal Services	128,888,904	128,888,904	149,532,723	148,848,734	182,439,634	149,241,560	152,590,901	162,290,295
Total	1,379,014,593	1,379,014,593	2,238,204,659	1,259,911,585	1,802,302,668	1,402,966,977	2,454,790,927	1,401,833,512

The budgetary performance summary table above provides for the following:

- Main Estimates for 2020-21;
- Planned Spending for 2020-21, as reported in NRCan's 2020-21 Departmental Plan;
- Planned Spending for 2021-22 to 2022-23, as reported in NRCan's 2021-22 Departmental Plan;
- Total authorities available for use in 2020-21, which reflects the authorities received including in-year funding; and
- Actual expenditures 2018-19 to 2020-21, as reported in the Public Accounts of Canada.

Actual spending for 2019-20 was \$2.45 billion, a year-over-year increase of \$1.05 billion (75%) from 2018-19 actual spending. This increase is mainly due to:

- A one-time statutory endowment to the Federation of Canadian Municipalities for the Green Municipal Fund; and
- Incremental spending for Green Infrastructure (GI) Phase 2 programs such as GI-Emerging Renewable Power, GI-Energy Efficient Buildings, GI-Clean Energy for Rural and Remote Communities, and other programs such as Impact Canada, Electric Vehicle Infrastructure Demonstration, Clean Growth, Indigenous Natural Resource Partnerships Programs, and Forest Innovation Program.

These increases in spending were offset by reduced spending due to the winding down of the ecoENERGY for Renewable Power Program and a decrease in Statutory payments to the Nova Scotia Offshore Revenue Account.

Actual spending for 2020-21 was \$1.40 billion, a year-over-year decrease of \$1.05 billion (42.9%) when compared to 2019-20 actual spending. This decrease to 2020-21 is mainly attributed to:

- A one-time payment made in 2019-20 to the Federation of Canadian Municipalities for the Green Municipal Fund; and reduced spending as a result of the winding down of the ecoENERGY for Renewable Power Program and TMX Consultations, as well as a decrease in the Atlantic Offshore Accounts.

These reductions in spending were offset by an increase in spending as a result of new or incremental funding for various programs such as the Safety Measures in Forest Sector Operations, the Emissions Reduction Fund, the Zero Emission Vehicle Infrastructure Program, the Energy Innovation Program, and the Mountain Pine Beetle Program.

The variance of \$423 million between planned spending of \$1,379 million and total authorities of \$1,802 million in 2020-21 can be attributed to supplementary funding received as per Budget 2019 and Budget / Fall Economic Statement 2020 announcements related to the following initiatives:

- Emissions Reduction Fund, Improving Energy Efficiency in Homes, Forest Sector Competitiveness Program Renewal, Safety Measures in forest Sector operations, Mountain Pine Beetle, Mineral Geoscience Program Renewal, Indigenous Natural Resources Partnership and the Youth Employment Strategy Programs; and
- Operating and Capital Budget Carry Forwards, as well as compensation allocations related to new collective agreements.

Of the \$1,802 million total authorities in 2020-21, NRCan spent \$1,402 million. The \$400 million in unspent funding relates to a number of programs and is attributable in part to the impact of COVID-19, which resulted in further delay in hiring staff, in procurement processes, in establishing contribution agreements and in part due to the complex nature of projects, which resulted in overall delay in their delivery. To mitigate the impact on program delivery, much of the unspent funding was carried forward or reprofiled into future years so that funding will be available when needed to support the projects that contribute to departmental objectives.

Actual human resources

Human resources summary for core responsibilities and Internal Services

Core responsibilities and Internal Services	2018–19 Actual full-time equivalents	2019–20 Actual full-time equivalents	2020–21 Planned full-time equivalents	2020–21 Actual full-time equivalents	2021–22 Planned full-time equivalents	2022–23 Planned full-time equivalents
1. Natural Resources Science and Risk Mitigation	1,223	1,274	1,226	1,206	1,213	1,189
2. Innovative and Sustainable Natural Resources Development	1,581	1,645	1,581	1,650	1,582	1,489
3. Globally Competitive Natural Resource Sectors	407	469	436	494	479	460
Sub-Total	3,211	3,388	3,243	3,350	3,274	3,138
Internal Services	960	993	1,036	975	989	979
Grand Total	4,171	4,381	4,279	4,325	4,263	4,117

For 2018-19 to 2020-21, the figures represent actual FTEs as reported in the Departmental Results Reports. The planned FTEs in all years align with figures identified in the 2020-21 and 2021-22 Departmental Plan.

The increase in FTEs in 2018-19 to 2019-20 is attributable to funding received for new programs such as TMX accommodation measures, Emergency Management Strategy, and incremental funding to support the Program of Energy Research and Development (PERD), Green Infrastructure Phase 2 programs, and Cumulative Effects and Open Science. These increases are offset by a reduction in FTEs for the Energy Innovation Program.

The decrease in FTEs in 2019-20 to 2020-21 is attributable to reduced funding related to the PERD, Geo-Mapping for Energy and Minerals program, and Indigenous Consultations for TMX. These reductions in FTEs are offset by funding for new programs such as the Emissions Reduction Fund, Indigenous Resource Partnership Initiatives and incremental funding to support the TMX Accommodation Measures, Energy Innovation program and Energy Efficiency and Alternative Fuels program.

The increase between 2020-21 planned and actual FTEs is explained by the new funding received through Supplementary Estimates. Further details can be found in the Budgetary Performance Summary section.

The decrease between 2020-21 Actual FTEs and 2022-23 Planned FTEs is mainly explained by the sunsetting of a number of initiatives. As new initiatives are undertaken or renewals approved, plans for future FTE requirements will be adjusted accordingly.

Expenditures by vote

For information on Natural Resources Canada’s organizational voted and statutory expenditures, consult the [Public Accounts of Canada 2020–2021](#).^{cxli}

Government of Canada spending and activities

Information on the alignment of Natural Resources Canada’s spending with the Government of Canada’s spending and activities is available in [GC InfoBase](#).^{cxlii}

Financial statements and financial statements highlights

Financial statements

The NRCan consolidated financial statements (unaudited) for the year ended March 31, 2021, are available on the [Departmental website](#).^{cxliii}

Financial statement 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, 2021 (dollars)

Financial information	2020–21 Planned results*	2020–21 Actual results	2019–20 Actual results	Difference (2020–21 Actual results minus 2020–21 Planned results)	Difference (2020–21 Actual results minus 2019–20 Actual results)
Total expenses	1,419,444,847	1,467,730,454	1,542,109,099	48,285,607	(74,378,645)
Total net revenues	34,003,745	22,625,976	27,606,132	(11,377,769)	(4,980,156)
Net cost of operations before government funding and transfers	1,385,441,102	1,445,104,478	1,514,502,967	59,663,376	(69,398,489)

*The 2020-21 Planned Results are derived from the amounts presented in the [2020-21 Consolidated Future-Oriented Statement of Operations](#) and included in NRCan's 2020-21 Departmental Plan.

Total NRCan expenses of \$1,468 million in 2020-21 consist of \$691 million in transfer payments, mainly related to industry under Innovative and Sustainable Natural Resources Development and to other levels of government under Globally Competitive Natural Resource Sectors, along with \$777 million in other operating expenses. The NRCan total net revenues of \$23 million in 2020-21 resulted from re-spendable revenues such as those from service fees and from the Geomatics Canada Revolving Fund.

The decrease of \$69 million in the net cost of operations before government funding and transfers in 2020-21 is mainly explained by:

- Decrease of \$113 million in transfer payments to *Other levels of Government* largely in the Statutory Offshore Payments program;
- Increase of \$17 million in transfer payments to *Non-Profit organizations*; and
- Offset by an overall increase of \$23 million in the operating expenses.

The increase of \$60M to the net cost of operations before government funding and transfers between the planned and actual results is mainly attributed to additional funding received during the year, such as funding for Innovation and diversification in Canada's Forest sector, for COVID-19 Safety Measures in Forest Sector Operations, for the Youth Employment and Skills Strategy Enhancement, and for the Emissions Reduction fund.

The chart presenting NRCan's actual expenses by type for 2020-21 is available on the [NRCan website](#).^{cxliv}

Condensed Consolidated Statement of Financial Position (unaudited) as of March 31, 2021 (dollars)

Financial information	2020–21	2019–20	Difference (2020–21 minus 2019–20)
Total liabilities	618,946,543	540,602,144	78,344,399
Total net financial assets	514,001,414	440,598,199	73,403,215
Departmental net debt	104,945,129	100,003,945	4,941,184
Total non-financial assets	332,704,978	346,536,830	(13,831,852)
Departmental net financial position	227,759,849	246,532,885	(18,773,036)

Total NRCan liabilities of \$619 million include \$475.9 million in accounts payable and accrued liabilities. The increase of \$78 million is mainly related to an increase in accrued liabilities mainly due to the timing of contribution payments.

Total NRCan net financial assets of \$514 million mainly consist of \$497 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 \$333 million mainly consist of \$330 million of tangible capital assets.

The decrease of \$19 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 decrease in tangible capital assets.

Corporate Information

Organizational profile

Appropriate minister: The Honourable Jonathan Wilkinson, P.C., M.P.

Institutional head: Jean-François Tremblay

Ministerial portfolio:

- [Atomic Energy of Canada Limited](#);^{cxlv}
- [National Energy Board](#);^{cxlvi}
- [Canadian Nuclear Safety Commission](#);^{cxlvii}
- [Canada-Newfoundland and Labrador Offshore Petroleum Board](#);^{cxlviii}
- [Canada-Nova Scotia Offshore Petroleum Board](#); ^{cxlix}
- [Northern Pipeline Agency](#);^{cl} and,
- Energy Supplies Allocation Board (inactive).

Enabling instrument[s]:

- [Department of Natural Resources Act, S.C. 1994, c. 41](#);^{cli}
- [Forestry Act, R.S.C., 1985, c. F-30](#);^{clii}
- [Resources and Technical Surveys Act, R.S.C., 1985, c. R-7](#);^{cliii}
- [Energy Efficiency Act, S.C. 1992, c. 36](#);^{cliv}
- [Extractive Sector Transparency Measure Act, S.C. 2014, s.376](#);^{clv} and,
- [Explosives Act, R.S.C., 1985, c. E-17](#).^{clvi}

Year of incorporation / commencement: 1994

Raison d'être, mandate and role: who we are and what we do

“Raison d'être, mandate and role: who we are and what we do” is available on [Natural Resources Canada's website](#).^{clvii}

For more information on the department's organizational mandate letter commitments, see the [Minister's mandate letter](#).^{clviii}

Operating context

Information on the operating context is available on [Natural Resources Canada's website](#).^{clix}

Reporting framework

Natural Resources Canada’s Departmental Results Framework and Program Inventory of record for 2020–21 are shown below.

Natural Resources Canada’s Departmental Results Framework 2020-21			
NRCan CORE RESPONSIBILITIES			
<p>Natural Resource Science and Risk Mitigation</p> <p>Lead foundational science and share expertise for managing Canada’s natural resources, reducing the impacts of climate change and mitigating risks from natural disasters and explosives.</p>	<p>Innovative and Sustainable Natural Resources Development</p> <p>Lead the transformation to a low-carbon economy by improving the environmental performance of Canada’s natural resource sectors through innovation and sustainable development and use.</p>	<p>Globally Competitive Natural Resource Sectors</p> <p>Advance and promote market access, inclusiveness and competitiveness for Canada’s natural resource sectors, in support of jobs and economic growth.*</p>	<p>Internal Services</p>
DEPARTMENTAL RESULTS AND INDICATORS <small>What is the department trying to achieve?</small>			
<p>Canadians have access to cutting-edge research to inform decisions on the management of natural resources</p> <ul style="list-style-type: none"> Number of times scientific products related to natural resources are accessed by Canadians Percentage of environmental impact assessments demonstrating use of scientific and technical advice provided by NRCan Number of times stakeholders acknowledge using NRCan’s scientific and technical products in making their decisions Number of training and development initiatives that enable NRCan to incorporate Indigenous knowledge in conjunction with NRCan science Percentage of annual updates to make NRCan foundation geospatial data current <p>Communities and officials have the tools to safeguard Canadians from natural hazards and explosives</p> <ul style="list-style-type: none"> Percentage of hazardous natural events within Canada for which a notification was issued in a timely manner Percentage of emergency geomatics services provided to Canadians in a timely manner to assist during floods Percentage uptime of the Canadian Wildland Fire Information System during the wildfire season Percentage of inspections of explosives rated safe <p>Communities and industries are adapting to climate change</p> <ul style="list-style-type: none"> Number of times NRCan products and expertise on adaptation are accessed by Canadians Percentage of Canadian communities and industries that have taken steps to adapt to climate change 	<p>Natural resource sectors are innovative</p> <ul style="list-style-type: none"> Percentage of NRCan-funded innovation projects that result in new intellectual property, standards or regulations Percentage of innovative forest products and decision tools informed by NRCan research that contribute to the environmental sustainability of Canada’s forests Percentage of NRCan-funded clean energy innovation projects advancing along the innovation scale Percentage of innovative mining technologies developed by NRCan that move towards being ready for commercial use <p>Clean technologies and energy efficiencies enhance economic performance</p> <ul style="list-style-type: none"> Percentage of NRCan-funded clean technology demonstration projects achieving their economic goals Ratio of partner investment to government spending in NRCan-funded energy innovation projects Total annual energy savings resulting from adoption of energy efficiency codes, standards and practices <p>Canada’s natural resources are sustainable</p> <ul style="list-style-type: none"> Percentage of Canadian electricity generated from non-GHG emitting sources Number of renewable energy projects in remote communities and off-grid industrial operations Amount of wood harvested compared to the sustainable supply Number of low-carbon recharging and refueling stations under development or completed Reduction in greenhouse gas emissions resulting from NRCan-funded clean technology demonstrations Percentage of NRCan’s projects on innovation and sustainable development that engage Indigenous communities, organizations or governments 	<p>Access to new and priority markets for Canada’s natural resources is enhanced</p> <ul style="list-style-type: none"> Canada’s share of U.S. and global imports of natural resources Increase in value of assets abroad owned by Canadian natural resource companies Number of NRCan international engagements that support the development or expansion of trade and investment in natural resources <p>Canadians are engaged in the future of the new and inclusive resource economy</p> <ul style="list-style-type: none"> Number of joint products developed in collaboration with provinces and territories and released to Canadians Percentage of NRCan’s projects that support participation of Indigenous communities, organizations or governments in Canada’s natural resource economy <p>Enhanced competitiveness of Canada’s natural resource sectors</p> <ul style="list-style-type: none"> Percentage of resource development project decisions on target as per timelines Number of initiatives enabled by NRCan to strengthen the cyber security and resilience of Canada’s critical energy infrastructure Number of times NRCan’s economic and investment data are accessed 	
PROGRAM INVENTORY <small>Covers 100 percent of the department’s activities and resources</small>			
<p>Canadian Geodetic Survey; Spatially Enabling Canada Geological Knowledge for Canada’s Onshore and Offshore Land Core Geospatial Data Canada-US International Boundary Treaty Canada Lands Survey System Geoscience for Sustainable Development of Natural Resources Pest Risk Management Forest Climate Change Climate Change Adaptation Explosives Safety and Security Geoscience to Keep Canada Safe Wildfire Risk Management Polar Continental Shelf program</p>	<p>Clean Energy Technology Policy, Research and Engagement Clean Growth in Natural Resource Sectors Energy Innovation Program Green Mining Innovation Fibre Solutions Sustainable Forest Management Cumulative Effects Lower Carbon Transportation Electricity Resources Energy Efficiency Energy and Climate Change Policy Innovative Geospatial Solutions</p>	<p>Forest Sector Competitiveness Provision of Federal Leadership in the Minerals and Metals Sector Energy Safety and Security, and Petroleum Resources International Energy Engagement Statutory Offshore Payments Natural Resources Canada’s Indigenous Partnerships Office – West Major Projects Management Office Initiative Science and Technology Internship Program</p> <p>* Also includes statutory payments for offshore petroleum.</p>	<p>Management & Oversight Communications Legal Services Human Resources Financial Management Information Management Information Technology Real Property (Domestic) Material Management Acquisition Management</p>

Supporting information on the program inventory

Financial, human resources and performance information for Natural Resources Canada's Program Inventory is available in [GC InfoBase](#).^{clx}

Supplementary information tables

The following supplementary information tables are available on Natural Resources Canada's website:

- ▶ [Details on transfer payment programs](#)
- ▶ [Gender-based analysis plus](#)
- ▶ [Response to parliamentary committees and external audits](#)
- ▶ [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](#).^{clxi} This report also provides detailed background information on tax expenditures, including descriptions, objectives, historical information and references to related federal spending programs as well as evaluations and GBA Plus of tax expenditures.

Organizational contact information

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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.

core responsibility (*responsabilité essentielle*)

An enduring function or role performed by a department. The intentions of the department with respect to a core responsibility are reflected in one or more related departmental results that the department seeks to contribute to or influence.

Departmental Plan (*plan ministériel*)

A report on the plans and expected performance of an appropriated department over a 3-year period. Departmental Plans are usually tabled in Parliament each spring.

departmental priority (*priorité*)

A plan or project that a department 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 departmental results.

departmental result (*résultat ministériel*)

A consequence or outcome that a department seeks to achieve. A departmental result is often outside departments' immediate control, but it should be influenced by program-level outcomes.

departmental result indicator (*indicateur de résultat ministériel*)

A quantitative measure of progress on a departmental result.

departmental results framework (*cadre ministériel des résultats*)

A framework that connects the department's core responsibilities to its departmental results and departmental result indicators.

Departmental Results Report (*rapport sur les résultats ministériels*)

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

experimentation (*expérimentation*)

The conducting of activities that seek to first explore, then test and compare the effects and impacts of policies and interventions in order to inform evidence-based decision-making, and improve outcomes for Canadians, by learning what works, for whom and in what circumstances.

Experimentation is related to, but distinct from innovation (the trying of new things), because it involves a rigorous comparison of results. For example, using a new website to communicate with Canadians can be an innovation; systematically testing the new website against existing outreach tools or an old website to see which one leads to more engagement, is experimentation.

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. For a particular position, the full-time equivalent figure is the ratio of number of hours the person actually works divided by the standard number of hours set out in the person's collective agreement.

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

An analytical process used to assess how diverse groups of women, men and gender-diverse people experience policies, programs and services based on multiple factors including race ethnicity, religion, age, and mental or physical disability.

government-wide priorities (*priorités pangouvernementales*)

For the purpose of the 2019–20 Departmental Results Report, those high-level themes outlining the government's agenda in the 2019 Speech from the Throne, namely: Fighting climate change; Strengthening the Middle Class; Walking the road of reconciliation; Keeping Canadians safe and healthy; and Positioning Canada for success in an uncertain world.

horizontal initiative (*initiative horizontale*)

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

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 to the expected result.

planned spending (*dépenses prévues*)

For Departmental Plans and Departmental Results Reports, planned spending refers to those amounts presented in 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.

program (*programme*)

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 inventory (*répertoire des programmes*)

Identifies all the department's programs and describes how resources are organized to contribute to the department's core responsibilities and results.

result (*résultat*)

A 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.

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

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