Natural Resources Canada

2021–22

Departmental Plan

Originally signed by

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From the Minister

Canada's ability to meet the challenges of our post-COVID-19 recovery — and seize its opportunities — will depend in large measure on the strength and imagination of our country's natural resource industries. They are the ones that kept our lights on during the difficult past year. They helped support essential services and produced critical supplies. We will need them even more as we build back from this unprecedented time: to drive sustainable growth, create good jobs and ensure a prosperous future — for all Canadians, in every region of the country.

This Departmental Plan for Natural Resources Canada (NRCan) reflects that hopeful perspective. It underscores Canada's natural advantage to lead the global transition to a low-carbon future. And it confirms the central role our resource sectors will play in our government's efforts to transform our economy, advance reconciliation with Indigenous peoples and achieve net-zero emissions by 2050.

This Report identifies a number of specific departmental priorities that will help us make progress on those goals in 2021–22 and in the years that follow. They include:

- Planting two billion trees as a nature-based solution to fight climate change as we also adopt adaptation strategies and invest in measures to reduce the impact of climate-related disasters such as floods and wildfires;
- Promoting zero-emission vehicles, including an expansion of the necessary charging and fuelling stations from coast to coast;
- Implementing early actions from the Hydrogen Strategy for Canada to accelerate domestic production, become a global supplier of choice and extend our nation's edge with fuel cell technologies;
- Working toward the safe and responsible development and deployment of small modular reactors (SMR) as a new, non-emitting technology to produce reliable electricity;
- Helping Canadians adopt energy efficiency measures to make their homes more comfortable to live in and more affordable to power;
- Assisting remote, rural and Indigenous communities to move off diesel; and
- Administering the Emissions Reduction Fund (ERF) to help oil and gas producers lower their GHG emissions, retain jobs and strengthen their competitiveness in a low-carbon economy.

All of these measures are in addition to, and build on, NRCan's existing efforts to support greener, more innovative and inclusive resource industries — everything from the Canadian Mining and Minerals Plan and the Forest Bioeconomy Framework to the Impact Canada challenges aimed at turning Canadian ingenuity into tomorrow's breakthroughs. Often, these initiatives overlap resource industries. That is the case with NRCan's ongoing efforts to develop strong value chains and secure global supplies of the critical minerals needed to build a clean-energy future — including solar panels, wind turbines and a new domestic industry for the next generation of batteries.

That is why NRCan will also help ensure Canada has the skilled and diverse workforce to succeed in this new resource economy and deliver on the government's strengthened Climate Plan. For example, NRCan will oversee initiatives such as the Science and Technology Internship (STIP) program — with a particular emphasis on attracting under-represented youth and providing valuable work experience.

Similarly, NRCan will continue to assume a leadership role in the government's priority relationship with First Nations, Inuit and Métis peoples. Measures will include helping to implement the United Nations Declaration on the Rights of Indigenous Peoples; continuing to meet the Crown's duty to consult; incorporating Indigenous Knowledge to strengthen our science; and supporting more Indigenous-led projects to develop our resources.

NRCan will also continue to advance diversity and inclusion in its own decision-making processes across the Department. This includes ensuring gender equality, as well as racial equality, through the integration of Gender-based Analysis Plus (GBA+) in existing policies, programs and initiatives and the development of new ones.

As this Departmental Plan makes clear, Canada's resource industries are more than a proud part of our nation's past — they are a key piece to our promising future.

The Honourable Seamus O'Regan Jr., P.C., M.P.
Minister of Natural Resources

Plans at a glance

Canada's natural resource sectors are facing unprecedented times moving into 2021-22. Natural resource sectors experienced the initial shock of COVID-19 in early 2020, with operations declared as an essential service to help maintain a reliable critical infrastructure during the global pandemic.[1] Our natural resource sectors showed strong signs of recovery by late 2020, with our forestry and mining sectors returning to pre-COVID levels of activity and the clean technology industry stabilizing. For the oil and gas sector, this recovery has been slowed by the double impact of unparalleled low prices for their commodities and a decline in demand due to the pandemic.

Considering that Canada's natural resources accounted for 17% of our gross domestic product, 48% of total Canadian goods exported and over 1.9 million direct and indirect jobs in 2019, building a more competitive, efficient, resilient and inclusive natural resources sector remains critical as Canada recovers from COVID impacts. This will be supported by adopting circular economy principles to ensure natural resources continue to be innovative and developed sustainably.

Contributing to a Stronger and More Resilient Canada

As announced in the 2020 Speech from the Throne and Fall Economic Statement, the Government will support green recovery and climate change adaptation and mitigation to help build a strong and more resilient Canada, including through actions led by NRCan such as:

- Planting two billion trees as a nature-based climate change solution;
- Supporting energy efficiency through home energy retrofits;
- Accelerating Zero Emissions Vehicles (ZEV) and related infrastructure;
- Creating green jobs;
- Supporting strategic interties;
- Launching the Small Modular Reactor Action Plan;
- Working and investing in renewables, clean fuels, and hydrogen;
- Advancing critical minerals for batteries and clean technologies; and,
- Supporting development of climate adaptation and resilience strategies.

In addition to health and economic impacts of the global pandemic, climate change continues to be one of the biggest challenges for 2021-22 and beyond. The Government of Canada is committed to developing a more sustainable, resilient economy that creates jobs while accelerating climate action for a more sustainable future. Canada's new, strengthened climate plan, **A Healthy Environment and a Healthy Economy**,[2] outlines how we will meet our economic and environmental goals. Natural Resources Canada (NRCan) is a partner department with Environment and Climate Change Canada in helping the Government deliver on this bold plan, including by supporting the sustainability, inclusivity and prosperity of Canada's natural resource sectors.

As a science-based department recognized globally for its world-class research, expertise and evidence-based policy, NRCan will be at the forefront of making Canada cleaner, greener and stronger while helping it to reach net-zero greenhouse gas (GHG) emissions by 2050. NRCan also collaborates with

[1] See Public Safety Canada's Guidance on Essential Services and Functions in Canada During the COVID-19 Pandemic for more details: https://www.publicsafety.gc.ca/cnt/ntnl-scrt/crtcl-nfrstrctr/esf-sfe-en.aspx
[2] See text box in Core Responsibility 2 for more details. Canada's strengthened climate plan is available at https://www.canada.ca/content/dam/eccc/documents/pdf/climate-change/climate-plan/healthy_environment_healthy_economy_plan.pdf

Indigenous peoples and works closely with both domestic and international partners. The Department will support the Government of Canada's green economic recovery and climate action priorities, and the Minister of Natural Resources Canada's Mandate Letters (**December 13, 2019**,[i] and **January 15, 2021**[ii]) through three core responsibilities:

- Natural Resource Science and Risk Mitigation;
- Innovative and Sustainable Natural Resources Development; and,
- Globally Competitive Natural Resource Sectors.

NRCan aims to consider diversity and inclusion in its decision-making processes across all three core responsibilities, advancing the integration of **Gender-based analysis plus** (GBA+)[iii] in the development of new and ongoing policies, programs and initiatives for all diverse populations of Canadians. This contributes to the Government of Canada's vision for achieving greater equality and equity, where everybody benefits and prospers.

Our focus for 2021-22

In 2021-22, NRCan will advance five strategic priorities that will assist in Canada's economic recovery and climate action.

i) Accelerate development and adoption of clean technology and transition to a net-zero future in a post-pandemic economic recovery

Canada's natural resource sectors play a critical role in strengthening Canada's economy by creating green jobs, helping to advance our development and adoption of clean technology and making the transition to a net-zero future. By investing an additional $150M (over 3 years) in the **Zero Emission Vehicle Infrastructure Program** (ZEVIP)[iv] to ensure charging and refuelling stations are more easily available, NRCan will help address one of the key barriers in adopting zero-emissions transportation solutions.

As outlined in **Canada's strengthened climate plan**,[v] the Government plans to invest in clean fuels, including hydrogen which will play an essential role in exceeding our 2030 climate objectives, and putting Canada on a path towards net zero emissions by 2050. Therefore, in 2021-22, NRCan will deliver new investments to the growth in Canada's clean fuels market, including supporting early actions outlined in the **Hydrogen Strategy for Canada**.[vi] The Hydrogen Strategy is underpinned by a federal investment of $1.5B in a **Low-carbon and Zero-emissions Fuels Fund** aimed at increasing the production and use of low-carbon fuels, including hydrogen.

Globally, there is high demand for the critical minerals required for clean technologies and the net-zero economy. NRCan's '**mines to mobility**' approach will leverage Canada's competitive advantage in responsible and sustainable mining to develop Canadian battery and critical mineral supply chains

required for domestic and global electric vehicle markets, advanced manufacturing and the wider clean energy transition.

The Government of Canada's **Home Energy Retrofit Program** will help Canadians make their homes more energy efficient, support Canada's environmental objectives and create good, local middle-class jobs while making homes more comfortable and affordable to maintain. By investing $2.6B over 7 years, this program will encourage Canadians to lower their carbon footprints and help Canada meet its commitments to achieve net-zero emissions by 2050.

As well, Canada will invest an additional $964M over 4 years to advance smart renewable energy and grid modernization projects to enable the clean grid of the future. This includes support to increase renewable power generation capacity such as wind and solar, and advance the electrification of the broader economy and help jurisdictions minimize the role of fossil fuel-fired electricity generation in their electricity systems.

Canada's **Small Modular Reactor (SMR) Action Plan**[vii] was launched on December 18, 2020 with more than 100 organizations, including provincial and territorial governments, Indigenous peoples, utilities, industry, innovators, academia, and civil society. The SMR Action Plan is Canada's plan for the development, demonstration and deployment of SMRs to reduce emissions, decarbonize heavy industry and spur economic development. Canada's SMR Action Plan was also highlighted in Canada's strengthened climate plan, **A Healthy Environment and a Healthy Economy**.[viii]

NRCan will work towards the concrete commitments made in the Government of Canada chapter of the SMR Action Plan to accelerate innovation; ensure robust policy, regulatory, and legislative frameworks are in place to protect people and the environment; participate in meaningful engagement with Indigenous communities and Canadians; and foster global collaboration by developing international partnerships and opening up new markets.

To build a climate-resilient economy for the long-term and position Canada as a global leader in clean technology research, development and demonstration (RD&D), NRCan will continue to build on initiatives like the **Energy Innovation Program** (EIP)[ix] and the **Clean Growth Program** (CGP)[x] to drive innovation and reduce environmental impacts.

The Department will also lead in renewing the **Clean Technology Data Strategy**[xi] to produce and disseminate essential environmental and clean technology sector data. This information helps identify gaps, explain how the sector contributes to economic and environmental goals, and track progress towards policy and program clean technology objectives.

The **Emissions Reduction Fund** (ERF)[xii] will provide funding, primarily in the form of repayable contributions, to eligible Canadian onshore (up to $675M) and offshore ($75M) oil and gas companies and Canadian innovators to invest in green solutions to reduce greenhouse gas (GHG) emissions and retain jobs in the sector.

To help clean up **orphan and inactive oil and gas wells**, $1.72B will also be invested in Alberta, British Columbia and Saskatchewan and Alberta's **Orphan Well Association**,[xiii] providing the opportunity to create thousands of jobs in the oil field service sector.

In 2021-22, NRCan will continue to work with provinces and territories on key intertie projects ($25M) with assistance from the **Canada Infrastructure Bank** (CIB)[xiv] to help build new electricity transmission infrastructure.

ii) Improve market access and competitiveness for Canada's resource sectors

In order to expand and thrive, Canada's natural resource sectors must continue to export their products and services to existing and new global markets while investing in collaborative ventures with international partners. NRCan will assist natural resource sectors in this goal by helping them improve their efficiency, adopt clean technologies, develop natural resources sustainably, and transform traditional industries by helping them develop new innovative technologies and products that support the domestic and global transition to a low-carbon, climate change resilient future.

Advancing Environmental, Social, and Governance (ESG) Performance of Canada's Natural Resource Sector

NRCan recognizes the importance of ESG performance and disclosure by Canada's natural resources sector to support economic and social outcomes and attract needed investment. The Department aims to deepen its engagement and analysis on ESG issues in the coming year, contributing to strong ESG performance and verifiable disclosure that will mean increased competitiveness for Canadian firms. The Department's work will focus on:

- Providing leadership on ESG issues and strategies for the natural resources sector;
- Influencing corporations that NRCan works with; and,
- Building sustainability and inclusion in NRCan's own operations.

Canada's minerals sector is an important global supplier of minerals and metals that are essential to Canada's modern economies and emerging technologies, including critical minerals that enable a swift transition to a low-carbon economy. For example, Canada is a key producer of minerals including aluminum, cobalt, nickel, copper, lithium and graphite required for global deployment of clean technologies such as batteries, solar panels and wind turbines. In 2021-22, NRCan will help the development and adjustment of Canada's mining and clean technologies industries to stimulate green economic growth in **critical mineral** development and supply chains as well as to advance battery innovation and performance. This will strengthen Canada's industrial capacity to produce the required inputs demanded by manufacturing firms, secure new investments and allow Canada to capture economic growth from increased global clean technology production and adoption.

With the transition to the new U.S. administration, through a 'mines to mobility' approach, NRCan will continue to support potential collaboration with the U.S. through the **Joint Action Plan on Critical Minerals**,[xv] which aims to attract investment in Canadian exploration and mining projects, as well as spur job creation and economic growth in various downstream industries.

The Department will also continue to defend Canadians, communities, workers and industry from unfair trade disputes, help increase Canada's presence in national and international wood markets, and

promote Canadian wood in non-traditional construction through the **Expanding Markets Opportunities Program**.[xvi]

In 2021-22, the Department will work to advance major infrastructure projects, such as the **Trans Mountain Expansion Project** (TMX)[xvii] to increase access to new and priority markets for Canada's natural resources.

iii) Advance reconciliation, build relationships and share economic benefits with Indigenous peoples

NRCan supports the Government of Canada's commitment to advancing reconciliation, strengthening partnerships, and pursuing mutually-beneficial social and economic opportunities with Indigenous peoples. NRCan will explore new ways to meaningfully collaborate with and support the participation of Indigenous peoples, communities, and businesses in the natural resources sector, including taking steps to further implement the **United Nations Declaration of the Rights of Indigenous Peoples**.[xviii] Continued contribution to the whole-of-government response to the **National Inquiry into Missing and Murdered Indigenous Women and Girls' Final Report** will also be important moving forward, as NRCan focused on departmental inclusion and empowerment program actions for Indigenous women, and 2SLGBTQQIA people, and on engaging Indigenous communities and industry on further steps. The Department's actions for an inclusive, green economic recovery and its commitment to amplifying Indigenous voices, Knowledge, and expertise within the natural resource sectors and its science will contribute to strengthen our partnership with Indigenous peoples and advance our knowledge base.

NRCan will also continue to help Northern and Indigenous communities in their transitions to a low-carbon future through such initiatives as the **Clean Energy for Rural and Remote Communities (CERRC) Program**[xix] to help these communities move away from diesel to clean, renewable energy, create green jobs and improve energy efficiency and security. To this effect, the Government has announced an additional $300M over 5 years to transitioning diesel-reliant rural, remote and Indigenous communities onto clean energy, and to engage with Indigenous communities on ensuring this funding is delivered in a streamlined fashion.

In 2021-22, NRCan will expand the **Indigenous Forestry Initiative** (IFI)[xx] by investing $5.6M in more projects and initiatives for Indigenous businesses and operators to take advantage of opportunities in the forest bioeconomy. These investments will also support Indigenous communities, women and young people as they recover from the economic impacts of the global pandemic on the Indigenous forest sector.

Through the **Indigenous Advisory and Monitoring Committee**,[xxi] the Department will continue to foster meaningful dialogue and provide monitoring and oversight of the TMX and Line 3 pipelines to ensure safety and protection of environmental and Indigenous interests with respect to these two major resource projects.

iv) Promote a diverse and inclusive workforce while supporting resource communities

In the transition to strengthen diversity and inclusion in the natural resource sectors and equip workers and communities with the appropriate skills, tools, experience and knowledge, NRCan will help in the delivery of employment and skills programs focused on green jobs, including those aimed at youth employment. In particular, the Department will continue to support workers through its **Science and Technology Internship (STIP) Program**,[xxii] under the Government's **Youth Employment and Skills Strategy** (YESS),[xxiii] to help young Canadians of diverse backgrounds gain experience in the natural resource sectors by assisting employers. The Department will also work with international partners to promote growth and transitions that focus on people and communities.

v) Protect Canadians from the impacts of natural and human-induced hazards and support climate action

To help safeguard Canadians and advance Canada's green and inclusive recovery efforts, NRCan will conduct world-class research that helps monitor and anticipate hazards, including earthquakes, tsunamis, volcanoes, landslides, flooding, and wildfires, as well as risks from resource operations, explosives, critical infrastructure and cyber threats, and help Canadians respond to climate change through adaptation and mitigation.

Through an investment of $3.16B over 10 years, NRCan will partner in 2021-22 with provinces, territories, non-government organizations, Indigenous communities, municipalities, private landowners, and others, to plant **two billion trees**[xxiv] as a nature-based solution to fight climate change by enhancing the natural ability of ecosystems, such as forests, to sequester and store carbon.

NRCan will also prioritize initiatives like the **Building Regional Adaptation Capacity and Expertise (BRACE) Program**[xxv] to increase the capacity of Canadians to use adaptation tools that will help protect against hazards caused by climate change.

In 2021-22, NRCan will apply expertise in geospatial data and services to provide near-real time mapping information that enables responses to natural disasters and helps monitor the spread of COVID-19. NRCan will also collaborate with stakeholders to deliver flood mapping guidelines to support **flood hazard mapping**[xxvi] in Canada.

NRCan will continue its federal science leadership, with the provinces and territories, on the implementation of the **Canadian Wildland Fire Strategy**[xxvii] and on efforts to protect Canada's forests from pests like the **mountain pine beetle**[xxviii] and invasive species such as the **emerald ash borer**[xxix] in rural and urban forests.

To help Canadians make more informed decisions on the management of natural resources, NRCan will provide access to its data and scientific publications through initiatives such as the **Open Science and**

Data Platform, and lead the development of an **Open Science Action Plan** to make the Department's science more readily available.

Canada's natural resource sectors are increasingly technology-intensive, where data-driven digital innovation is now critical in reducing costs, creating well-paying jobs for a diverse workforce, improving productivity, lessening environmental impacts, and enhancing safety. Digitization is proving to be an efficient and a cost effective way of tracking our transition to a low-carbon future. Through the **Digital Accelerator Initiative**,[xxx] the Department will explore machine learning AI techniques to accelerate capabilities in creating geospatial data layers for use in flood mapping, change detection, landscape monitoring and predictive modelling. The Department will also use quantum technology and big data tools to enhance automation, and increase energy efficiency in the natural resource sectors.

For more information on the Natural Resources Canada's plans, priorities and planned results, see the "Core responsibilities: planned results and resources, and key risks" section of this report

Core responsibilities: planned results and resources, and key risks

Natural Resource Science and Risk Mitigation

Description

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.

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

- Protect Canadians from the impacts of natural and human-induced hazards and support climate action;
- Accelerate development and adoption of clean technology and transition to a net-zero future in a post-pandemic economic recovery; and,
- Advance reconciliation, build relationships and share economic benefits with Indigenous peoples.

This Core Responsibility also contributes 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;
- 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;
- Develop a national climate change adaptation strategy and invest in reducing the impact of climate-related disasters, such as floods and wildfires, to make communities safer and more resilient; and,
- Support the efforts of foresters to reduce emissions and build resilience as key partners in the fight against climate change.

Planning highlights

As a science-based department, NRCan works in collaboration with other federal departments, provincial, territorial and local governments, Indigenous peoples, academic institutions, industry, international research institutions and foreign governments to grow its scientific knowledge and capacity, drawing on multiple ways of knowing, including Indigenous Knowledge, which can be used to complement, enhance, supplement, and strengthen NRCan science. In 2021-22, the Department will continue to enable informed decision-making on natural resource management and support faster, more efficient responses to climate change impacts that will help protect Canadians from natural and human-induced hazards.

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

The ability to visualize changes across Canada's vast geography is important in supporting how we manage our natural resources. In 2021-22, NRCan's **satellite ground stations** will continue to collect valuable data on the status and trends of our changing lands, water and infrastructure. The Department will provide **geospatial data** to inform the science and data mapping for the Department, other federal departments and the provinces and territories, including providing near-real time mapping information to enable responses to flooding, other natural disasters, as well as helping efforts in monitoring the spread of COVID-19.

In 2021-22, NRCan's **Geological Survey of Canada**[xxxi] will work with provinces and territories to develop the **Pan-Canadian Geoscience Strategy**, a nation-wide framework whose vision, defined by the National Geological Survey Committee, is to provide geoscience information to underpin the responsible development of Canada's georesources and serve the public good. This strategy is a priority under the **Canadian Minerals and Metals Plan** (CMMP)[xxxii] to support exploration, land use decisions, and resource potential assessments for georesources such as critical minerals for batteries, as well as the development of renewable geothermal energy.

The surveying and mapping of First Nation lands through initiatives like the **First Nations Land Management Program** and **Comprehensive Land Claim agreements**[xxxiii] will help clarify land boundaries and support Indigenous governance of their lands in Canada. Similarly, our knowledge will be expanded through science-based programs like NRCan's **Polar Continental Shelf Program** (PCSP)[xxxiv] and **GEM-GeoNorth** that increasingly engage with Northerners and Indigenous peoples to help meet the growing demand for Arctic science research and generate regional socio-economic benefit. Policy instruments like the **Arctic and Northern Policy Framework**[xxxv] will help guide investments in energy infrastructure, job creation and innovation in the Arctic and northern economies. Through this work, NRCan will contribute to the clean growth and inclusive management of the natural resource sectors in Canada's north as well as Canada's reconciliation agenda.

In support of sustainable natural resource management, NRCan will continue to work with Environment and Climate Change Canada on **protecting and recovering species at risk and their habitat**, like woodland caribou, to help conserve biodiversity. The Department will also invest in the development of specific tools to **analyze and map forest carbon stocks** that will contribute to climate change mitigation and management.

Advancing Indigenous Reconciliation

In December 2020, the Government of Canada introduced legislation to implement the **United Nations Declaration of the Rights of Indigenous Peoples** (UNDRIP) as a framework for reconciliation in Canada.

In 2021-22, NRCan will contribute to UNDRIP by:

- Continuing to pursue collaborative research projects and data-sharing agreements with Indigenous peoples;
- Incorporating Indigenous Knowledge with NRCan's scientific and technological expertise into project level and regional impact assessments; and,
- Integrating Indigenous methodologies and western science for more responsible and informed decision-making on major natural resource development projects.

The value and utility of NRCan's research and information increases by making it more widely available. In 2021-22, NRCan's Chief Scientist will lead the development of an Action Plan to implement the Chief Science Advisor's **Open Science Roadmap**[xxxvi] to make the Department's science more readily available to Canadians. NRCan will also continue to provide access to its data and scientific publications through initiatives such as the **Open Science and Data Platform**, an online tool that can help expand understanding of the cumulative effects of human activities and natural processes as well as government decision-making.

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

NRCan is recognized domestically and internationally as a key source of science-based information on natural hazards and risks. In 2021-22, the Department will continue to conduct fundamental research on natural hazards and their occurrence, including earthquakes, tsunamis, volcanoes, landslides, space weather, flooding, and wildfires. Research on the risks for earthquakes, for example, is critical to determining building codes published by the **National Research Council Canada**. The Department will also continue to monitor hazard events, providing the required forecasts and alerts for disaster management.

With the rise in frequency and severity of weather-related natural disasters due to climate change and increased economic vulnerability due to COVID-19 over the last year, a timely response to natural disasters continues to be essential in helping to protect Canadians and our livelihoods. The Department plays a vital role in the management of natural disasters by providing critical data for decision-making during emergency response. NRCan achieves this in part by providing subject matter expertise and access to near-real time satellite imagery produced through the **RADARSAT Constellation Mission**.[xxxvii] In 2021-22, NRCan will collaborate with other government departments, provinces and territories, and Indigenous communities to deliver an inventory of existing flood maps to support the national efforts towards **flood hazard mapping**[xxxviii] in Canada. NRCan will also continue to inform risk reduction efforts by supporting Canada's **Emergency Management Strategy**[xxxix] and the development of national risk

profiles for earthquakes, floods and wildfires. With upgrades to the national earthquake-monitoring infrastructure completed, NRCan will support the continued roll-out and commissioning of systems for the **National Earthquake Early Warning system**.

To help protect Canada's forests, NRCan will continue to lead on the science underpinning the **2016 Canadian Wildland Fire Strategy**,[xl] which will help enable increased resilience to wildfires. NRCan will also continue to lead and invest in science on damaging insects and diseases such as the **spruce budworm**,[xli] **mountain pine beetle**,[xlii] and invasive species such as the **emerald ash borer**[xliii] in rural and urban forests. These scientific contributions will enable forest managers and communities to take preventative risk management actions that will help protect and conserve forest resources and ecological functions.

NRCan is mandated to ensure the safety of the public and of workers through Canada's explosives industry. The Department will continue to administer the ***Explosives Act***[xliv] and advance explosives safety and security technology.

Communities and industries are adapting to climate change

As climate change intensifies, the federal government and Canadians recognize the integrated nature of the impacts of climate change. Climate change impacts affect all Canadians, including Indigenous communities, coastal regions and Northern populations. In pursuing a holistic approach to climate change adaptation, in 2021-22, NRCan will lead collaborative engagement with other government departments, provinces and territories, industry, stakeholders, and populations most affected by climate change accelerate action that will reduce risks arising from a changing climate and increase climate resilience.

For example, for a third consecutive year, NRCan will lead the **Canada in a Changing Climate: Advancing Knowledge for Action**[xlv] national publication that raises awareness of climate change issues and provide information for sound decisions and action. The Department will also expand its geoscience research to help inform infrastructure investments, land use planning, resource management, economic development and actions to reduce hazards.

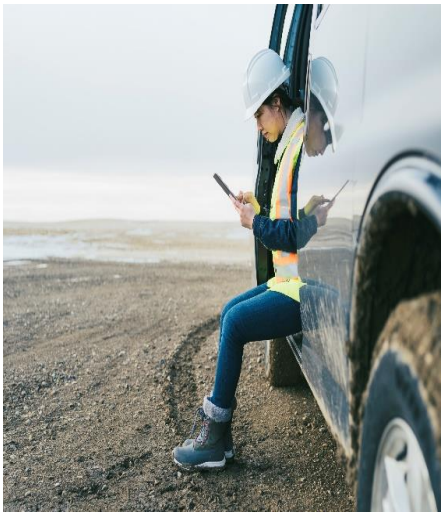
NRCan, including the Geological Survey of Canada (GSC), will look at expanding its **Climate Change Geoscience Program** as part of a whole-of-government effort. Being the unique provider of geoscience in the federal government, the GSC will monitor, model and research to assess and predict changes in glaciers, permafrost and coastlines as well as selected extreme events, such as flooding and landslides. These activities will help inform infrastructure investments, land use planning, resource management, economic development, and hazard reduction actions.

NRCan will work with other government departments, national partners and stakeholders to develop a national climate change adaptation strategy using NRCan's Climate Change Adaptation Platform as a means of engagement.

In 2021-22, NRCan will continue to invest in training that will equip Canadians with the skills and knowledge to put climate adaptation into action. The **Building Regional Adaptation Capacity and Expertise (BRACE) Program**[xlvi] will help build the skills and expertise necessary to implement adaptation action across Canadian communities and industry. The Department is also working horizontally with Indigenous communities, municipalities, other levels of government, including professional foresters, to share research and knowledge and to provide access to adaptation tools such as domestic sources of climate-resilient and genetically diverse trees.

Gender-based analysis plus

Across the three core responsibilities, NRCan uses GBA+ to identify meaningful solutions to real issues in the natural resource sector. NRCan's planned activities aim to further advance the integration of GBA+ into departmental decision-making processes in order to support the development of new and ongoing policies and programs.



Female oil worker working at oil field

STEM the Gap is a pilot program which strives to redress imbalances in gender and Indigenous representation by enabling women and Indigenous peoples who hold a degree in science, technology, engineering and mathematics (STEM) to re-enter the workforce following an absence of five years or more. Offering a six-month placement in a science role followed by a second placement in a policy role, this pilot career re-entry program funded through the NRCan **Lands and Minerals Sector Innovation Fund** has successfully granted participants a unique opportunity to re-start their careers. Given the level of interest generated from this program, options to expand it are currently being discussed. NRCan is also implementing a new, multi-year departmental student hiring and mentoring program that seeks to advance reconciliation and increase representation, in STEM, pairing Indigenous and non-Indigenous women in the development of research projects that braid western science and Indigenous Knowledge. Together with STEM the Gap, the **Sistering Indigenous & Western Science** (SINEWS) demonstrates NRCan's commitment to addressing diversity and inclusion, as well as Indigenous reconciliation, through innovative programs and projects grounded in fostering career development, empowerment and leadership.

Similarly, under the **Geological Knowledge for Canada's Onshore and Offshore Land Program**, both the **United Nations Convention on the Law of the Sea** (UNCLOS)[xlvii] and **GEM-GeoNorth** programs seek to increase labour market opportunities for diverse groups of women, especially women in underrepresented groups (e.g. Indigenous peoples). GEM-GeoNorth will also create labour market opportunities in the physical sciences, and in computer and information systems.

Beyond labour market opportunities, programs like the **Core Geospatial Data**, **Wildland Fire Risk** and **Polar Continental Shelf Program** seek to facilitate greater equality and equity through capacity building and inclusivity. In particular, the **Core Geospatial Data Program** seeks to inspire girls in STEM and facilitate greater inclusion of Indigenous communities and partners in STEM fields. The **Wildland Fire Risk Program** aims to advance more equitable opportunities and outcomes in wild fire management through regular Indigenous engagement and collaboration, including through the development of the **Blueprint for Wildland Fire Science in Canada (2019-2029)**.[xlviii] The **Polar Continental Shelf Program** (PCSP)[xlix] supports science activities across the Arctic that enable greater participation of students, Indigenous peoples, and women, as well as, generate regional economic benefits. These activities strengthens the resilience of Indigenous communities through engagement, training, and employment opportunities.

United Nations' 2030 Agenda for Sustainable Development and the UN Sustainable Development Goals (SDGs)

NRCan's planned activities under this Core Responsibility will continue to support Canada's efforts to address the UN 2030 Agenda and the achievement of several Sustainable Development Goals (SDG). Planned activities include:

- **Climate Change Adaptation Platform:** In support of **SDG 13 – Climate Action**,[l] the platform advances climate change adaptation and resilience across Canada by aligning adaptation priorities and resources, synthesizing and disseminating multidisciplinary knowledge on climate change impacts and adaptation, identifying and addressing gaps in knowledge, and facilitating collaboration among business, communities and government.

- **Forest Climate Change Program**:[li] In support of **SDG 13 – Climate Action**,[lii] the Forest Climate Change program helps to build the resilience of the forest sector. It increases uptake and use of climate change mitigation, resilience and adaptation tools and information by professional foresters and other decision-makers through ensuring the usefulness of and access to NRCan's climate change tools and information to fill knowledge gaps and strengthen sound decision-making by forest sector partners on climate actions.

- **Emergency Management Strategy**: In support of **SDG 11 – Sustainable Cities and Communities**,[liii] this strategy supports ongoing research and the implementation of tools that reduce risk and prevent harm caused by natural hazards, including provision of geospatial data to support national and international emergency management efforts.

- **United Nations Convention on the Law of the Sea (UNCLOS) Program**: In support of **SDG 14 – Life Below Water**[liv] (particularly SDG 14c Conservation and Sustainable Use of Oceans and their Resources), UNCLOS uses geoscience to support the legal framework showing Canada's entitlement

to 2.4 million sq. km. of seafloor beyond 200 nautical miles to conserve and sustainably manage the living and non-living natural resources on the seabed and in the subsoil.

Altogether, NRCan's scientific research and contributions to clean technologies in the natural resources, as well as adaptation and mitigation agenda domestically and internationally, continue to help mitigate and reduce the impacts of climate change, building a safer, more resilient Canada.

Experimentation

Experimentation describes a rigorous process through which researchers methodically test new approaches to existing problems, and use the resulting evidence to help determine approaches that work, and those that do not. Grounded in the Department's science-based focus, NRCan's commitment to experimentation helps to streamline internal processes and optimize evidence-based policy-making, results, and program delivery.

Natural Resources Canada is conducting experimentation (using randomization and strong counterfactual comparisons wherever possible) to test different approaches and learn which works best. The **Canadian Forest Service** (CFS)[iv] and **Experimentation and Analytics Unit** (EAU) are exploring experimentation in the design, delivery, and implementation of activities to meet the commitment to plant two billion trees by 2030. Early planning is focusing on testing program approaches that could improve program outcomes, as well as leveraging private sector involvement and investment in tree-planting on public and private lands. It is planned to have experiments in the field starting in 2022-23.

Key risks

NRCan has identified a number of risks under this Core Responsibility, including:

- The increasing impact of climate change on the natural resource sectors and on Canadian communities, as well as their abilities to adapt to it in a post-COVID economy;
- Keeping abreast of the rapid pace of science and technological innovation while prioritizing economic recovery; and,
- The increasing occurrence of natural and human-induced hazards and emergencies, in communities made more vulnerable by COVID and the economic recovery from it.

The Department will continue to manage these risks through the development, implementation and monitoring of various mitigation strategies, including:

- Leveraging existing innovation resources to support research, development and demonstration (RD&D) projects that advance solutions to pressing environmental challenges and the transition to a low-carbon economy while creating jobs for Canadians;
- Supporting training and knowledge exchange activities to increase the capacity of organizations, professionals, and communities to undertake climate change adaptation action while prioritizing safety during COVID by innovating how we deliver our services; and,

- Addressing needs of communities and critical infrastructure through pre-emptive and preventative, or responsive measures, using innovative science and technology.

Planned results for Natural Resource Science and Risk Mitigation

Departmental result	Departmental result indicator	Target	Date to achieve target	2017–18 actual result	2018–19 actual result	2019–20 actual result
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 450,000 quarterly average	March 2022	484,904	482,745	504,242
	Percentage of environmental impact assessments demonstrating use of scientific and technical advice provided by NRCan	Exactly 100%	March 2022	100%	100%	100%
	Number of times stakeholders acknowledge using NRCan's scientific and technical products in making their decisions	At least 30,250	March 2022	30,250	26,142	30,957
	Number of NRCan agreements that recognize data and/or	To be determined[3]	March 2022	Not available[4]	Not available[4]	Not available[4]

[3] The target will be determined based on 2021-22 baseline data.
[4] Historical information is not available for all previous years for this indicator given that the indicator and its methodology were amended starting in 2021-22.

	information derived from an Indigenous Knowledge source and is used to inform NRCan science and/or research					
	Percentage of annual updates to make NRCan foundational geospatial data current	At least 20% average annual updates towards full refresh over 5 years	March 2022	Not available[5]	Not available[5]	Not available[5]
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 2022	70%	100%	97%
	Percentage of emergency geomatics services provided to Canadians in a timely manner to assist during floods	Exactly 100%	March 2022	100%	100%	100%
	Percentage uptime of the Canadian Wildland Fire Information System during the wildfire season	At least 97%	March 2022	Not available[5]	95%	97%

[5] 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.

	Percentage of inspections of explosives sites rated safe[6]	At least 70% (90% by March 2025)	March 2022	Not available[7]	64.2%	82%
Communities and industries are adapting to climate change	Number of times NRCan products and expertise on adaptation are accessed by Canadians	At least 34,000 quarterly average	March 2022	18,602	20,272	46,085
	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	At least 57% for communities 32% for businesses[8] (from 2018 survey)	At least 57% for communities 32% for businesses[8] (from 2018 survey)	57% for communities 32% for businesses[8] (from 2018 survey)

Financial, human resources and performance information for Natural Resource Canada's program inventory is available in the GC InfoBase.[lvi]

Planned budgetary financial resources for Natural Resource Science and Risk Mitigation

2021–22 budgetary spending (as indicated in Main Estimates)	2021–22 planned spending	2022–23 planned spending	2023–24 planned spending
$252,369,016	$252,369,016	$216,485,092	$184,597,120

Financial, human resources and performance information for Natural Resource Canada's program inventory is available in the GC InfoBase.[lvii]

[6] 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.
[7] NRCan has revised the methodology to more accurately calculate the percentage of inspections rated safe. This has resulted in a more rigorous inspection ratings regime but means that historical data prior to 2018-19 are not directly comparable to more recent results.
[8] This indicator tracks progress on long-term outcomes and is measured through a survey conducted every five years. The next set of results will be available in 2023.

Planned human resources for Natural Resource Science and Risk Mitigation

2021–22 planned full-time equivalents	2022–23 planned full-time equivalents	2023–24 planned full-time equivalents
1,213	1,189	1,161

Financial, human resources and performance information for Natural Resource Canada's program inventory is available in the GC InfoBase.[lviii]

Core responsibilities: planned results and resources, and key risks

Innovative and Sustainable Natural Resources Development

Description

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.

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

- Accelerate development and adoption of clean technology and transition to a net-zero future in a post-pandemic economic recovery;
- Improve market access and competitiveness for Canada's resource sectors;
- Promote a diverse and inclusive workforce while supporting resource communities; and,
- Advance reconciliation, build relationships and share economic benefits with Indigenous peoples.

This Core Responsibility also contributes to the achievement of the **Mandate Letter Commitments** of the Minister of Natural Resources:

- Work with partners to carry on implementing, as appropriate, the recommended four pathways of the Generation Energy Council Report on transitioning to a low-carbon future;
- Work with partners to continue implementing the Canadian Minerals and Metals Plan, and in collaboration with all stakeholders, work on strengthening the competitiveness of Canada's forest sector;
- Support the installation of more zero emission vehicles charging stations along major road networks, and within urban and rural areas throughout Canada;
- Work to position Canada as a global leader in clean technology, including in critical minerals;
- Partner with provinces, territories and Indigenous peoples to help Canadian industries and homes transition to zero carbon electricity;
- Support the transition of Indigenous communities from reliance on diesel-fueled power to clean, renewable and reliable energy;
- Work with partners to help Canadians make their homes more energy efficient and climate resilient;
- Make Energy Star certification mandatory for all new home appliances starting in 2022;
- Develop programs and initiatives to attract private capital for deep retrofitting of large buildings;
- Help Canadians retrofit their homes and buildings;
- Support investments in renewable energy, energy efficiency, energy storage and next-generation clean energy and technology solutions, including in Indigenous communities;
- Work to support the implementation of the Net-Zero Accelerator Fund;
- Move forward with large-scale building retrofits and the Clean Power Fund;
- Support continued work to create a new Canada Water Agency to keep our water safe, clean and well-managed;
- Support the efforts of foresters to reduce emissions and build resilience as key partners in the fight against climate change; and,
- Support efforts to develop a comprehensive blue economy strategy aligned with Canada's economic recovery and focused on growing Canada's ocean economy.

Planning highlights

By fostering clean technology innovation through its programs and initiatives, NRCan ensures that Canada's energy, mining and forest sectors remain innovative and that our natural resources are developed sustainably. NRCan's support of Canada's natural resource sectors in this manner will also encourage a green, post-pandemic economic recovery, while setting the path to meet our commitment to net-zero emissions by 2050. In this regard, recommendations from the **Generation Energy Council Report**[lix] helped inform various measures announced as part of the Canada's strengthened climate plan, **A Healthy Environment and a Healthy Economy**,[lx] released in December 2020.

Natural resource sectors are innovative

To spur innovation in 2021-22, the Department will continue to promote, lead and fund activities and programs that generate new ideas, leveraging the expertise of industry, government, academia and other stakeholders to innovate together in the natural resources sector. Collaboration is facilitated through the Department's **Canmet laboratories**, as well as through initiatives like the **Clean Growth Hub**,[lxi] co-led by NRCan and Innovation, Science, and Economic Development Canada, to encourage Indigenous peoples, youth, women and racialized communities to engage in, and be part of the natural resource economy.

Supporting the Growth of Canada's Hydrogen Ecosystem

As the largest Canadian research centre dedicated to metals and materials, CanmetMATERIALS is working with industry to close fundamental knowledge gaps for pipeline transport of hydrogen and carbon dioxide. The results will support early decisions by operators seeking to convert natural gas pipelines into safe and reliable vehicles for carrying these alternative products.

CanmetMATERIALS' main facility is located in Hamilton, Ontario.

The **International Energy Agency** (IEA)[lxii] notes that while existing technologies hold considerable potential to reduce emissions by 2030, up to 75% of the technologies required to achieve net-zero by 2050 are not yet ready. Emissions reductions will become increasingly difficult to find without investing in research, development and demonstration (RD&D) now. In 2021-22, NRCan will continue to collaborate with stakeholders to support hundreds of projects and initiatives across energy RD&D programs in key areas such as carbon capture, use and storage; oil and gas; low-carbon fuels; renewable energy; electricity; transportation; the built environment; as well as across the broader natural resource sectors. Projects will aim to reduce emissions and environmental impacts and to increase energy efficiency and competitiveness, while ultimately overcoming barriers to large-scale adoption, unlocking breakthrough solutions to complex and persistent problems, and facilitating deep decarbonization of high greenhouse gas (GHG)-emitting sectors. NRCan will also continue playing a leadership role internationally, including through contributing to the development of an ambitious second phase of **Mission Innovation**,[lxiii] and working with the IEA to advance energy RD&D globally.

NRCan will support, through its expertise, programs and activities, the transformation of the forest sector to increase its economic sustainability and create new market opportunities. This includes the **Investments in Forest Industry Transformation (IFIT) Program**[lxiv] to facilitate the adoption of transformative technologies, products, and processes, and the **Forest Innovation Program**[lxv] for research, development and technology transfer activities. Further, NRCan will strengthen its collaboration with provinces, territories and Indigenous communities on delivering a national vision to make Canada a global leader in the **forest bioeconomy**.[lxvi]

In the mining sector, NRCan will fund innovative practices that minimize mining waste and improve the overall productivity and efficiency of mining such as the **Mining Value from Waste Program**,[lxvii] which aims to position Canada as the preferred supplier of ethically, socially and environmentally responsible raw materials, leveraging and strengthening the Canada brand and moving us closer to meeting our climate targets.

NRCan recognizes the importance of adopting circular economy principles to ensure natural resources continue to be innovative and developed sustainably. Circularity offers a comprehensive approach to managing materials and energy flow – bringing economic opportunities, value retention and environmental benefits. NRCan is conducting studies and exploring more ways to promote circularity in the natural resources sectors. In 2021-22, NRCan will develop a departmental work plan on circularity to outline key areas and actions needed to incorporate circular economy principles further in the areas of energy, mining, and forestry. Additionally, NRCan will work collaboratively with Environment and Climate Change Canada to ensure that circularity in the natural resource sectors is highlighted at the **World Circular Economy Forum**,[lxviii] which will be hosted by Canada in 2021.

Clean technologies and energy efficiencies enhance economic performance

Driving energy efficiency is a key component of the Government's plan to build a strong and more resilient Canada. Energy demand is on the rise, and accelerated uptake of energy efficiency is needed in all sectors. In particular, improvements in the energy performance of Canada's buildings, and in industrial energy efficiency will be required to meet Canada's ambitious 2030 and 2050 climate objectives.

In the November 2020 **Fall Economic Statement**,[lxix] the Government announced that it will provide $2.6B over 7 years, starting in 2020-21, to NRCan to help homeowners improve their home energy efficiency through home energy retrofits.

In addition, the Department will continue to work to improve the efficiency of new and existing buildings including how homes and buildings are designed, renovated, and constructed. Initiatives will continue to support energy labelling and disclosure of buildings, and work is underway to introduce more stringent model building energy codes for new and existing buildings. Finally, the Department is developing ambitious energy efficiency targets for equipment used in our homes and buildings.

Home Energy Retrofits

The Home Energy Retrofit Program will provide:

- 700,000 grants of up to $5,000 each for energy efficiency retrofits;
- Up to one million free EnerGuide energy assessments; and,
- Support for recruiting and training EnerGuide energy auditors.

This initiative will provide Canadians with expert advice to improve the efficiency of their homes, and grants of up to $5,000 to make related improvements, as well as support for recruitment and training of EnerGuide Energy Advisors to meet increased demand. The Initiative will save homeowners money, enable homeowners to make retrofits with the greatest potential for energy savings, increase and create inclusive jobs in the energy efficiency sector.

The Department will also continue working with provinces and territories, industry and academia to support the market transformation of residential windows, space heating and water heating through the **Market Transformation**[lxx] road map for energy efficient equipment in the building sector.

Through the **Industrial Energy Management Program**,[lxxi] the Department will continue working with industry to improve their energy efficiency and strive to accelerate the uptake of benchmarking of industrial facilities through tools such as the **ENERGY STAR® for Industry Program**,[lxxii] and the implementation of **ISO 50001 Energy Management Systems**.[lxxiii]

The Department will advance energy efficiency and the use of energy efficient products through strengthened regulations, by promoting and increasing the reach of the ENERGY STAR® program, and by providing technical support, guidance, and training to other federal organizations in support of the federal commitments under the new **Greening Government Strategy**.[lxxiv]

To help advance Canada's transition to a low-carbon future in a post-COVID-19 recovery, NRCan will promote strategic and targeted assistance for its clean technology programs and energy efficient initiatives such as the **Energy Innovation Program**.[lxxv] Support will also be provided to help natural resource sectors deliver on significant GHG emissions reductions through green investments that will see the deployment of mature, clean technologies and create employment to position the sectors for long-term environmental and commercial success.

In 2021-22, NRCan will strengthen its **Clean Technology Data Strategy**[lxxvi] to collect and share essential environmental and clean technology sector information to ensure data is available to understand the economic and environmental contribution of clean technologies in Canada. The Department will also fund groundbreaking technologies in **Artificial Intelligence** (AI),[lxxvii] **Machine Learning**, **Quantum Technology** and **Big Data** tools to enhance automation, produce geospatial and remote sensing datasets, streamline regulations, and increase energy efficiency in the natural resource sectors. Working with industry partners, data scientists, academia, and other levels of government, the Department will explore advanced technologies that support evidence-based decision-making, reduce costs, create well-

paying jobs for a diverse workforce, boost productivity, mitigate environmental impacts, and strengthen cyber-safety.

NRCan's **Digital Accelerator**[lxxviii] will continue to take a hands-on-approach to growing the Department's application of advanced digital solutions. The nexus between science and policy will drive much of the Digital Accelerator's work over the next year. Activities contributing to fostering NRCan's digital-driven culture will emphasize strategies aligning policy objectives to analytics and data preparation, as well as the implementation of a data valuation framework. The Digital Accelerator will also seek to augment departmental science and research through the pursuit of strategic partnerships, such as with Microsoft's **AI for Good Initiative**, which represents a new model for future public and private technology sector collaboration to support research focused on sustainable development and climate action.

Ottawa Synthetic Intelligence Forum

Data Science roles are growing rapidly in the private and public sectors, and a variety of practices have emerged around the application of advanced analytics to solve complex policy issues, such as climate change.

The **Ottawa Synthetic Intelligence Forum** brings together specialists and enthusiasts to share knowledge and discuss how applied machine learning, deep learning, and reinforcement learning are disrupting industries as well as reshaping markets.

NRCan will continue to work with Statistics Canada, and other partners such as Environment and Climate Change Canada and the Canada Energy Regulator, to further expand the **Canadian Centre for Energy Information** (CCEI).[lxxix] The Centre is mandated to work with a wide range of stakeholders to improve the accessibility and overall quality of Canada's energy data, housing resources on energy-related information, including production, consumption, and international trade.

Canada's natural resources are sustainable

Since its introduction in 2016, NRCan has played a key role in the implementation of the **Pan-Canadian Framework on Clean Growth and Climate Change**,[lxxx] which has positioned Canada to achieve its 2030 targets. In 2021-22, NRCan will promote collaboration in clean growth and sustainable resource development through ongoing programs and in support of Canada's strengthened climate plan. The Plan announced a range of new measures that NRCan will directly support to help make clean, affordable transportation and power available in every community, build Canada's clean industrial advantage, and embrace the power of nature to support healthier families and more resilient communities.

Canada's low-carbon energy future depends on mining to produce the materials for low-carbon technologies such as batteries. Enabling these technologies to be produced in Canada, with Canadian raw materials, contributes to strengthening the "Canada Brand" as the choice supplier of socially and environmentally responsible minerals. Doing so further supports an industry that has adopted measures to manage climate change risks throughout the mine lifecycle.

NRCan will also help in the development of the entire battery supply chain to ensure that Canada can build the batteries that will power the zero emission vehicles (ZEVs) and electricity grids of the future. A 'mines to mobility' approach will build on Canada's natural resources and expertise to develop an end-to-end battery ecosystem in Canada, from mineral extraction and processing, to research and design, battery and ZEV manufacturing, and recycling.

The Department will also continue to support potential collaboration with the U.S. through the **Joint Action Plan on Critical Minerals**,[lxxxi] which aims to attract investment in Canadian exploration and mining projects, as well as spur job creation and economic growth in various downstream industries.

NRCan's Contributions to Canada's Strengthened Climate Plan

On December 11, 2020, the Government of Canada announced a strengthened climate plan, **A Healthy Environment and a Healthy Economy**, to fight climate change and rebuild a more sustainable and resilient economy. This plan builds on the Pan-Canadian Framework, supported by an initial $15B in investments and in collaboration with provinces and territories.

In 2021-22, NRCan will contribute to the strengthened climate plan by:

- Retrofitting homes and buildings that will create jobs and help Canadians reduce their emissions;
- Expanding the supply of clean electricity and clean fuels;
- Increasing the availability of renewables and next-generation clean energy and technology;
- Producing low-carbon products that fill a growing gap in market demand for energy efficient goods;
- Planting two billion trees to help cut pollution, improve air quality, create jobs, and increase resiliency of communities to extreme weather; and,
- Building the Canadian battery and critical mineral supply chains by leveraging Canada's competitive advantage in mining.

NRCan will be supporting Innovation, Science and Economic Development Canada in the implementation of the new **Strategic Innovation Fund - Net Zero Accelerator**[lxxxii] of $3B over five years, to be delivered via the **Strategic Innovation Fund**,[lxxxiii] to rapidly expedite decarbonization projects with large emitters, scale-up clean technology and accelerate Canada's industrial transformation across all sectors.

NRCan will support the Government's commitment to making additional investments of $964M (over four years) to advance smart renewable energy and grid modernization projects that will enable the clean grid of the future. This includes supporting the increase in renewable power generation capacity, such as wind and solar, and the deployment of grid modernization technologies, such as power storage. This work will support the electrification of the broader economy and help jurisdictions minimize the role of fossil fuel-fired electricity generation in their electricity systems, as many regions of Canada still rely on coal power, and getting clean power to more communities remains a challenge.

Opportunities in the Global Battery Value Chain

NRCan led the **Battery Initiative** in 2019, a stakeholder consultation process focussing on seizing opportunities for Canada in the global battery value chain. In partnership with Innovation, Science and Economic Development Canada, NRCan held several sessions with over 300 stakeholders, focussing on the various aspects of the battery value chain from exploration and mining to battery recycling. The input received was captured in a **What We Heard Report**.

NRCan will work with Infrastructure Canada and the **Canada Infrastructure Bank** (CIB)[lxxxiv] in moving forward with large-scale retrofits and the **Clean Power Fund** that will connect surplus clean power to

regions transitioning away from coal and help transform how we power our economy and communities. This includes working with provinces and territories to build key intertie projects with support from the CIB, such as the Atlantic Loop. Specifically, NRCan will help in necessary **intertie project predevelopment** work, which delivers on the commitment as identified in Canada's strengthened climate plan to provide $25M in 2021-22 to complete engineering assessments, community engagement, and environmental and regulatory studies. This work will help inform and complement the CIB's efforts to identify and address financial gaps in the projects. Through its **Smart Grid Program**,[lxxxv] NRCan will focus on improving the efficiency of Canada's key infrastructure. NRCan will also hold its third annual **Smart Grid Symposium** in fall 2021, where Smart Grid Program funding recipients and industry stakeholders will be able to discuss emerging smart grid technologies, energy sector transformation from the utility perspective and project challenges and successes.

Small Modular Reactors (SMRs)[lxxxvi] represent a promising new non-emitting technology that has the potential to produce reliable electricity in Canada, supporting our country's transition to net-zero emissions by 2050. In support of this technology, NRCan will respond to the recommendations identified in **Canada's SMR Roadmap**[lxxxvii] through the launch of activities identified in **Canada's SMR Action Plan**,[lxxxviii] which seeks to advance the safe and responsible development and deployment of SMRs in collaboration with provincial and territorial governments, Indigenous peoples, organized labour, utilities, industry, innovators, academia and civil society. Action items from the Plan will include ensuring that the federal legislative, regulatory, and policy framework is sound and ready for SMR deployment, while working with bilateral and multilateral partners to align international engagement and cooperation with Canadian priorities on SMRs.

In 2021-22, NRCan will also administer the $750M **Emissions Reduction Fund** (ERF).[lxxxix] $675M of the Fund will go towards helping eligible Canadian onshore oil and gas companies and Canadian innovators to invest in green solutions to reduce GHG emissions and retain jobs in the sector. The remaining $75M will be available to offshore oil and gas companies for capital investments and RD&D to reduce GHG emissions from offshore production in Newfoundland and Labrador. Methane is one of the most potent GHG emissions, accounting for 43% of all GHGs in the oil and gas sector. Taking action now to reduce these emissions will help Canada achieve its goal to protect the environment while growing the economy as we recover from the COVID-19 pandemic. The fund will support Canadian oil and gas companies in their transition to a low-carbon economy, allowing them to be more globally competitive for years to come.

Transportation accounts for approximately 25% of Canada's total GHG emissions. As such, promoting the use of zero emission transportation remains a key component of the Government's and NRCan's objectives to help move towards a net-zero future. In 2021-22, NRCan will further support low-carbon transportation by deploying new **recharging and refuelling infrastructure for ZEVs** across Canada, while also supporting the development of enabling codes and standards.

Sign identifying access to electric vehicle charging station

Investing in ZEV infrastructure will help increase confidence in Canadian buyers that charging and refuelling stations are available and conveniently located where and when they are needed. In line with the **Hydrogen Strategy for Canada**,[xc] which lays out a framework for actions that will cement hydrogen as a tool to achieve our goal of net-zero emissions by 2050, and position Canada as a global, industrial leader of clean renewable fuels. NRCan will help implement hydrogen as a clean energy alternative for vehicles, including at mine sites across Canada and for power generation and manufacturing. The Strategy is designed to spur investment and partnerships to establish Canada as a global supplier of hydrogen, and to increase domestic production, which will transform our energy sector. The Strategy is also complemented by the **Clean Fuel Standard regulations**[xci] to reduce carbon intensity of liquid fuels by 12% by 2030, and is underpinned by a federal investment of $1.5B in a **Low-carbon and Zero-emissions Fuels Fund** to increase the production and use of low-carbon fuels, including hydrogen.

In 2021-22, through the **Clean Energy in Rural for Remote Communities (CERRC) Program**,[xcii] the Department will support Indigenous communities in their transition away from diesel to clean, renewable, and reliable energy to encourage energy efficiency, support community-led renewable energy, and build community capacity to own and operate renewable energy systems. These Indigenous-led initiatives will result in job creation within Indigenous communities, generate important economic opportunities for Indigenous peoples, including in a post-COVID recovery, and advance reconciliation by promoting energy self-reliance. The Government has committed an additional investment of $300M over five years to transitioning diesel-reliant rural, remote and Indigenous communities onto clean energy.

Internationally, NRCan will carry on representing and promoting Canada's sustainable resource development, and strengthen Canada's international presence within the natural resource and clean technology markets to open trade opportunities, attract foreign investments and enhance collaboration. The Department will also engage in a number of **multilateral fora** such as the IEA, **Clean Energy Ministerial and Mission Innovation**,[xciii] **G7**,[xciv] **G20**,[xcv] **International Renewable Energy Agency**,[xcvi] **International Energy Forum**,[xcvii] **Asia-Pacific Economic Cooperation**[xcviii] and the **United Nations High Level Dialogue on Energy**[xcix] to advance discussions around green, inclusive, and sustainable resource development, as well as access to clean energy sources and technologies. These engagements will help position NRCan for **COP 26**,[c] where the Department will join Environment and Climate Change Canada and other departments to champion Canada's ambitious climate action, including renewed climate finance commitments, exceeding current domestic 2030 targets and reaching net-zero emissions by 2050.

In 2021-22, NRCan will increase carbon storage and reduce Canada's GHG emissions by implementing a suite of natural climate solutions, in collaboration with other federal departments, other levels of government, Indigenous organizations and communities, the private sector, and other stakeholders. This

includes investing $3.16B over ten years to grow Canada's forests by **planting two billion trees**[ci] through reforestation and forest reclamation to regenerate forests affected by human and natural disturbances; afforestation to create new forests; evidence-based forest-management advice and restoration to support species at risk; and urban tree planting. Canada's plan to plant two billion trees over the next ten years is projected to reduce GHG emissions by up to 12 megatonnes by 2050 and create up to 4,300 jobs.

NRCan will also continue to deliver the $39.8M **Green Construction through Wood Program**,[cii] which advances low-carbon construction through promoting the use of innovative wood products as a green building material in non-traditional construction.

Gender-based analysis plus

Across the three core responsibilities, NRCan uses GBA+ to identify meaningful solutions to real issues in the natural resource sector. NRCan's planned activities aim to further advance the integration of GBA+ into departmental decision-making processes in order to support the development of new and ongoing policies and programs.

The **Innovative Geospatial Solutions Program** seeks to inspire girls in STEM and facilitate greater inclusion of Indigenous communities and partners in STEM fields, through capacity building and projects, such as: Northern geographical place naming; the collection and sharing of UAV-based mapping products; and community outreach in Inuvik, NWT.

In 2021-22, the **Energy Efficiency Program** will incorporate the findings from a study completed with outside consultants, which defined intersectional gender-based barriers in the energy efficiency sector in Canada. These findings will assist in filling data gaps and informing decision-making in the Program by providing reliable and validated GBA+ information to support policy development. Ultimately, this work will contribute to the development of policies and programs that better consider the specific needs and circumstances of diverse populations in Canada, are more inclusive and equitable, and enable all Canadians to participate fully in energy efficiency.

The **Clean Energy for Rural and Remote Communities (CERRC) Program**[ciii] supports community-led renewable energy and capacity building projects with the intent that direct benefits are distributed across a broad group of rural, remote and Indigenous communities across Canada, including First Nations, Inuit and Métis women, men and gender-diverse people. CERRC seeks to address systemic barriers related to gender and age.

Finally, the **Indigenous Off Diesel Initiative** (IODI)[civ] supports remote Indigenous communities in overcoming barriers associated with access to capital funding and related activities, necessary to enable the full participation of these communities in the renewable energy and broader natural resource sectors. The intent of this approach is to create green jobs and improve energy security, while also supporting other community co-benefits such as housing and food security.

United Nations' 2030 Agenda for Sustainable Development and the UN Sustainable Development Goals (SDGs)

NRCan's planned activities under this Core Responsibility will support Canada's efforts to address the UN 2030 Agenda and the achievement of several Sustainable Development Goals (SDGs). Planned activities include:

- **Clean Energy for Rural and Remote Communities (CERRC) Program**[cv] and **Smart Grid Program**:[cvi] In support of **SDG 7 - Affordable and Clean Energy**,[cvii] the CERRC program helps reduce the reliance on diesel fuel for heat and power, support community-driven clean energy solutions and create green jobs and opportunities. The Smart Grid Program is designed to accelerate the transition to a clean economy while reducing GHG emissions and creating new jobs. The Smart Grid Program also supports **SDG 9 - Industry, Innovation and Infrastructure**.[cviii]

- **Energy Efficiency Program**:[cix] In support of **SDG 7 – Affordable and Clean Energy**,[cx] and specifically SDG target 7.3, which aims to double the global rate of improvement in energy efficiency by 2030, the Government has made significant investments in energy efficiency. Canada plays a leadership role globally by working 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.

- Similarly, the **Energy Innovation Program** (EIP)[cxi] supports **SDG 7 - Affordable and Clean Energy**,[cxii] **SDG 9 - Industry, Innovation and Infrastructure**[cxiii] and **SDG 12 – Responsible Consumption and Production**[cxiv] through RD&D of clean energy technologies, which help reduce GHGs. In addition, the program contributes to **SDG 8 – Decent Work and Economic Growth, full and productive employment, and decent work for all**[cxv] by enhancing Canada's economic competitiveness, and creating jobs in clean technology.

- **Sustainable Forest Management**:[cxvi] In support of **SDG 15 – Life on Land**,[cxvii] the Sustainable Forest Management program supports the sustainable management of Canada's forests, in collaboration with provinces and territories, private sector and civil society to maintain environmental, social and economic value and benefits over time, promoting responsible and transparent practices in the forest sector to help ensure Canada's forests are sustainable for years to come.

- **Zero-Emission Vehicles** (ZEVs): In support of **SDG – 9 Industry, Innovation and Infrastructure**,[cxviii] NRCan is leading the efforts to make ZEVs more affordable and accessible by investing in development of a coast-to-coast fast-charging network for electric vehicles.

The COVID-19 pandemic has had significant impacts across society and economy, including across natural resource sectors. In the recovery period, taking climate action means seizing an opportunity that

will help create new jobs in Canada, building on our goal to create 1 million jobs to restore employment levels in Canada, which will support **SDG 11 – Sustainable Cities and Communities**[cxix] and **SDG 13 - Climate Action**.[cxx]

Altogether, these programs will support Canada's transition to a low-carbon future and help meet the Government's target to achieve net-zero emissions by 2050, while providing access to affordable, reliable, sustainable and clean energy, promoting innovation, and ensuring sustainable economic growth and ecosystems.

Experimentation

Natural Resources Canada will promote energy efficiency by searching for new partnerships and opportunities to experiment. The Department aims to encourage cross-sectoral collaboration to bring innovative and experimental projects to support energy efficiency and meet GHG reductions targets.

For example, throughout 2020, CanmetENERGY, the Office of Energy Efficiency and the Experimentation and Analytics Unit, in partnership with Carleton University, the City of Kelowna, FortisBC (the local utility in Kelowna) and others, have been planning a randomized controlled field trial in Kelowna, as part of the **Canadian Energy End-use Mapping (CEE Map) Project**. The field trial, starting in 2021, will determine the most effective measures to incent retrofits or other energy-efficient upgrades in homes. The experiments will measure impacts on consumer well-being and ways to maximize uptake of financial incentives and instruments.

Building on an initial experiment conducted in 2020 on enhancing communication with stakeholders, the **Clean Growth Hub**[cxxi] and the **Experimentation and Analytics Unit** (EAU) are working together to explore next steps and plan future experimentation over 2021-22.

Lastly, the **Office of Energy Research and Development** (OERD) and the EAU are in the initial stages of exploring the feasibility of experimentation in any of OERD's ten programs.

Key risks

NRCan has identified a number of risks under this Core Responsibility, including those related to the impact of climate change and keeping abreast of the rapid pace of science and technological innovation. NRCan will manage these risks through the development, implementation and monitoring of mitigation strategies, including:

- Supporting federal climate action initiatives to reduce GHG emissions and achieve net-zero emissions by 2050 by maintaining a focus on climate action as we support economic recovery, such as:
    - Pursuing natural solutions to the effects of climate change like the planting of two billion trees over the next 10 years;

  - Accelerating development and adoption of clean and renewable energy technologies;
  - Supporting progress towards a low-carbon transportation sector;
  - Advancing electrification, zero-carbon electricity generation, transmission systems and grid modernization; and,
  - Continuing to reduce the environmental footprint of mine wastes.
- Providing federal leadership and scientific expertise to support the continued advancement of sustainable energy technologies and solutions to pressing environmental challenges in a time of economic recovery by leveraging existing innovation resources; and,
- Continuing to make investments in and working collaboratively with different levels of government and Indigenous peoples to reduce GHG emissions through inclusive and diverse initiatives.

Planned results for Innovative and Sustainable Natural Resources Development

Departmental result	Departmental result indicator	Target	Date to achieve target	2017–18 actual result	2018–19 actual result	2019–20 actual result
Natural resource sectors are innovative	Percentage of NRCan-funded innovation projects that result in new intellectual property, codes, 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 2022	Not Available	65%	30%[9]
	Percentage of innovative forest products and decision tools informed by NRCan research that contribute to the environmental sustainability of Canada's forests	At least 95%	March 2022	Not Available[5]	Not available[5]	Not available[5]
	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	Not Available	90% of completed projects advanced one TRL level[10]	77%[10]
	Percentage of innovative mining technologies developed by NRCan that	At least 25%	March 2022	Not Available[5]	Not available[5]	25%

[9] This indicator tracks progress on results at the completion of NRCan-funded projects in 2021. These results show interim progress based on the projects completed to date.
[10] This indicator tracks progress on results at the completion of NRCan-funded projects. The figure represents only a fraction of the full program portfolio and is provided only as an indication of progress to date.

	move towards being ready for commercial use					
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[11]	Not Available[12]	Not available[13]
	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 2022	2.6:1	3.1:1	3:1
	Total annual energy savings resulting from adoption of energy efficiency codes, standards and practices	Annual savings of at least 600 petajoules (PJ)	March 2030	20.0PJ[14]	26.7PJ	35.6PJ
Canada's natural resources are sustainable	Percentage of Canadian electricity generated from non-GHG emitting sources	At least 90%	March 2030	81.6%	82.0%	Not available[15]

[11] NRCan established a new Departmental Results Framework to report its results starting in 2018-19. Several indicators were new as of April 2018 and historical information is not available for all previous years.

[12] The indicator tracks progress on results at the completion of NRCan-funded projects. No projects with economic goals were completed in 2018-19.

[13] 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.

[14] The petajoule savings resulting from improved building code standards is now based on the 2015 National Energy Code for Buildings (NECB), instead of the 2011 NECB. As a result, the petajoules saved in 2017-18 have been revised to 20.0, rather than the 27.4 petajoules that were previously reported in the 2019-20 Departmental Plan.

[15] Data for Fiscal Year 2019-20 is not available as electricity statistics are only available on a calendar year-basis. On December 31, 2018, the percentage of non-emitting electricity was 82%. There is no data available yet for calendar year 2019. The next data update is expected to be available by June 2021. Additionally, reporting has been impacted due to the delayed availability of statistics amid the COVID-19 pandemic.

	Number of renewable energy projects in remote communities and off-grid industrial operations	At least 100	March 2024	Not Available[16]	0[17]	1[18]
	Amount of wood harvested compared to the sustainable supply	Harvest is less than sustainable supply	March 2022	160 million m^3 total harvest versus total wood supply of 226 M m^3 (SoF, 2017 – data from 2015)[19]	155 million m^3 total harvest versus total wood supply of 223 M 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)
	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 = 102 Natural gas refuelling stations = 7 Hydrogen refuelling stations = 3	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

[16] This is a new indicator implemented in 2018-19. Past actuals are not available as the indicator tracks a new program that began in January 2018.
[17] 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.
[18] This indicator measures the number of completed renewable energy projects for 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.
[19] The 2017-18 actual results have been revised to reflect consistency with the 2017 State of Canada's Forests Report.

	Reduction in greenhouse gas emissions resulting from NRCan-funded clean technology demon-strations	Clean Growth Program: Between 0.3 - 0.7 megatons (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[20] Energy Innovation Program: 1.2 Mt/ year[23]	Clean Growth Program: Not Available[21] Energy Innovation Program: 1.32Mt/ year[23]	Clean Growth Program: Not available[22] Energy Innovation Program: 1.61 Mt/ year[23]
	Percentage of NRCan's projects on innovation and sustainable development that engage Indigenous communities, organizations or governments	To be determined[24]	March 2022	Not Available[5]	Not Available[5]	Not available[5]

[20] NRCan established a new Departmental Results Framework to report its results starting in 2018-19. Several indicators were new as of April 2018 and historical information is not available for all previous years.
[21] 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.
[22] 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.The program will monitor the effects of the COVID-19 pandemic on project progress, timelines and potential impact on program target dates.
[23] On track for 2030 target. Projects are just now underway and only represent a small percent of the final target.

Financial, human resources and performance information for Natural Resource Canada's program inventory is available in the GC InfoBase.[cxxii]

Planned budgetary financial resources for Innovative and Sustainable Natural Resources Development

2021–22 budgetary spending (as indicated in Main Estimates)	2021–22 planned spending	2022–23 planned spending	2023–24 planned spending
$1,400,422,672	$1,400,422,672	$379,307,710	$330,752,686

Financial, human resources and performance information for Natural Resource Canada's program inventory is available in the GC InfoBase.[cxxiii]

Planned human resources for Innovative and Sustainable Natural Resources Development

2021–22 planned full-time equivalents	2022–23 planned full-time equivalents	2023–24 planned full-time equivalents
1,582	1,489	1,439

Financial, human resources and performance information for Natural Resource Canada's program inventory is available in the GC InfoBase.[cxxiv]

[24] The target will be determined based on 2020-21 baseline data.

Core responsibilities: planned results and resources, and key risks

Globally Competitive Natural Resource Sectors

Description

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

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

- Accelerate development and adoption of clean technology and transition to a net-zero future in a post-pandemic economic recovery;
- Improve market access and competitiveness for Canada's resource sectors;
- Promote a diverse and inclusive workforce while supporting resource communities; and,
- Advance reconciliation, build relationships and share economic benefits with Indigenous peoples.

This Core Responsibility also contributes 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 completing the twinning of the Trans Mountain Pipeline;
- Work with partners to expand implementation of the Canadian Minerals and Metals Plan and to develop strategies to help strengthen the competitiveness of the 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.

Planning highlights

Canada's natural resource sectors recognize the increasing global demand for sustainably developed natural resources. Sustainability, diverse market access, competitive prices, inclusive development, fair distribution of green jobs within resource communities, a diverse and inclusive workforce, and clean technology development are dominant themes influencing Canada's natural resource sectors. The

sectors also face unprecedented challenges in managing their operations due to the impacts of the COVID-19 pandemic. These challenges underscore the importance for the Department in 2021-22 to focus on actions that help diversify trade, increase investment, and support competitiveness for Canada's energy, mining and forest sectors. This is further advanced by providing high quality data on exploration and production of minerals and metals, and ensuring the safe and uninterrupted production and supply of energy to industrial, domestic and international customers. These challenges also highlight the need for Canada to demonstrate global leadership in transitioning to a decarbonized economy and continuing engagement with partners at international fora.

These efforts will strengthen the resiliency of Canada's natural resource sectors, contribute towards Canada's 2030 and 2050 emissions targets, and help create long-lasting, well-paying jobs for a diverse and prosperous Canada.

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

In a global market, access to new and priority markets remains crucial to maintaining the competitiveness of our natural resource sectors and to ensuring continued prosperity for Canadians. This requires reliable infrastructure that can deliver our natural resources effectively to more markets. In 2021-22, the Department will work with partners, stakeholders and Indigenous peoples on advancing **major infrastructure projects**, such as the **Trans Mountain Expansion Project** (TMX)[cxxv] that are geared towards diversifying and expanding the export market of our natural resources. NRCan will support partnerships with Indigenous peoples through initiatives such as **Indigenous Advisory and Monitoring Committees** (IAMC) for the existing Trans Mountain pipeline and its expansion and **Line 3 Replacement Program**[cxxvi] and the **Indigenous Natural Resource Partnership Program** (INRP).[cxxvii] NRCan will also continue to work with the **Canada Energy Regulator**[cxxviii] in enhancing the role of Indigenous communities in the lifecycle oversight of energy infrastructure projects.

Regulatory stability is an important factor for investors and the business community when considering long-term planning, especially when investments are significant and overlap many years. In 2021-22, the Department will work with partners and stakeholders to advance the implementation of statutes that support stable, long-term investment planning as well as provide expertise and support to decision-makers at the Canada Energy Regulator and the **Impact Assessment Agency of Canada**.[cxxix] The Department will also support the development and ongoing review of regulations under the ***Canadian Energy Regulator Act***[cxxx] to ensure the long-term effectiveness and to maximize safety, security and environmental protection.

Successfully supporting the competitiveness of Canada's natural resource sectors, including by promoting their sustainable development, requires collaboration both domestically and internationally. In 2021-22, NRCan will work with other government departments to position Canada as a global energy leader as well as a reliable and preferred partner for energy trade and investment. The Department will also engage with key markets and partners to strengthen energy relationships, promote cooperation,

advance trade and investment opportunities and create favorable conditions for Canadian businesses to compete internationally.

With our North American counterparts, the Department will work to further enhance market integration by leveraging existing free trade agreements and partnerships.

NRCan will continue to work with the U.S. to design a collaborative and strategic agenda and define Canada's priorities for our resource partnerships, including for energy decarbonization, clean and inclusive growth and the security of natural resources. NRCan will also work with the U.S. on cross-border energy infrastructure development, trade policy, and foreign capital and talent acquisition to ensure the path forward is mutually-beneficial

In other priority markets such as Asia, Europe, the Middle East and Africa, the Department will advance and employ strong trade and investment agreements and promote Canada as a secure, reliable, and sustainable supplier of natural resources products, services, and technologies.

Notably, NRCan will work to support engagement with bodies such as the **World Trade Organization** to uphold Canada's commitments to the rules-based international order and rules based trade. The Department will also engage in multilateral fora like the **G7**, **G20**, **International Energy Agency** (IEA), **International Renewable Energy Agency** (IRENA), and **Clean Energy Ministerial and Mission Innovation** (CEM/MI) to advance Canadian priorities for a clean, affordable, secure and resilient future. These international engagements will help to advance the transition to the low-carbon economy and open new market opportunities for Canada's goods, services and technologies.

International Agreements

The Department continues to collaborate with federal partners on:

- Ongoing and future free trade aggrements and negotiations, including with Mercosur, Indonesia and ASEAN;
- Trade policy issues with U.S., China, EU, and Japan;
- Advancing market access on trade and investment diversification efforts; and,
- Advancing non-discriminatory, predictable and transparent market and rules-based trading system through collaboration with Global Affairs Canada in multilateral fora (WTO, G20, G7, WTO, OECD).

NRCan is also committed to support defending Canadians, resource communities and workers from unfair trade disputes.

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

A diverse and inclusive workforce

As Canadians move towards a low-carbon future and adopt the required technological changes, new opportunities and challenges will continue to emerge for workers in the natural resource sectors. The Government is committed to providing opportunities for workers and young people affected by rapidly transforming natural resource sectors. In 2021-22, the Department will deliver its **Science and Technology Internship (STIP) program – Green Jobs**[cxxxi] through the Government's **Youth Employment Skills Strategy** (YESS)[cxxxii] by funding employers in the natural resource sectors that hire recent graduates in natural sciences. This internship program will help young Canadians of diverse backgrounds gain experience in the natural resource sectors, including in energy, forestry, mining and earth sciences, with an emphasis on underrepresented youth, to ensure a more diverse and inclusive resources sector that will be better equipped to face the challenges of the future.

NRCan will also collaborate with other government departments in identifying new opportunities to industry, workers and communities affected by changing priorities and technology within the natural resource sectors. This includes leveraging Employment and Social Development Canada's training and skills development programming to ensure that Canadians are equipped with the right skills at the right time to succeed in the low-carbon economy.

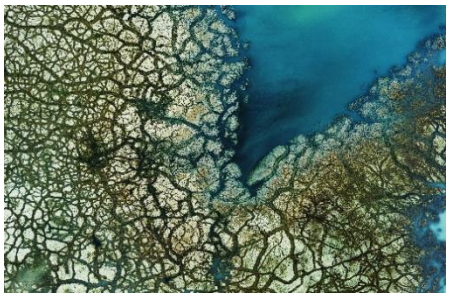
To ensure that Indigenous peoples benefit from resource development, NRCan will engage with Indigenous groups and communities in economic development projects. In the forest sector, the **Indigenous Forestry Initiative** (IFI)[cxxxiii] will provide $5.6M in 2021-22 to support Indigenous-led economic development projects as a means to ensure ongoing Indigenous participation in the forest sector throughout the COVID-19 recovery. The projects under the IFI contribute to a more environmentally and commercially sustainable natural resource sector and advance reconciliation with Indigenous peoples.

Internationally, NRCan will continue to work globally with bilateral partners and through multilateral fora to advocate for energy transitions that focus on people and communities, building inclusive and skilled workforces to meet ambitious climate targets. As the lead for **Clean Energy Education and Empowerment** (C3E)[cxxxiv] International's **Equal by 30 Campaign**,[cxxxv] the Department also advocates for making gender equality central to the transition to a clean energy future by promoting concrete actions on equal pay, leadership and opportunities for women by 2030. The Campaign is now in its second phase, and has established a reporting framework and metrics to help signatories measure their progress against their commitments, track advancements on the goals of the campaign, and create a baseline of

gender-disaggregated data for the energy sector. The aggregated data results will be publicized in 2021, and will inform further work by the C3E.

Enhanced competitiveness of Canada's natural resource sectors

NRCan will continue to collaborate with federal, provincial and territorial governments to implement actions under the **Canadian Minerals and Metals Plan** (CMMP).[cxxxvi] This includes cleaner and more competitive resource extraction of the critical minerals needed for batteries and other clean energy products that will contribute to the speed and success of Canada's decarbonisation efforts.



Aerial view of high mineral content wetland with dead moss

Canada's energy deposits and mining activities extend to our oceans. In 2021-22, NRCan will work with provinces, industry and other stakeholders to support petroleum-related activities while protecting our aquatic resources. This includes collaborating with Newfoundland and Labrador to provide $320M to support Canadians with offshore energy jobs through activities such as safety improvements, maintenance and upgrades of existing facilities, and research and development.

With the rise in frequency and impact of cybercrimes targeting the Canadian energy sector, NRCan will focus on strengthening the cyber security and resilience of Canada's domestic and cross-border energy infrastructure. The Department will work with trusted partners to provide tools and advice that will help the energy sector to detect, mitigate and respond to evolving cyber threats. Considering the interconnectivity of Canada's and the U.S.' energy infrastructure, NRCan will continue to collaborate with its U.S. counterparts to protect our shared cross-border energy systems.

For the forest sector, Canada remains a global leader in **sustainable forest management** and a trusted supplier of forest products. To support jobs in rural communities, implement essential climate solutions and to build on Canada's innovation potential, NRCan will pursue policies and engage key partners, including Indigenous communities, to help strengthen Canada's forest sector. The **Forest Innovation Program** (FIP),[cxxxvii] for example, facilitates the initial research and development of innovative technologies, products and processes in the emerging bioeconomy through a number of external and internal organizations, such as the **Canadian Wood Fibre Centre**[cxxxviii] at NRCan. The Department will also help accelerate investments in advancing bioproducts manufacturing through the **Investments in Forest Industry Transformation Program** (IFIT)[cxxxix] in the areas of bioenergy, bio-products (such as plastics and mass timber construction) and next generation building materials.

NRCan supports Global Affairs Canada in continuing to defend Canada's forest sector against unwarranted U.S. duties imposed on Canadian softwood lumber exports, and to address other market access challenges faced by the sector abroad.

Gender-based analysis plus

Across the three core responsibilities, NRCan uses GBA+ to identify meaningful solutions to real issues in the natural resource sector. NRCan's planned activities aim to further advance the integration of GBA+ into departmental decision-making processes in order to support the development of new and ongoing policies and programs.

The **Resource Partnerships Sector's** (RPS) program facilitates meaningful participation of potentially impacted Indigenous groups in Crown consultation activities on natural resource project decisions, and the natural resource sector more broadly through measures, such as participant funding and consulting with Indigenous groups in natural resource project reviews.

The **Indigenous Natural Resources Partnerships Program** (INRP)[cxl] aims to increase the participation of Indigenous communities and organizations in oil and gas infrastructure developments in British Columbia and Alberta.

The **Indigenous Forestry Initiative** (IFI)[cxli] supports Indigenous participation in economic development projects within the forest sector and aims to increase Indigenous participation in forestry-related opportunities, businesses, careers and governance. It is designed to support a strong and resilient Indigenous forest sector by addressing systemic barriers such as those related to accessing tenure or capital funding, and capacity challenges. These investments will also help Indigenous communities, women and young people navigate the negative impacts of the global pandemic on the Indigenous forest sector.

NRCan, in partnership with provinces, territories, Indigenous groups and industry, developed the **Canadian Minerals and Metals Plan** (CMMP)[cxlii] with the vision of Canada becoming the world's leading mining nation, and home to a competitive, sustainable and responsible minerals industry that benefits all Canadians. The CMMP highlights the need to take action on gender equality, establishing an aspirational target to increase the representation of women in the industry's workforce to 30% by 2030, and it identifies strategies to increase the number of women and visible minorities in the mining sector and advance Indigenous participation, particularly of Indigenous women.

Finally, NRCan will contribute to the **Youth Employment and Skills Strategy** (YESS)[cxliii] through the **Science and Technology Internship Program (STIP) - Green Jobs**.[cxliv] The Program builds a diverse qualified labour pool in STEM fields and other fields that advance environmental outcomes. In this regard, STIP is able to support youth across Canada in all natural resource sectors, while promoting diversity.

United Nations' 2030 Agenda for Sustainable Development and the UN Sustainable Development Goals (SDGs)

NRCan's planned activities under this Core Responsibility will support Canada's efforts to address the UN 2030 Agenda and the achievement of several Sustainable Development Goals (SDG). Planned activities include:

- **Mission Innovation** (MI):[cxlv] In support of **SDG 17 – Partnerships for the Goals**,[cxlv i] the MI initiative aims to accelerate global clean energy innovation with 24 other countries. NRCan tracks clean energy research, development, and demonstration (RD&D) investments across all departments to report on the Government of Canada's commitment to double total federal investments under MI.

- **Marine Conservation Targets**:[cxlv ii] This work supports **SDG 17 – Partnerships for the Goals**[cxlv iii] by developing resource assessments to advise other government departments on protected areas along Canada's offshore and using marine geoscience to develop new maps and analyses of seafloor geology to inform evidence-based marine spatial planning and regional environmental assessments. This work also supports **SDG 14 – Life Below Water**,[cxlix] which aims to conserve and sustainably use oceans, seas and marine resources for sustainable development.

- **Energy Safety and Security, and Petroleum Resources program**: This program supports both **SDG 7 - Affordable and Clean Energy**[cl] and **SDG 9 – Industry, Innovation and Infrastructure**[cli] 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.

- **International Engagement**: In support of **SDG 7 - Affordable and Clean Energy**[clii] and **SDG 17 – Partnerships for the Goals**,[cliii] NRCan engages with key bilateral partners and multilateral fora to advance international efforts that enhance global energy security, energy system transformation, climate change mitigation and clean energy technology development and deployment. The Department also leads engagement in the international **Clean Energy, Education, and Empowerment** (C3E)[cliv] Initiative to enable greater gender diversity in clean energy professions.

- **Emissions Reduction Fund**:[clv] In support of **SDG 13 – Climate Action**,[clv i] Canada is assisting its oil and gas sector reduce its greenhouse gas emissions, with a focus on methane reduction. The Fund will increase the production and use of low-carbon fuels (e.g., hydrogen, biocrude, renewable natural

gas and diesel, cellulosic ethanol), complementing federal carbon pollution pricing, regulatory efforts and other federal programming.

Altogether, these activities will support Canada's transition to a low-carbon future and support competitiveness in Canada's natural resource sectors, while advancing reconciliation with Indigenous peoples.

Experimentation

NRCan will identify opportunities for experimentation within this Core Responsibility over 2021-22.

Key risks

The global pandemic has created a changing global trade context as a result of its impact on national and international economies, which has had an impact on market access for Canada's natural resource sectors as well as resulting in a number of risks captured under this Core Responsibility. These risks include challenges to competitiveness for the natural resource sectors, opportunities for workers affected by rapidly transforming natural resource sectors, as well as maintaining public confidence and engagement, including of Indigenous peoples, in natural resources development.

NRCan will manage these risks through the development, implementation and monitoring of mitigation strategies, including:

- Contributing to the diversification of Canada's market for natural resources, which include strategies on addressing trade barriers and infrastructure capacity;
- Supporting the economic recovery of natural resource sectors to improve competiveness through actions such as regulatory reform, trade missions and international engagement;
- Contributing to the Government of Canada's efforts to support workers and communities to ensure that economic recovery is able to foster future skills, create inclusive cultures, provide tools and training to be full participants in a clean-growth economy; and,
- Continuing work to restore public trust in regulatory processes and impact assessments of natural resources development.

Planned results for Globally Competitive Natural Resource Sectors

Departmental result	Departmental result indicator	Target	Date to achieve target	2017–18 actual result	2018–19 actual result	2019–20 actual result
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 25.2% of total U.S. imports (in value) Canada's market share in the world (non-U.S.) = At least 1.4 of the total world imports (in value)	December 2021	25.2% (U.S.) 1.4% (global imports)	24.8% (U.S.) 1.4% (global imports)	26.8% (U.S.) 1.5% (global imports)
	Increase in value of assets abroad owned by Canadian natural resource companies	At least $229.0 billion <	December 2021	$220.3 billion	$227.7 billion	Data not yet available[25]
	Number of NRCan international engagements that support the development or expansion of trade and investment in natural resources	At least 40	March 2022	27	39	42
	Number of joint products developed in collaboration with provinces and territories and released to Canadians	At least 12	March 2022	10	18	15

[25] Compilation of 2018-19 Industry data is not available before April 2020 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[26]	March 2022	Not Available[5]	Not Available[5]	Not available[5]
Enhanced competitiveness of Canada's natural resource sectors	Economic value of anticipated natural resource projects supported by analysis and solutions	At least $2.2 billion	March 2022	Not available[4]	Not available[4]	Not available[4]
	Number of initiatives enabled by NRCan to strengthen the security and resilience of Canada's critical energy infrastructure	At least 18	March 2022	Not Available[27]	Not available	Not available
	Number of times NRCan's economic and investment data are accessed	At least 400,000 quarterly average	March 2022	133,147	191,735	379,032

Financial, human resources and performance information for Natural Resource Canada's program inventory is available in the GC InfoBase.[clvii]

[26] The target will be determined based on 2020-21 baseline data.
[27] Historical information is not available for all previous years for this indicator newly added to Natural Resource Canada's Departmental Results Framework starting in 2020-21.

Planned budgetary financial resources for Globally Competitive Natural Resource Sectors

2021–22 budgetary spending (as indicated in Main Estimates)	2021–22 planned spending	2022–23 planned spending	2023–24 planned spending
$435,880,248	$435,880,248	$515,270,049	$886,951,774

Financial, human resources and performance information for Natural Resource Canada's program inventory is available in the GC InfoBase.[clviii]

Planned human resources for Globally Competitive Natural Resource Sectors

2021–22 planned full-time equivalents	2022–23 planned full-time equivalents	2023–24 planned full-time equivalents
479	460	404

Financial, human resources and performance information for Natural Resource Canada's program inventory is available in the GC InfoBase.[clix]

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 services that support Program delivery in the organization, regardless of the Internal Services delivery model in a department. These services are:

- Management and Oversight Services
- Communications Services
- Legal Services
- Human Resources Management Services
- Financial Management Services
- Information Management Services
- Information Technology Services
- Real Property Management Services
- Materiel Management Services
- Acquisition Management Services

Planning Highlights

In 2021-22, NRCan's Internal Services will continue to support the Department in advancing the Minister's Mandate Letter commitments and Government of Canada priorities. By providing corporate support, NRCan's Internal Services will ensure that NRCan programs are equipped with the tools required to deliver results to Canadians. As NRCan prepares for continued remote work, the Department's internal services have become essential in enabling employees continue to serve Canadians during these unprecedented times.

Operating in the COVID Context

Starting in March 2020, NRCan focused on developing operational management responses to recommended restrictions and other impacts related to the emerging COVID-19 public health crisis. Immediate responses included business continuity planning and addressing IM/IT systems to increase effective remote working capacity for the Department, while maintaining security and prioritizing the safety of all employees requiring physical access to NRCan buildings.

In 2021-22, like other departments, NRCan will build on the lessons learned in the past year to improve the way we work and foster flexibilities. This will include looking into how we can transform our workplace and science over the next few years while ensuring the health and well-being of employees, reinforcing our information infrastructure as well as reviewing and updating the Real Property plan.

NRCan will develop its **National Real Property Portfolio Strategy** in 2021-2022, which will align with new Federal Workplace Guidance and identify potential opportunities to optimize its portfolio.

The Department will further strengthen its operational activities by working towards centralizing and consolidating device services within the Chief Information Officer and Security Branch and provide further awareness surrounding information management and information technology security.

Supporting Science in an Open and Accountable Government

Ensuring NRCan's science is underpinned by a culture of integrity and excellence is essential to maintaining the rigour, relevance and reputation of NRCan and its expertise, while building trust among Canadians. **Transparency** and **communication** are key to achieving a culture of open, trustworthy and accountable science at NRCan. In 2021-22, work will continue on implementing the **Scientific Integrity**

Policy,[clx] adopted in 2019, to ensure that its principles are embedded in the design, conduct, management and use of the Department's science. To support enhanced dialogue and interaction between knowledge generators and knowledge users, the Department will also provide its employees with a platform to share their work and provide all Canadians with access to and use of the Government of Canada's geospatial data, services and applications.

To strengthen a culture of accountability and monitor how NRCan's science is used to inform decision-making, the Department will develop indicators on the benefits of our science and to measure our progress on making our science and data more accessible. NRCan's Chief Science Advisor (CSA) will support evidence-based decision-making within the Department by ensuring that our decisions and actions are grounded in transparent and robust science and, through continued participation in the interdepartmental **Science Advisor Network**, that NRCan is addressing cross-government science priorities, including Canada's post-pandemic economic recovery.

Emergency Management and Cybersecurity

NRCan supports the Government of Canada's **national security and emergency management agenda** by providing scientific advice and leadership. In 2021-22, NRCan will provide strategic advice and operational support during emergencies such as floods and wildfires. In addition, NRCan will focus on mitigating cyber security risks to protect its assets. In support of this, the Department will strengthen the oversight and governance on IT activities across the organization. Work will also ensure that the Department's employees and assets are secure as the nature of work and the workplace changes to adapt to the COVID-19 pandemic.

Strengthening Federal Science and Renewing NRCan's Laboratory Infrastructure

NRCan will support a whole-of-government initiative to strengthen federal science in Canada, Laboratories Canada. Specifically, the Department will consolidate portions of our science facilities under **new, world-class laboratory facilities** that will meet the current and future needs of scientists and promote collaboration with internal and external partners. The Department is contributing to transforming the delivery of science in the federal science ecosystem by promoting an integrated science vision and plan with its partners and reducing barriers to scientific collaboration. To this end, NRCan is co-leading the new **TerraCanada Science Hub** with the National Research Council Canada, Environment and Climate Change Canada, Health Canada and the Canadian Nuclear Safety Commission to establish new or expanded science facilities. This will form a network spanning from the National Capital Region to regional locations in Sudbury, Val D'Or, Quebec City, and Hamilton to replace and consolidate outdated laboratory buildings. The innovative research and development (R&D) resulting from this project will contribute to developing the economic potential of Canada's lands and resources in a sustainable manner, supporting the transition to a low-carbon economy and mitigating the impact of natural and human-made hazards.

Workforce and Workplace

NRCan will continue to grow its workforce in 2021-22, including through the Department's **Policy Analyst Recruitment and Development Program** (PARDP).[clxi] This program is an accelerated development program that recruits high caliber Master's or PhD-level graduates for challenging policy roles in the Department. Through two rotational assignments, training, mentorship support and other development channels, including an embedded digital literacy program, PARDP will develop policy leaders and help ensure that NRCan's workforce needs are met with talented employees.

Our dynamic workforce drives NRCan's delivery of results to Canadians. In 2021-22, NRCan will continue to **foster a healthy and inclusive workplace** for our employees. In 2021-22, NRCan will make use of new Workforce Availability data for Employment Equity (EE) groups, the *Accessibility Act* and the Public Service-wide Accessibility Strategy with a focus on ensuring employees have an accessible workplace where their accommodation needs are met. NRCan will develop recruitment and retention strategies for equity seeking groups including Indigenous employees, black employees and persons with disabilities. These strategies will be included in a planned **Employment Equity and Diversity Action Plan for 2021-2024**.

In addition, the Department will advance corporate change in support of reconciliation by providing training and awareness for employees and investing in targeted activities, such as targeted recruitment strategies, to help NRCan become an employer of choice for Indigenous peoples. Through 2021-22, the Department will also offer distinctions-based learning opportunities to support an increased understanding of Indigenous cultures, practices, Knowledge, and philosophies guided by Elders, noted Indigenous opinion leaders and academics. These teachings will support the goal of increasing the Department's cultural literacy and integrating Indigenous Knowledge into our work to complement, enhance, supplement, and strengthen western science. NRCan's **Circle of Nations Learning Centre** will host events including Indigenous cultural teachings, workshops and intergovernmental fora.

Through such initiatives as the **2020-2023 Mental Health and Workplace Wellness Strategy** NRCan will promote the resources and tools available to all employees to develop supportive mechanisms for building resilience and positive mental health competencies. The Department will also promote mechanisms to build collaborative relationships with stakeholders in all sectors and regions. The Department has positioned itself to build an equipped and competent management cadre with the capacity to empower and support employees with their mental health and wellbeing while fostering psychologically healthy and safe teams.

Alternately, recent **Public Service Employee Survey** (PSES)[clxii] results were very positive, overall. For 2021-22, NRCan will maintain its efforts to improve further on areas such as leadership, diversity and inclusion, and respectful and ethical workplace. To achieve this, our PSES departmental working group will ensure that senior management teams have the information and support required to drive continuous improvement. Concrete results will be achieved through initiatives such as the **2019-22 Official**

Languages Action Plan, the **2020-23 Employment Equity, Diversity and Inclusion Action Plan**, the **Prevention of Harassment and Violence in the Work Place Program**, as well as through ongoing **Change Leadership** and **Flexible Work Initiatives**.

Experimentation

The **Policy Analyst Recruitment and Development Program** (PARDP)[clxiii] has engaged in experimentation to test ways to improve its desired outcomes for the last two years. Experimentation has supported diversity and inclusion as well as the recruitment of economists, in particular, to allow the department to advance its priorities. Building on this innovative work, the PARDP team, Human Resources Branch, and the **Experimentation and Analytics Unit** (EAU) plan to perform more experimentation in 2021. In addition, the EAU will raise capacity across the Department on experimentation.

Planned budgetary financial resources for Internal Services

2021–22 budgetary spending (as indicated in Main Estimates)	2021–22 planned spending	2022–23 planned spending	2023–24 planned spending
$149,532,723	$149,532,723	$148,848,734	$142,999,186

Planned human resources for Internal Services

2021–22 planned full-time equivalents	2022–23 planned full-time equivalents	2023–24 planned full-time equivalents
989	979	973

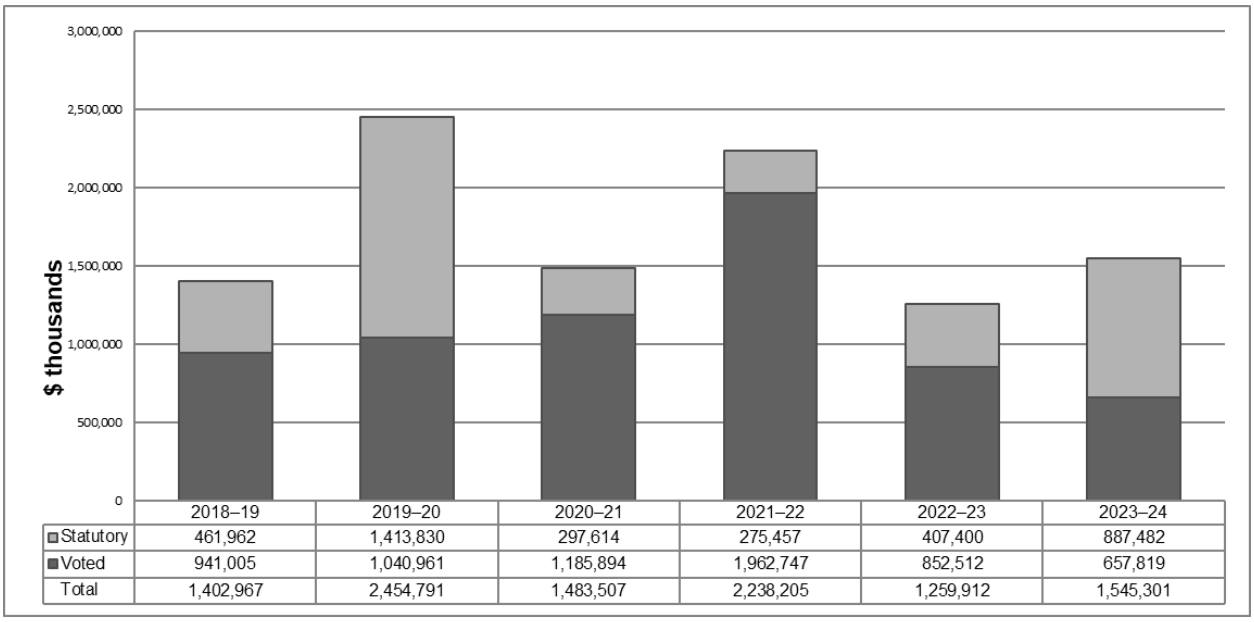
Spending and human resources

This section provides an overview of the department's planned spending and human resources for the next three consecutive fiscal years and compares planned spending for the upcoming year with the current and previous years' actual spending.

Planned spending

Departmental spending 2018–19 to 2023–24

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



	2018–19	2019–20	2020–21	2021–22	2022–23	2023–24
Statutory	461,962	1,413,830	297,614	275,457	407,400	887,482
Voted	941,005	1,040,961	1,185,894	1,962,747	852,512	657,819
Total	1,402,967	2,454,791	1,483,507	2,238,205	1,259,912	1,545,301

NRCan's program expenditures include salaries, non-salary costs, capital, grants and contributions to deliver programs and statutory items.

Budgetary planning summary for core responsibilities and Internal Services (dollars)

The following table shows actual, forecast and planned spending for each of Natural Resource Canada's core responsibilities and to Internal Services for the years relevant to the current planning year.

Core responsibilities and Internal Services	2018–19 expenditures	2019–20 expenditures	2020–21 forecast spending	2021–22 budgetary spending (as indicated in Main Estimates)	2021–22 planned spending	2022–23 planned spending	2023–24 planned spending
1. Natural Resources Science and Risk Mitigation	$208,683,836	$207,688,086	$249,430,748	$252,369,016	$252,369,016	$216,485,092	$184,597,120
2. Innovative and Sustainable Natural Resources Development	$483,259,791	$1,498,877,063	$589,733,738	$1,400,422,672	$1,400,422,672	$379,307,710	$330,752,686
3. Globally Competitive Natural Resource Sectors	$561,781,790	$595,634,877	$494,243,480	$435,880,248	$435,880,248	$515,270,049	$886,951,774
Subtotal	**$1,253,725,417**	**$2,302,200,026**	**$1,333,407,966**	**$2,088,671,936**	**$2,088,671,936**	**$1,111,062,851**	**$1,402,301,580**
Internal Services	$149,241,560	$152,590,901	$150,099,174	$149,532,723	$149,532,723	$148,848,734	$142,999,186
Total	**$1,402,966,977**	**$2,454,790,927**	**$1,483,507,140**	**$2,238,204,659**	**$2,238,204,659**	**$1,259,911,585**	**$1,545,300,766**

For 2018-19 and 2019-20, the figures represent the actual expenditures as reported in the Public Accounts of Canada, while those for 2020-21 represent the forecasted expenditures to year end. For 2021-22 to 2023-24, the figures represent total planned spending, as per approved budgetary authorities in the 2021-22 Main Estimates to support NRCan program activities.

From 2018-19 to 2019-20, expenditures increased by $1.1 billion mainly as a result of a statutory endowment in 2019-20 to the Federation of Canadian Municipalities for the Green Municipal Fund and due to new or incremental spending for various programs such as the Green Infrastructure envelope and

the Clean Growth Program. These increases were partially offset by reduced spending in the Federal Infrastructure Initiative as the program was winding down, and lower payments under the Statutory Atlantic Offshore Accords Act.

The overall decrease of $1.0 billion in forecast spending from 2019-20 to 2020-21 is mainly the result of a statutory endowment in 2019-20 to the Federation of Canadian Municipalities, which was a one-time payment, and decreases in Statutory Atlantic Offshore payments; offset by new voted spending forecasted for the Emissions Reduction Fund, for safety measures in forest sector operations (COVID-19), for improving energy efficiency in homes, to combat mountain pine beetle infestations, and efforts to protect the southern mountain woodland caribou.

The overall increase of $0.8 billion in funding from 2020-21 to 2021-22 is mainly the result of increases in the funding profile for the Emissions Reduction Fund and for improving energy efficiency in homes.

An overall decrease in planned authorities of $0.7 billion from 2021-22 to 2023-24 is mainly the result of reduced funding profiles for major initiatives such as the Emissions Reduction Fund and improving energy efficiency in homes as well as sunsetting programs.

Sunsetting 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 related to royalty transfers to the province of Newfoundland and Labrador, which are 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.

Planned human resources

The following table shows actual, forecast and planned full-time equivalents (FTEs) for each core responsibility Natural Resource Canada's departmental results framework and to Internal Services for the years relevant to the current planning year.

Human resources planning 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 forecast full-time equivalents	2021–22 planned full-time equivalents	2022–23 planned full-time equivalents	2023–24 planned full-time equivalents
1. Natural Resources Science and Risk Mitigation	1,223	1,274	1,197	1,213	1,189	1,161
2. Innovative and Sustainable Natural Resources Development	1,581	1,645	1,494	1,582	1,489	1,439
3. Globally Competitive Natural Resource Sectors	407	469	491	479	460	404
Subtotal	3,211	3,388	3,182	3,274	3,138	3,004
Internal Services	960	993	987	989	979	973
Total	**4,171**	**4,381**	**4,169**	**4,263**	**4,117**	**3,977**

For 2018-19 and 2019-20, the figures represent the FTEs as reported in the Departmental Results Report while 2020-21 represents the forecasted FTEs to year end. For 2021-22 to 2023-24, the figures represent total Planned FTEs to support NRCan program activities, approved by Treasury Board.

NRCan's total FTE count remains relatively steady from 2018-19 to 2023-24.

The fluctuation between 2020-21 Forecasted FTEs and 2023-24 Planned FTEs is mainly attributed to the sunsetting of major initiatives, which were explained in the Budgetary Planning Summary Section. As new initiatives are undertaken, plans for future FTE requirements will be adjusted accordingly.

Estimates by vote

Information on Natural Resource Canada's organizational appropriations is available in the 2021–22 Main Estimates.[clxiv]

Consolidated Future-oriented Condensed Statement of Operations

The consolidated future-oriented condensed statement of operations provides an overview of NRCan's operations for 2020-21 to 2021-22.

The amounts for forecast and planned results in this statement of operations were prepared on an accrual basis. The amounts for forecast and planned spending presented in other sections of the Departmental Plan were prepared on an expenditure basis. Amounts may therefore differ.

A more detailed consolidated future-oriented statement of operations and associated notes, including a reconciliation of the net cost of operations to the requested authorities, are available on the NRCan website.[clxv]

Consolidated future-oriented condensed statement of operations for the year ending March 31, 2022 (dollars)

Financial information	2020–21 forecast results	2021–22 planned results	Difference (2021–22 planned results minus 2020–21 forecast results)
Total expenses	1,541,402,813	1,821,313,961	279,911,148
Total net revenues	24,306,102	29,101,181	4,795,079
Net cost of operations before government funding and transfers	1,517,096,711	1,792,212,780	275,116,069

The increase of $280 million in total expenses between years is mainly explained by:

- An **increase of $328 million in Innovative and Sustainable Natural Resources Development** mainly related to:
    - An increase of $128 million related to the Emissions Reduction Fund (ERF), which is the net of $532 million in planned expenditures less $404 million for unconditionally repayable contributions (which will be repaid); and
    - An increase of $284 million related to improving energy efficiency in homes.
    - These increases are offset by a decrease of $59 million related to the sunsetting of the ecoENERGY Renewable Power Initiative and the winding down of the energy efficiency programming in the automotive sector, the Clean Growth Program and the Impact Canada Initiative.

- A **decrease of $60 million in Globally Competitive Natural Resource Sectors** mainly due to:
    - A decrease of $30.6 million related to the sunsetting of the COVID-19 safety measures in forest sector operations;
    - A decrease in the funding profile of the Youth Employment and Skills Strategy of $16.6 million and of the Indigenous Advisory and Monitoring Committees of $4.4M; and,
    - A decrease of $3.3M related to Offshore Statutory accounts.

The increase of $5 million in total net revenues is mainly attributable to a planned increase in the Environmental Studies Research Fund in 2021-22.

The charts presenting the distribution of Natural Resources Canada's total forecast expenses for 2020-21 and planned expenses for 2021-22 by Core Responsibility on an accrual basis are available on the NRCan website.[clxvi]

Corporate information

Organizational profile

Appropriate minister: The Honourable Seamus O'Regan Jr., P.C., M.P.

Institutional head: Jean-François Tremblay

Ministerial portfolio:

- Atomic Energy of Canada Limited;[clxvii]
- Canada Energy Regulator (CER);[clxviii]
- Canadian Nuclear Safety Commission;[clxix]
- Canada-Newfoundland and Labrador Offshore Petroleum Board;[clxx]
- Canada-Nova Scotia Offshore Petroleum Board;[clxxi]
- Northern Pipeline Agency;[clxxii] and,
- Energy Supplies Allocation Board (inactive).

Enabling instruments:

- Department of Natural Resources Act, S.C. 1994, c. 41;[clxxiii]
- Forestry Act, R.S.C., 1985, c. F-30;[clxxiv]
- Resources and Technical Surveys Act, R.S.C., 1985, c. R-7;[clxxv]
- Energy Efficiency Act, S.C. 1992, c. 36;[clxxvi]
- Extractive Sector Transparency Measure Act, S.C. 2014, s.376;[clxxvii] and,
- Explosives Act, R.S.C., 1985, c. E-17.[clxxviii]

Year of incorporation / commencement: 1994

Other:

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 NRCan's website.[clxxix]

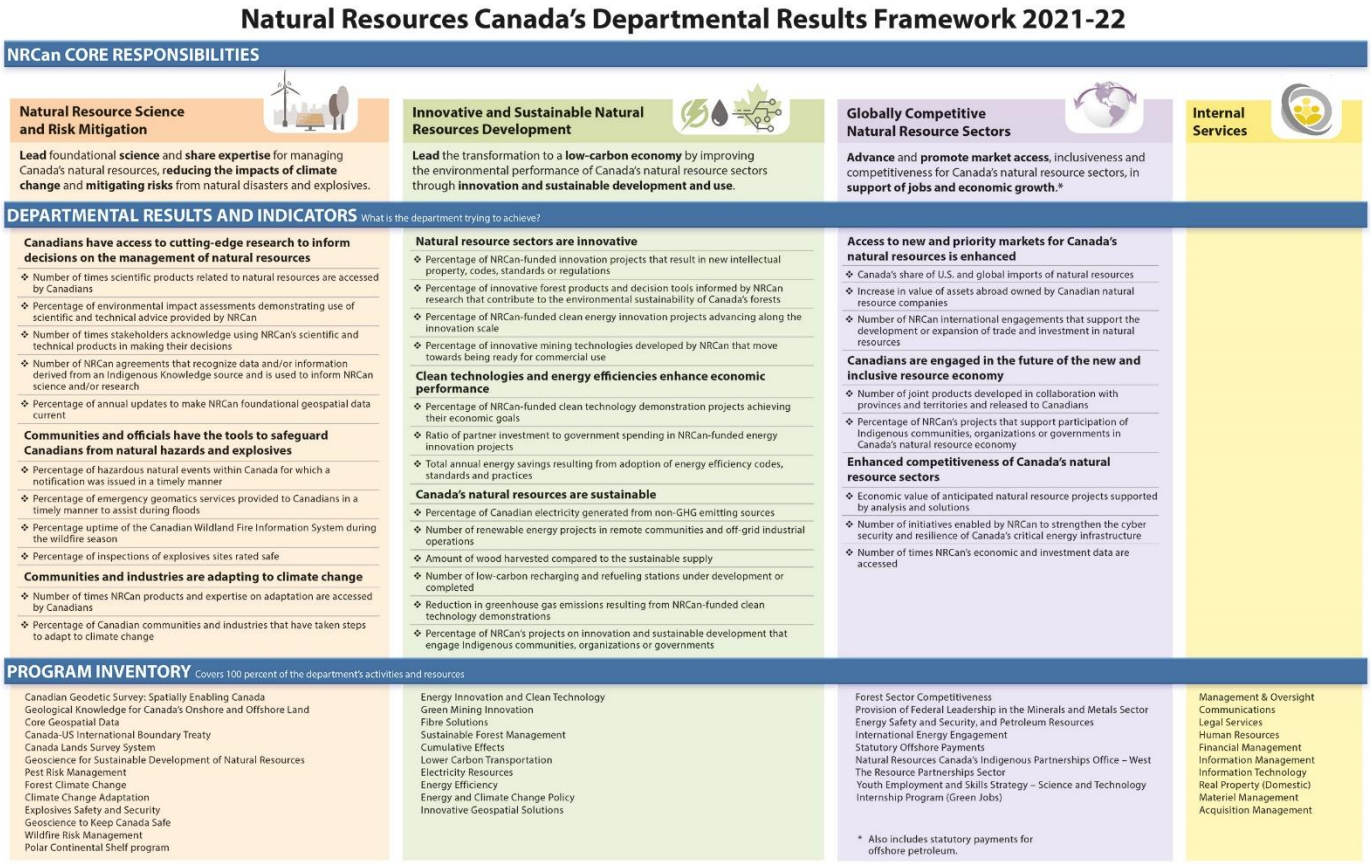
For more information on the department's organizational mandate letter commitments, see the Minister of Natural Resources Canada's Mandate Letters (December 13, 2019,[clxxx] and January 15, 2021[clxxxi])

Operating context

Information on the operating context is available on NRCan's website.[clxxxii]

Reporting framework

The NRCan approved departmental results framework and program inventory for 2021-22 are as follows.



Changes to the approved reporting framework since 2020-21

Structure		2021-22	2020-21	Change	Reason for change
CORE RESPONSIBILITY		Natural Resource Science and Risk Mitigation	Natural Resource Science and Risk Mitigation	No change	Not applicable
	PROGRAM	Canadian Geodetic Survey: Spatially Enabling Canada	Canadian Geodetic Survey: Spatially Enabling Canada	No change	Not applicable
	PROGRAM	Geological Knowledge for Canada's Onshore and Offshore Land	Geological Knowledge for Canada's Onshore and Offshore Land	No change	Not applicable
	PROGRAM	Core Geospatial Data	Core Geospatial Data	No change	Not applicable
	PROGRAM	Canada-US International Boundary Treaty	Canada-US International Boundary Treaty	No change	Not applicable

Structure		2021-22	2020-21	Change	Reason for change
	PROGRAM	Canada Lands Survey System	Canada Lands Survey System	No change	Not applicable
	PROGRAM	Geoscience for Sustainable Development of Natural Resources	Geoscience for Sustainable Development of Natural Resources	No change	Not applicable
	PROGRAM	Pest Risk Management	Pest Risk Management	No change	Not applicable
	PROGRAM	Forest Climate Change	Forest Climate Change	No change	Not applicable
	PROGRAM	Climate Change Adaptation	Climate Change Adaptation	No change	Not applicable
	PROGRAM	Explosives Safety and Security	Explosives Safety and Security	No change	Not applicable
	PROGRAM	Geoscience to Keep Canada Safe	Geoscience to Keep Canada Safe	No change	Not applicable
	PROGRAM	Wildfire Risk Management	Wildfire Risk Management	No change	Not applicable
	PROGRAM	Polar Continental Shelf program	Polar Continental Shelf program	No change	Not applicable
CORE RESPONSIBILITY		Innovative and Sustainable Natural Resources Development	Innovative and Sustainable Natural Resources Development	No change	Not applicable
	PROGRAM	Energy Innovation and Clean Technology	Not applicable	New program	Note 1
	PROGRAM	Not applicable	Clean Energy Technology Policy, Research and Engagement	Program ended	Note 2
	PROGRAM	Not applicable	Clean Growth in Natural Resource Sectors	Program ended	Note 2
	PROGRAM	Not applicable	Energy Innovation Program	Program ended	Note 2
	PROGRAM	Green Mining Innovation	Green Mining Innovation	No change	Not applicable
	PROGRAM	Fibre Solutions	Fibre Solutions	No change	Not applicable
	PROGRAM	Sustainable Forest Management	Sustainable Forest Management	No change	Not applicable
	PROGRAM	Cumulative Effects	Cumulative Effects	No change	Not applicable
	PROGRAM	Lower Carbon Transportation	Lower Carbon Transportation	No change	Not applicable
	PROGRAM	Electricity Resources	Electricity Resources	No change	Not applicable
	PROGRAM	Energy Efficiency	Energy Efficiency	No change	Not applicable

Structure		2021-22	2020-21	Change	Reason for change
	PROGRAM	Energy and Climate Change Policy	Energy and Climate Change Policy	No change	Not applicable
	PROGRAM	Innovative Geospatial Solutions	Innovative Geospatial Solutions	No change	Not applicable
CORE RESPONSIBILITY		Globally Competitive Natural Resource Sectors	Globally Competitive Natural Resource Sectors	No change	Not applicable
	PROGRAM	Forest Sector Competitiveness	Forest Sector Competitiveness	No change	Not applicable
	PROGRAM	Provision of Federal Leadership in the Minerals and Metals Sector	Provision of Federal Leadership in the Minerals and Metals Sector	No change	Not applicable
	PROGRAM	Energy Safety and Security, and Petroleum Resources	Energy Safety and Security, and Petroleum Resources	No change	Not applicable
	PROGRAM	International Energy Engagement	International Energy Engagement	No change	Not applicable
	PROGRAM	Statutory Offshore Payments	Statutory Offshore Payments	No change	Not applicable
	PROGRAM	Natural Resources Canada's Indigenous Partnerships Office – West	Natural Resources Canada's Indigenous Partnerships Office – West	No change	Not applicable
	PROGRAM	The Resource Partnerships Sector	Major Projects Management Office Initiative	Title change	Note 3
	PROGRAM	Youth Employment and Skills Strategy - Science and Technology Internship Program (Green Jobs)	Science and Technology Internship Program	Title change	Note 4

Note 1 Three programs have merged into one to better reflect program outcomes, tell our funding program results story and reduce unnecessary reporting burden among artificially divided indicators.

Note 2 Program merged into the new Clean Energy Technology program. See Note 1.

Note 3 The Resource Partnerships Sector was established in 2020 to succeed the Major Projects Management Office Initiative that ended in March 2020.

Note 4 Title modified to align with the Youth Employment and Skills Strategy.

No Change: Title Change: Not applicable:

Supporting information on the program inventory

Supporting information on planned expenditures, human resources, and results related to the Department of Natural Resources Canada's program inventory is available in the GC InfoBase.[clxxxiii]

Supplementary information tables

The following supplementary information tables are available on NRCan's website:[clxxxiv]

- Sustainable Development Goals
- Departmental Sustainable Development Strategy
- Details on transfer payment programs
- Gender-based analysis plus
- Up-front multi-year funding

Federal tax expenditures

NRCan's Departmental Plan does not include information on tax expenditures that relate to its planned results for 2021–22.

Tax expenditures are the responsibility of the Minister of Finance, and the Department of Finance Canada publishes cost estimates and projections for government-wide tax expenditures each year in the Report on Federal Tax Expenditures.[clxxxv] This report provides detailed information on tax expenditures, including objectives, historical background and references to related federal spending programs, as well as evaluations, research papers and gender-based analysis. The tax measures presented in this report are solely the responsibility of the Minister of Finance.

Organizational contact information

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Website: www.nrcan.gc.ca/home

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 a department over a 3 year period. Departmental Plans are tabled in Parliament each spring.

departmental priority (priorité ministérielle)

A plan or project that a department has chosen to focus and report on during the planning period. Departmental 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 factor or variable that provides a valid and reliable means to measure or describe progress on a departmental result.

departmental results framework (cadre ministériel des résultats)

A framework that consists of the department's core responsibilities, 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 and what doesn't. Experimentation is related to, but distinct form 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. Full time equivalents are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

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

An analytical 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 2021–22 Departmental Plan, government-wide priorities refers to those high-level themes outlining the government's agenda in the 2020 Speech from the Throne, namely: Protecting Canadians from COVID-19; Helping Canadians through the pandemic; Building back better – a resiliency agenda for the middle class; The Canada we're fighting for.

horizontal initiative (initiative horizontale)

An initiative in which 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 up to the expected result.

planned spending (dépenses prévues)

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

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

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

result (résultat)

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

statutory expenditures (dépenses législatives)

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

strategic outcome (résultat stratégique)

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

target (cible)

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

voted expenditures (dépenses votées)

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

Endnotes

[i] Minister of Natural Resources Canada's Mandate Letters, https://pm.gc.ca/en/mandate-letters/2019/12/13/minister-natural-resources-mandate-letter

[ii] Minister of Natural Resources Canada's Mandate Letters, https://pm.gc.ca/en/mandate-letters/2021/01/15/minister-natural-resources-supplementary-mandate-letter

[iii] Gender-based analysis plus, https://www.nrcan.gc.ca/gender-based-analysis-plus/22584

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