Natural Resources Canada
2022–23
Departmental Results Report

Originally signed by

The Honourable Jonathan Wilkinson, P.C., M.P.
Minister of Energy and Natural Resources

Natural Resources Canada | Ressources naturelles Canada

Canada

Cat No. M2-15E-PDF

ISSN 2561-1674

Aussi disponible en français sous le titre : Rapport sur les résultats ministériels, Ressources naturelles Canada 2022-2023

Copies are available through NRCan's web site: https://natural-resources.canada.ca/transparency/reporting-and-accountability/plans-and-performance-reports/22263

Table of contents

From the Minister 1

Results at a glance....4

Results: what we achieved....10

- Core responsibilities....10
- Natural Resource Science and Risk Mitigation 10
- Innovative and Sustainable Natural Resources Development 24
- Globally Competitive Natural Resource Sectors 50
- Internal services 63

Spending and human resources....70

- Spending....70
- Human resources....74
- Expenditures by vote....75
- Government of Canada spending and activities....75
- Financial statements and financial statements highlights 75

Corporate information....78

- Organizational profile 78
- Raison d’être, mandate and role: who we are and what we do 78
- Operating context....78
- Reporting framework 79

Supporting information on the program inventory 80

Supplementary information tables 80

Federal tax expenditures 80

Organizational contact information 80

Appendix: definitions....81

Endnotes....85

From the Minister

In the wake of the most destructive wildfire season in Canadian history, Canadians are feeling the effects of climate change. No region of the country is immune. From coast to coast to coast, extreme weather events are escalating in frequency and severity. There is an urgent need for action to prepare our communities for the impacts of climate change while also ensuring our workers and industries are advancing to seize the economic opportunities associated with taking action to fight climate change. And that's exactly what the Government of Canada is working toward.

In 2022–2023, Natural Resources Canada continued to deliver on its mandate to improve the lives of Canadians while ensuring that our country's natural resources are managed sustainably, competitively and inclusively. This report summarizes many of these initiatives, and it highlights the department's efforts to ensure economic growth, create good jobs in every region of the country and improve the lives and livelihoods of all Canadians.

NRCan is combating the climate crisis by supporting the development of our net-zero economy by 2050 under Canada's Emissions Reduction Plan. To accelerate Canada's low-carbon future, we are providing billions of dollars of investment through programs including the Smart Renewable and Electrification Pathways Program, which is deploying renewable energy and electrical grid modernization projects across Canada. These projects will reduce emissions by unlocking the generation of electricity with affordable, reliable and clean forms of energy while creating sustainable jobs for generations to come.

Around the world, governments are building efficient energy systems that require critical minerals. These minerals are the building blocks of clean energy technologies. With global demand growing, we have a generational opportunity for economic growth and job creation in communities across Canada. NRCan has set the stage to seize this generational opportunity by allocating nearly $4 billion in Budget 2022 through Canada's Critical Minerals Strategy, a strategy that will create jobs, economic growth and opportunities to advance reconciliation with Indigenous people.

We are working with global partners to ensure that Canada becomes the global supplier of choice for clean technologies, energy and the minerals needed to support the worldwide shift to net zero. We are working with international and domestic partners to advance opportunities for collaboration in clean technology and innovation. This collaboration is critical to seizing the

generational opportunities afforded by the rapid pace of global investment in cleaner technologies and industries.

To prepare our communities for the significant impacts of climate change, NRCan supported Canada's first National Adaptation Strategy. This was a vital step in order to adapt to unprecedented environmental conditions, improve human health and well-being and ensure resilience in supporting workers and the economy. To further protect Canadians and Canada's forests from climate change, the Fighting and Managing Wildfires in a Changing Climate Program and the Emergency Management Strategy provided valuable tools to enhance preparedness and mitigate risks.

NRCan continued to advance meaningful reconciliation with Indigenous Peoples through ongoing engagement to implement the *United Nations Declaration on the Rights of Indigenous Peoples*. We collaborated with Indigenous communities and partners to foster constructive dialogue to further develop initiatives like the National Benefits-Sharing Framework. We also continued to advance progress within the department by engaging with staff via the *Pathways to Reconciliation Initiative*, contributing to mutually beneficial relationships — ones founded on shared understanding and mutual respect — with Indigenous communities.

To achieve all of these intersecting goals, NRCan continued to work in collaboration with scientists, labour partners, industry and Indigenous Peoples and governments, alongside federal counterparts, and with provincial, territorial and local governments.

Science and data are essential to every NRCan initiative. The department has invested in modernizing the ways we work, notably through responsibly leveraging the potential of artificial intelligence to increase the value of new innovations through initiatives like the Digital Accelerator. Through world-class research, we informed the policy development process to support decision-making and help mitigate the impacts of natural and human hazards through regulations and policy, together with the support of innovative technologies.

NRCan continued to build on the progress made on all these fronts by advancing regulatory certainty for Canadians and businesses to achieve and maintain a reliable, affordable and clean energy supply that will grow our economy. We have continued to support Canadian workers through the Sustainable Jobs Plan to guide and organize efforts to ensure that workers have the right tools to contribute to the economy of the future. And through the Regional Energy and Resource Tables, we are engaging with provincial and territorial governments, workers, businesses and Indigenous partners to advance progress on vital economic opportunities that will enable Canada to take a coordinated and collaborative approach to creating generational wealth and a sustainable future for generations to come.

As the world accelerates climate action, Canada faces a choice: we can either lead in seizing the historic economic opportunities associated with building a global net-zero economy, or we can let them pass us by, with all the consequences attendant on inaction. As this report shows, we are choosing to plan for the future.

The global race to net zero is a critical economic mission for every region of Canada. By working together with provincial, territorial and Indigenous partners, we are advancing our efforts to support Canadians in seizing the enormous opportunities associated with building a sustainable and prosperous net-zero future.

Results at a glance

Canada's vast natural resource sectors contribute significantly to the economic growth of the country, playing a vital role in creating jobs, and fostering growth and prosperity for Canadians. In 2022-23, the real Gross Domestic Product (GDP) for the energy, forestry, mining and mineral sub-sectors accounted for approximately 15.5% of the GDP, 47% of total exported Canadian goods and supported over 1.9 million direct and indirect jobs.

Through science, evidence-based policies, and partnerships with Indigenous Peoples, provincial and territorial governments, as well as a diverse range of stakeholders, Natural Resources Canada (NRCan) made significant progress on its five strategic priorities.

While external pressures continued to affect natural resources sectors, including the residual effects of the COVID-19 pandemic impacting global supply chains and the war in Ukraine disrupting global energy markets, NRCan strengthened its support to reduce the impacts of climate change, pursue the transition to a low-carbon economy and enhance market access of Canada's natural resources while supporting jobs and economic growth.

NRCan focused on five strategic priorities in 2022-23 and achieved the following results:

1. **Accelerate development and adoption of clean technology to build a more resilient economy and transition to net-zero by 2050.**

Building on Canada's pledge to reduce greenhouse gas (GHG) emissions under the *Canadian Net-Zero Emissions Accountability Act*, the 2030 Emissions Reduction Plan[i] includes many measures that will reduce emissions across the entire economy to reach our emissions reduction target of 40 to 45 percent below 2005 levels by 2030 and put us on a path to achieve net-zero emissions by 2050.

To reach our climate objectives, Canada must harness the power of a cleaner future by transitioning to a low-carbon economy. One of the conditions that will influence success is the ability to shift to electric technologies and energy systems that are powered by renewable and non-emitting energies. NRCan played a key role in this transition via the $1.56 billion Smart Renewables and Electrification Pathways Program[ii], which is supporting 121 smart renewable energy, grid modernization, and capacity projects, adding over 2,700 megawatts of new renewable generation capacity to the electricity system. Over half of the supported projects have meaningful Indigenous ownership.

The following initiatives also contributed to accelerating Canada's low carbon future:

- The $250 million Electricity Predevelopment Program was launched in support of predevelopment activities necessary to advance large clean electricity infrastructure projects of regional and national significance.
- The $200 million Emerging Renewable Power Program funded six energy projects across three emerging renewable technologies, geothermal, tidal and bifacial solar. In 2022, the Tuh Deh Kah geothermal project in British Columbia completed well testing, surpassing a critical milestone.

- The $100 million Smart Grid Program[iii], which supported 22 projects over five years, completed delivery of funding for the modernization of grid infrastructure.
- Strategic Interties Predevelopment Program committed $12.7 million in support of inter-provincial electricity transmission project predevelopment activities.
- The Enabling Small Modular Reactor Program[iv] (SMR) was launched in 2023 to support the conditions and enabling the framework necessary for SMRs to displace fossil fuels and contribute to climate change mitigation.
- The $76 million Electric Vehicle Infrastructure Demonstration[v] program, which has supported 30 projects to date, continued to advance applications such as novel EV charging technologies and business models for multi-unit residential buildings and workplaces, transit electrification and battery repurposing.
- The Clean Energy for Rural and Remote Communities program supported 129 projects which support and enable rural and remote communities reliant on diesel and non-renewable sources of power to transition to renewable sources of energy, energy storage, and heating.

Critical minerals represent an opportunity for Canada in transitioning to a low-carbon economy. NRCan initiated pilot projects to accelerate the development of technologies that will produce key critical minerals for the electric vehicle industry. In addition, through innovative projects like the Critical Minerals Research, Development and Demonstration program,[vi] CanmetMINING advanced the commercial readiness of 31 emerging mineral processing operations and technologies.

To further reduce GHG emissions, NRCan administered the $1.5 billion Clean Fuels Fund[vii] to build new and expand existing, clean fuel production facilities; launched the Green Freight Program[viii] to help fleets reduce their fuel consumption and GHG emissions through fleet energy assessments, including fleet retrofits; and, helped onshore and offshore oil and gas companies invest in green solutions through the $750 million Emissions Reduction Fund.[ix]

Activities under the Energy Efficiency Program[x] reduced energy consumption and costs, ensured a competitive, more sustainable and resilient economy, and supported climate goals. In 2022-23, Amendments 13-16 to the Energy Efficiency Regulations under the *Energy Efficiency Act*,[xi] together with the ENERGY STAR for Products program,[xii] achieved an estimated 49 petajoules of cumulative annual energy savings and avoided 4.8 Mt of GHG emissions. Since its launch in May 2021, the Canada Greener Homes Initiative[xiii] had a total of over 310,000 grant applications; provided over $262 million in grants across Canada; achieved 4.26 petajoules of cumulative annual energy savings; and avoided 0.34 Mt of GHG emissions as of April 30, 2023.

To stimulate innovation, NRCan delivered $115 million in funding to support more than 350 clean energy research, development and demonstration projects in 2022-23. These advanced clean energy solutions for industry, communities, and transportation.

2. **Create and maintain market access while improving competitiveness for Canada's resource sectors.**

Canada's prosperity depends on expanding and diversifying resources while providing access to global markets. NRCan is working diligently to support economic growth, climate action and enhance global security by ensuring the nation is a reliable supplier of resources such as critical minerals.

Vital for a wide range of industries, critical minerals are also important inputs in many clean energy technologies like electric vehicles and batteries. Critical minerals represent an opportunity for Canada to be a global leader in the energy transition and ensure that every worker, business and community can thrive in a net-zero world. In December 2022, Canada's Critical Mineral Strategy[xiv] was released, a key commitment in the Minister of Natural Resources' mandate letter. The Strategy focuses on opportunities at every stage along the value chain for Canada's 31 critical minerals.[xv] It also outlines concrete measures to accelerate regulatory processes and ensure ongoing Indigenous partnership throughout the value chain. Canada is well positioned to increase the supply of critical minerals and support the development of domestic and global value chains for the green and digital economy.

To further support the green energy transition, NRCan's CanmetMINING worked with the Argonne National Laboratory, which is funded by the United States Department of Energy, on the Joint Action Plan on Critical Minerals to advance mutual interest in securing critical mineral supply chains. The Canadian Minerals and Metals Plan[xvi] made progress in implementing Pan-Canadian Initiatives to ensure Canada remains a leader in the mining industry.

To increase competitiveness of the forest sector, $14.6 million was invested in 2022-23 to support 204 projects in market development activities in partnership with industry and provinces through the Expanding Market Opportunities Program.[xvii] NRCan also collaborated with Global Affairs Canada to ensure that Canadian exporters of sustainable forest products were not affected by the in-market measures to address logging and associated trade.

The Department committed to reduce emissions from the oil and gas sector by taking action to maintain market competitiveness and strengthen strategic relationships with international partners, which led to the Canada Germany Joint Declaration of Intent[xviii] to collaborate on the export of clean hydrogen from Canada to Germany in August 2022.

Regulatory regimes are important to advance natural resource projects and ensure that projects meet federal regulations. NRCan continued actions towards better coordination and harmonization of the regulatory framework, such as codes, standards regulation and policies, in 2022-23 to ensure stable long-term planning of investments and competitiveness.

3. **Advance reconciliation, strengthen relationships, increase engagement and share economic benefits with Indigenous Peoples.**

Through the United Nations Declaration on the Right of Indigenous Peoples,[xix] and ongoing work to develop a National Benefit-Sharing Framework, including through engagement with Indigenous rights-holders and organizations, NRCan worked towards ongoing reconciliation with Indigenous Peoples by building meaningful relationships and ensuring that they benefited directly from natural resource development.

NRCan sought out Indigenous partners and perspectives for resources development plans and frameworks such as the Renewed Forest Bioeconomy Framework[xx] and the Critical Minerals Strategy. In addition, $135 million was allocated for consultations and engagements with Indigenous communities to maintain NRCan's commitment to implement the Trans Mountain Expansion initiative.

Work with the Indigenous Natural Resource Partnerships Program[xxi] (INRP) for implementing other natural resource projects established 16 agreements with Indigenous communities. The INRP was allocated $100 million through Budget 2022 aimed towards increasing the economic participation of Indigenous communities and organizations in the development of natural resource projects that support the transition to a clean energy future.

To support the transition to clean energy and reduce diesel consumption in Indigenous, rural, and remote communities, a network of five federal departments was created – named Wah-ila-toos – which aims to deliver funding in an accessible and efficient manner. In addition, a distinctions-based Indigenous Council was established to support Wah-ila-toos by providing guidance and advice on programs and policy development. The Indigenous Council will also direct an engagement process and develop recommendations on a long-term strategy for the clean energy transition in rural, remote, and Indigenous communities.

4. **Promote, build and foster equity, diversity, and inclusion while supporting resource communities to thrive in a net-zero carbon economy.**

With a highly skilled workforce, abundant natural resources and a thriving clean technology industry, Canada is poised to succeed in transitioning to a net-zero economy. The transition will require a whole of society approach that includes the right tools and support for workers of all groups in the natural resource sectors. NRCan released the interim Sustainable Jobs Plan[xxii] to guide and organize efforts to support workers in the economy of the future. The Plan seeks to encourage the creation of sustainable jobs through a worker and people-centered approach that will be equitable, fair and inclusive. This work will help to ensure that every provincial and territorial economy benefits from the transition to net-zero, including oil and gas producing regions.

In 2022, the Regional Energy and Resource Tables[xxiii] were launched to establish partnerships with provinces and territories to pursue opportunities for economic growth and sustainable job creation through the development of regional plans. The Regional Tables will help align

resources and timelines across all levels of government and better coordinate regulatory and permitting processes – all while respecting the rights and engaging the interests of Indigenous peoples, as well as enlisting the expertise of union partners, workers, industry, municipalities, experts and think tanks. To date, nine Regional Tables have been established and work is in progress to jointly identify short-terms actions and pathways to grow each region's comparative advantages in a low-carbon economy.

To support youth, the Department provided funding to eligible employers across Canada to hire, train, and mentor youth in the natural resources sector through the Science and Technology Internship program.[xxiv] This Program has created 594 green jobs and training opportunities for youth in the natural resource sectors and preliminary results for 2022-23 indicate that 74% of youth were employed after the internship.

To create successful employment policies for all, including youth, women and marginalized communities, NRCan produced a study on Skills Development and Inclusivity for Clean Energy Transitions[xxv] in partnership with the International Energy Agency. This report covers how best to overcome a broad range of challenges.

In the forest sector, increased economic development for Indigenous communities was made possible by allocating $7.5 million to Indigenous-led projects through the Indigenous Forestry Initiative[xxvi].

To encourage diversity and inclusion, and answer some of our biggest technological problems, NRCan provided $990,000 to innovators in the Women in Cleantech Challenge[xxvii] through the Energy Innovation Program[xxviii] (EIP).

5. **Protect Canadians from the impacts of natural and human-induced hazards while supporting and advancing climate change adaptation.**

As the climate is changing and will continue to change in the decades to come, we will have to overcome the climate impacts on our communities, economy, and well-being. NRCan's science and research activities will help mitigate the impacts of natural and human hazards with regulations, policy and innovative technology.

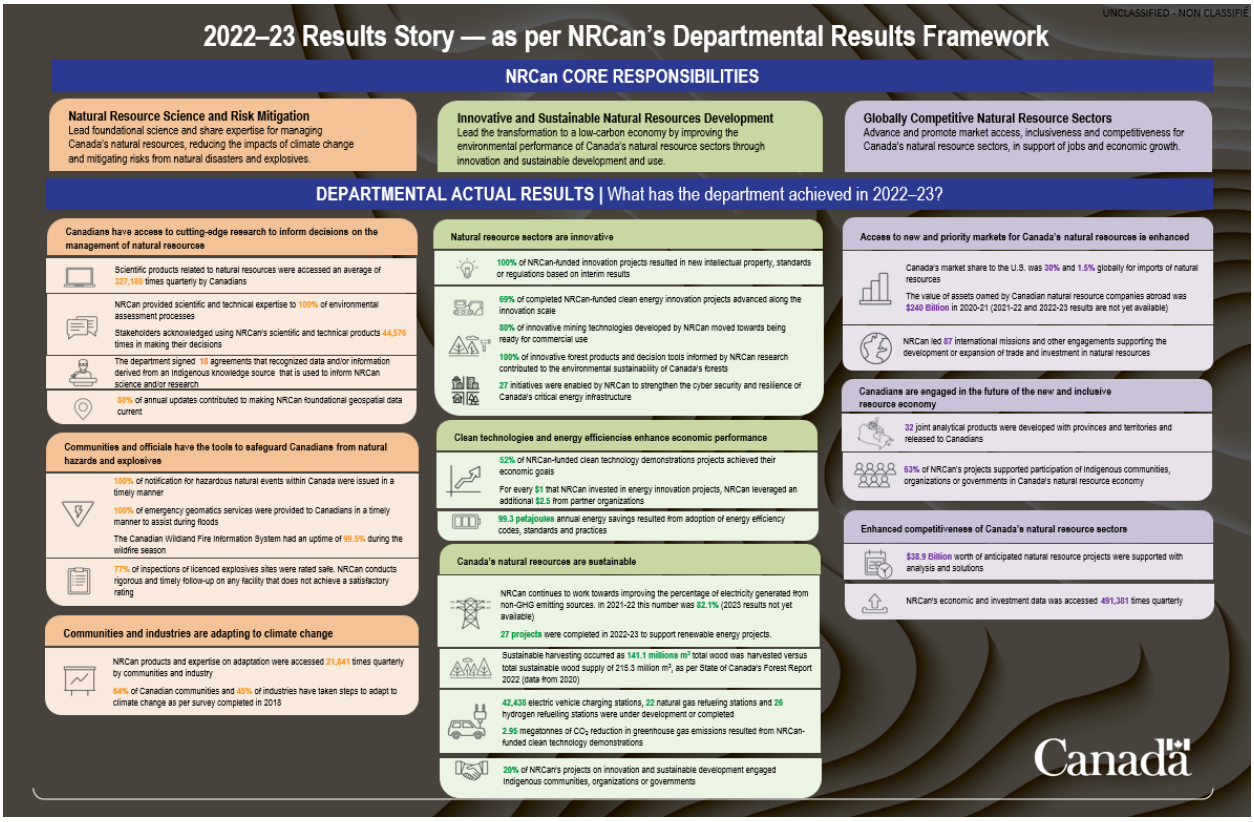
NRCan continued to raise awareness of climate change and provide information for sound decision-making by investing $134.8 million in Canada's first National Adaptation Strategy.[xxix] This Strategy establishes Canada's path by identifying national priorities toward a more climate-resilient future. To implement the Strategy, the Government of Canada released the $1.68 billion Government of Canada Adaptation Action Plan,[xxx] which lays out a policy and program framework to achieve the goals, objectives, and targets present in the Strategy.

The Department implemented the Fighting and Managing Wildfires in a Changing Climate Program[xxxi] and implemented the Emergency Management Strategy to enhance preparedness and mitigate risks related to wildfires. To further protect Canada's forests from climate change, NRCan's Forest Climate Change Program continued to deliver science-based adaptation and mitigation results to inform improvements in forest policy and best practices.

Geospatial mapping through the RADARSAT Constellation Mission[xxxii] enabled the identification of trends related to changing lands, forests, water and infrastructure. Imagery was used to inform decision-makers and emergency responders to protect Canadians. Also, geodetic activities within the Space-Based Earth Observation program included the establishment of two new Global Navigation Satellite System stations to support high accuracy geospatial positioning weather forecasting, climate modelling and space weather monitoring and warnings.

To safeguard Canadians from threats posed by human-induced hazards, NRCan enhanced protection against cyber-attacks and prepared emergency responses to ensure the safety and security of energy infrastructure systems. NRCan also implemented the Cyber Security and Critical Energy Infrastructure Program[xxxiii] in support of Canada's National Cyber Security Strategy to safeguard Canadians.

For more information on Natural Resources Canada's plans, priorities and results achieved, see the "Results: what we achieved" section of this report.[1]



[1] Each Core Responsibility chapter is organized by sub-headings corresponding to the departmental results of NRCan's Departmental Results Framework (DRF). The results achieved are then presented by using the Program Inventory structure that supports the DRF.

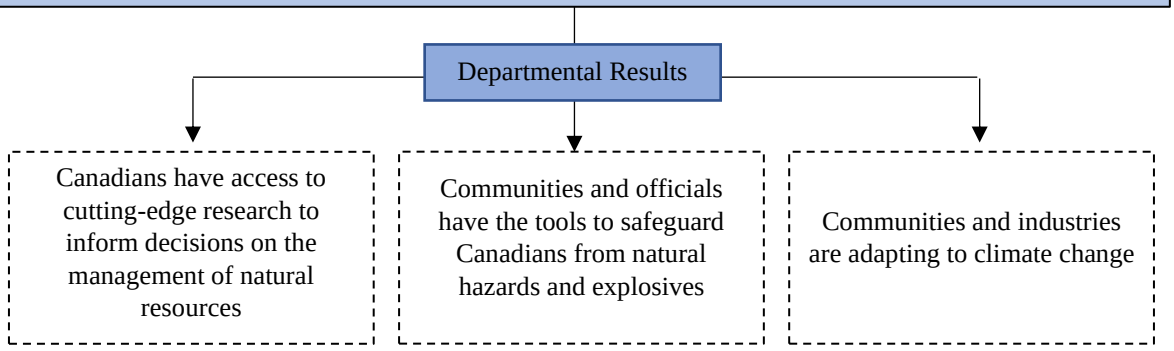
Results: what we achieved

Core responsibilities:

Natural Resource Science and Risk Mitigation

Core Responsibility 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.



Results

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

Canadian Geodetic Survey: Spatially Enabling Canada

Advances in information technology continue to strengthen NRCan's ability to collect and analyse data used for decision-making. This is evident in a broad range of activities from space observation to land surveying and water management.

One of these tools is the geodetic activities within the Space-Based Earth Observation program[xxxiv], which included the establishment of two new Global Navigation Satellite System (GNSS) stations located at Calvert Island, British Columbia, and Channel Port-aux-Basques, Newfoundland. Reconnaissance work for upcoming stations also occurred in Alberta and Ontario. This program supports existing and emerging Positioning, Navigation and Timing applications, as well as weather forecasting, climate modelling and space weather monitoring and warnings. New GNSS stations in coastal areas can help to estimate coastal erosion and sea-level rise, whereas GNSS stations placed in seismically active regions can provide better information for risk management by informing earthquake hazard models.

Usage of Geodetic Survey products and services by key clients continued to grow, including NRCan's web-based precise positioning service, which processed over 1.3 million submissions in 2022-23. This demonstrates the increased use of NRCan's geodetic science across many

sectors, including land and water management, engineering and natural resources, and the geosciences including hazard assessments.

The Department also invested in Light Detection and Ranging (LiDAR) technology, a system that can scan the environment to develop maps of the objects in the scene. This year, LiDAR added 65,000 km2 of topographic data and 1,200 linear km topo-bathymetric LiDAR to measure surfaces with a priority in high flood risk areas. Not only is this data integral in creating flood maps and informing urban planning in order to protect properties and lives, but its products are the most downloaded on Open Maps[xxxv] and can serve many uses ranging from climate change science to assisting with precision farming.

Core Geospatial Data

Through the Core Geospatial Data Program,[xxxvi] NRCan delivers and enables foundational or core geospatial data that is accurate, authoritative, and accessible to Canadians. On making its foundational geospatial data current, NRCan reached its 80% target. The data is co-developed in collaboration with other government departments, 13 provinces and territories and the non-governmental sector.

NRCan continued to provide geospatial data to inform the science and data mapping for the Department, other federal departments and provinces and territories. Geospatial data was made available to Canadians through Geo.ca,[xxxvii] GEOSCAN,[xxxviii] the Open Maps Portal[xxxix] and the Open Science and Data Platform.[xl]

Services for satellite imagery provided high-resolution and high frequency imagery to complement existing geospatial offerings through the RADARSAT Constellation Mission[xli] satellite. The Department processed historical air photographs to produce products that enabled identification of trends of changing lands, forests, water and infrastructure. The imagery was used for decision-making by emergency responders and informed science and policy for NRCan and other departments, provinces and territories.

To support flood emergency preparedness, a National Flood Susceptibility Index was developed to identify regions prone to flooding using modeling data and tools for near-real time response to flood events were advanced. This work provided 75 map products to Public Safety and emergency responders.

In collaboration with Environment and Climate Change Canada (ECCC) and 12 federal departments and agencies, NRCan, through the Open Science and Data Platform,[xlii] continued to provide access to over 147,000 science and data records relevant to supporting Canadians in understanding cumulative effects and making informed decisions on the management of natural resources. With the Open Science and Data Platform, interactive geospatial mapping capabilities allow users to layer multiple types of information such as, project location, geological, species at risk, socio-economic, etc., permitting better understanding of the cumulative effects of human activities, such as natural resource development projects.

The Department also implemented the Open Science Action Plan to provide greater access and transparency to NRCan scientific research through Scopus, an international database of peer-

reviewed scientific journals. This past year has seen a strong focus on enabling and supporting Open Access publishing by NRCan researchers and fostering Open Science culture at the NRCan science community. The department measures the progress made on making NRCan science openly available to Canadians. Data from 2022 indicates that science publications being open access increased to 53%.

Canada Lands Survey System

To provide more clarity to land boundaries and support Indigenous governance of their lands, the Canada Lands Survey Program continued to innovate and experiment with program delivery options, listening to the feedback received from First Nation participants. In-community training has become more flexible and customizable to the diverse needs of communities. These efforts enabled more time for sharing history and traditional land management practices in a forum of mutual respect.

Through the First Nations Land Management Program, 22 Land descriptions and 10 comprehensive research reports of First Nation Lands were completed in 2022-23, supporting the devolution of land management responsibilities from the federal Government to the First Nation through their Land Code.

In the Northwest Territories, the Gwich'in Land Survey Program resulted in four legal boundary survey contracts granted to an Indigenous company that was also a permit holder with the Association of Canada Lands Surveyors. The work was done from four different staging areas, all in remote northern locations. This work will fulfill Canada's obligation as required by the Comprehensive Land Claim Agreement and ensure boundary certainty for the beneficiaries and adjacent land holders.

Geological Knowledge for Canada's Onshore and Offshore Land

To support Canada's geological resources and implement the Pan-Canadian Geoscience Strategy, the GEM-GeoNorth Program[xliii] launched 28 multi-year research activities across Canada in collaboration with partner geological surveys, including Indigenous governments. The Program pursued continuous engagement with partners to plan regional surveys in 2023 and identified geoscientific gaps and priority alignment with provinces and territories.

To expand geoscientific data and deliver innovative research, the GEM-GeoNorth program supported 15 grants for geoscientific research and multidisciplinary projects representing a $744,703 investment in 2022-2023. Grants were awarded to academia, Northern and Indigenous organizations and governments, territorial governments and non-government organizations.

Canada's new outer limits of the extended continental shelf in the Arctic Ocean were filed with the United Nations in December 2022. The United Nations Convention on the Law of the Sea Program funding was announced in Budget 2023 to conduct new marine geoscience surveys in the central Arctic Ocean to validate new outer limits and support a revised submission by Canada. International recognition of Canada's outer limits will become our last international boundary on our map and will give Canada sovereign rights over the living and non-living natural resources on the seafloor and below, in the subsoil.

The Department also supported eighteen agreements that recognized data and information derived from an Indigenous Knowledge source to inform NRCan science and research, surpassing the target of four that was established for March 2024.

Polar Continental Shelf Program

The Polar Continental Shelf Program[xliv] provided support to more than 150 science and operations projects across the Canadian Arctic, rebounding to near pre-pandemic numbers. Support was provided to projects across a wide variety of disciplines, including investigations into geological and critical mineral deposits that will help guide mineral exploration and development in the North, as well as studies focused on climate-driven permafrost thaw and its impact on highway stability, which will enable the development of mitigation and adaptation measures to strengthen the resilience of northern infrastructure.

Geoscience for Sustainable Development of Natural Resources

The Targeted Geoscience Initiative undertook 34 research activities to develop next-generation geological knowledge, leading-edge exploration tools and techniques as well as predictive models for Canada's key commodities, including critical minerals. This research was done in collaboration with colleagues from 11 federal, provincial and territorial government organizations, industry and academia. The program also engaged with representatives as part of the National Geological Surveys Committee meetings in 2022-23.

To support innovative public geoscience that can be used by the mineral exploration industry to identify and develop mineral deposits in emerging and existing mining areas across the country, the Targeted Geoscience Initiative awarded 11 grants in 2022-2023 totaling $499,928 to Canadian academic institutions.

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

Innovative Geospatial Solutions

The Department supported natural disaster management and flood mitigation by providing technical knowledge to provinces and territories and developing flood maps for high-risk areas. The government provisioned $63.8 million over three years for the implementation of the Flood Hazard Identification and Mapping Program[xlv] (FHIMP). The program completed over 100 meetings over the past year and held several engagements with over 500 flood mapping stakeholders during sessions and webinars. The Department also hosted the Atlantic Flood Mapping Conference, Industry Day and the FHIMP Contingency Planning webinar. Engagements resulted in 21 agreements being drafted in support of over 200 flood mapping related projects in over 175 locations across Canada.

Leading-edge activities in artificial intelligence (AI) and quantum computing facilitated flood risk modeling across Canada through the application of machine learning. NRCan contributed to

risk reduction efforts by sharing AI tools for mapping, developing proposals for the Digital Accelerator, 1QBit[2] and universities to improve near-real-time flood mapping to predict possible natural disasters.

NRCan has also successfully secured a funding of $3.1 million over 5 years for the Quantum Research and Development Initiative for geophysical surveying, geology, unmanned aerial vehicles and quantum sensor applications. The Department will study critical mineral systems, benchmark trials over geophysical testing sites and study the advantages and limitations of quantum magnetic sensors.

NRCan scientists and researchers are applying innovative digital solutions to support sustainable development and the competitiveness of Canada's natural resource sector

Geoscience to Keep Canada Safe

The management of natural disaster risks continued to be monitored through the Public Safety Geoscience Program. The Program released 72 information products to the public to support work related to natural hazards. The Program also contributed to the National Risk Profile Report and co-developed the Resilience Pathways Report to better understand the relationship between climate disasters and socioeconomic development in British Columbia. The report identified gaps in information, challenges, and recommendations for a resilient path forward. This information was made available to through the Canada's Risk Profiler,[xlvi] which helps Canadians build resiliency to seismic risk through planning and emergency management. On the international stage, the Program supported the United Nations Sendai Framework for Disaster Risk Reduction.[xlvii]

Wildfire Risk Management

To help protect Canadians, their livelihoods and Canada's forests, NRCan worked to mitigate and reduce risks related to wildfires accentuated by climate change.

[2] 1QBit is a quantum computing software company focused on advanced AI, quantum processing and hardware innovation.

To combat wildfires, the Department implemented the Fighting and Managing Wildfires in a Changing Climate program,[xlviii] and signed contribution agreements with provinces, territories and Indigenous organizations totaling $10.4 million for equipment and training across Canada. Also, under the Emergency Management Strategy for Canada,[xlix] the Wildfire Resilience program managed 14 contribution agreements with a variety of research institutions, Indigenous organizations and other not-for-profit organizations representing investments of $1.9 million.

To enhance preparedness for wildfires, NRCan operated the Canadian Wildland Fire Information System and related services to support wildfire danger forecasting and active wildfire monitoring. In addition, modernizations to the Canadian Forest Fire Danger Rating System were advanced.

The Department expanded its knowledge base by working with partners to publish scientific reports that advanced wildfire science, helping to predict and manage wildfires. Work with other federal departments was also advanced to conduct assessments for wildfire emergency management, to prepare the first public National Risk Profile report. A governance framework and project plan were established to aid in the development of the National Wildfire Risk Assessment Framework. In addition, NRCan completed the technical architecture for the Canadian Wildland Fire Information Framework, a cloud-based system designed to streamline and standardize the collection of wildfire related data from multiple sources across federal, provincial and territorial jurisdictions.

Pest Risk Management

NRCan provided forest managers across Canada with foundational scientific information to support the management of damaging pests in natural, rural, and urban forests, such as the Emerald ash borer,[l] Mountain pine beetle,[li] and Spruce budworm.[lii]

In collaboration with the Government of Alberta, the Department successfully limited the spread and impacts of the mountain pine beetle infestation in Alberta, and across Canada, by investing $11.5 million in the third year of the Support for Mountain Pine Beetle Management program. In 2022-23, the program measured a 67% decline in the number of trees infested by mountain pine beetle in Alberta.

The Department protected jobs and forest health in Atlantic Canada by investing $11.5 million to successfully deliver the first year of the Spruce Budworm Early Intervention Strategy Phase III program. Spruce budworm populations have remained below outbreak levels throughout Atlantic Canada, largely due to this innovative pest management strategy and NRCan’s collaboration with provincial governments, industry, and academia.

Explosives Safety and Security

NRCan has a mandate to ensure the safety and security of Canadians by regulating a series of activities involving explosives and their restricted components. To achieve this mandate, in 2022-23 NRCan conducted over 1,300 inspections and 200 outreach visits to promote and verify compliance with the Explosives Act and the Explosives Regulations, 2013.[liii]

In 2022-23, NRCan also continued to advance the modernization of the *Explosives Regulations, 2013* and its regime, by conducting a series of stakeholder consultations on the first of two omnibus packages of amendments to address the results of the 2021 Regulatory Review. The first package of amendments was focused on enhancing safety and reducing stakeholder burden. It was published in the *Canada Gazette* Part I for public comment in May 2023.

Additionally, the Department showcased its commitment to improve and report on environment, social and governance obligations through the *Extractive Sector Transparency Measures Act*[liv] (ESTMA) to deter corruption in the extractive sector. Under the ESTMA, mining, oil and gas entities active in Canada must publicly disclose, on an annual basis, certain types of payments made to governments in Canada and abroad. In 2022-23, the Extractive Sector Transparency Office[lv] (ESTO) launched the ESTMA Data Portal to promote the contributions of companies globally, as well as the ESTMA Compliance Program to ensure that Canada remains a global leader in extractive sector transparency and good governance.

Communities and industries are adapting to climate change

Forest Climate Change

The Forest Climate Change Program continued to deliver science-based results to communities and industries on forest-related adaptation and mitigation solutions to climate change by sharing information, expertise and data, including through the National Inventory Report (NRCan's contribution to Canada's official greenhouse gas inventory). The program collaborated with the diverse groups that comprise the Canadian forest sector and forest-based communities to develop and apply vulnerability assessment tools to support practitioners in climate change actions.

The Forest Climate Change Program, in collaboration with other forestry research programs, continued to advance climate-sensitive forest growth and yield modeling in partnership with provinces and territories. Collaboration, including under the Canadian Council of Forest Ministers, has increased the application of these models and the

Building Resilient Communities and a Strong Economy

NRCan worked with ECCC to release Canada's first National Adaptation Strategy, which provides a roadmap for a whole-of-society action on adaptation. It establishes a shared vision of Canada's path for a more climate resilient future and includes five priority systems, including Economy and Workers system led by NRCan. To accompany the Strategy, the Government of Canada released the Government of Canada Adaptation Action Plan, which lays out a policy and program framework to achieve the goals, objectives, and targets laid out in the Strategy. To this end, NRCan secured funding to advance flood mapping nation-wide, build wildland fire knowledge and support adaption actions in coastal regions.

ability of these jurisdictions to prepare for the uncertainties associated with climate change.

In 2022-23, the 2 Billion Trees program[lvi] supported the planting of an additional 27.9 million trees. This brings the total trees planted since the program's start in 2021 to over 110 million, including over 54 million planted under Environment and Climate Change Canada's Low Carbon Economy Fund in 2021. Tree planting in 2022-23 represented 197 species at more than 1100 sites across 10 provinces. Tree planting projects funded through the program ranged from restoration of habitat for species at risk, enhancement of biodiversity, creation of forest ecosystems on fire-damaged land, increased carbon capture, capacity building, and the creation of parks and greenspaces in and around cities. In addition, 41% of all projects supported in 2022-23 were urban and 22% were Indigenous-led.

The third call for proposals for 2 Billion Trees program, launched in December 2022, aims to increase flexibility for applicants and encourage long-term arrangements, including with Indigenous partners. As of March 2023, the program has signed seven Agreements in Principle, leveraging a shared commitment with provincial and territorial partners to deliver social and environmental benefits for communities through tree-planting.

Climate Change Adaptation

In collaboration with ECCC, other federal departments and stakeholders, the report: Canada in a Changing Climate: Advancing Our Knowledge for Action[lvii] was published in February 2022. The report assesses the latest research and knowledge to inform Canadian about the effects of climate change and the adaptation measures being taken in Canada.

In 2022-23, the three remaining chapters of the Regional Perspectives Report[lviii] were released along with the Health of Canadians in a Changing Climate Report[lix] providing new information about climate change impacts and adaptation for Canadians. The reports in the *Canada in a Changing Climate* series were accessed more than 230,000 times in 2022-2023. Surveys show that the reports are used to inform programs, strategies, and policies, to raise awareness, and for educational purposes.

Gender-based analysis plus

NRCan uses gender-based analysis plus (GBA Plus) to assess all initiatives for potential implications on diverse populations of Canadians. Here are some examples where NRCan used GBA Plus under this core responsibility to address potential barriers, leading to more inclusive and equitable opportunities.

The Polar Continental Shelf Program[lx] continued to collect and track non-binary gender data from applicants to the program. A client diversity survey was conducted that gathered data from all program participants on gender, ethnicity, age, disability, and location of residence, and the results were analyzed. Repeating the survey and analysis at regular intervals to monitor trends in program participation will guide future modifications to the project selection process to reduce unintended bias, promote diversity and inclusion in scientific research, and ensure equity seeking groups are not disadvantaged.

The Core Geospatial Data program inspired girls to pursue careers in STEM through initiatives such as career discussions with high school students, an online publication, and a social media campaign. The program has facilitated Indigenous inclusion through building Indigenous capacity for geographic place naming, community outreach, and supporting Indigenous data sovereignty efforts.

The Flood Hazard Identification and Mapping program will provide funding, once approved, to advance Indigenous knowledge in flood mapping through community outreach, building Northern capacity, supporting Indigenous data sovereignty principles, and co-chairing the Indigenous Technical Working Group on Flood mapping.

In 2022-23, the Public Safety Geoscience Program successfully incorporated GBA Plus into earthquake risks assessments with the use of Social Vulnerability Data. The Social Vulnerability component includes information about the capacities for a community to withstand and recover from disaster events based on intrinsic characteristics of housing, family structure, individual autonomy, and financial agency. The Program's modelling shows that absolute losses from earthquakes, places where the potential loss of valuable assets such as the number of buildings or people are greatest, are in areas where we have the most exposed (e.g., big cities). Relative losses, where seismic events could incur a large amount of loss and overwhelm a vulnerable community, are greatest in coastal, rural, and remote communities in British Columbia and the Yukon, many of these being Indigenous communities. To characterize risk from seismic events, NRCan created the RiskProfiler[lxi] website. It is a tool which land use planners and emergency managers can use to support resilience planning, develop scenario exercises, create targeted retrofit strategies, and support vulnerable populations in building resilience against earthquakes.

United Nations 2030 Agenda for Sustainable Development and the Sustainable Development Goals

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

In support of Goal 13 – Climate Action, NRCan:

- Completed its earthquake risk assessment work through the Public Safety Geoscience Program, which provides a quantitative assessment of the expected consequences from earthquakes for all of Canada at the scale of neighborhoods. Work under this Program also contributed to resilience planning for other levels of government, including British Columbia, Quebec, Tuktoyaktuk, the City of Vancouver and the City of Ottawa. In addition, the Program co-hosted a series of online workshops on the role of geological survey organizations in disaster risk reduction, to share experiences and best practices from around the world on how these organizations can best develop and disseminate knowledge to understand risk and inform risk reduction actions. The program was also a contributor to the Public Safety Canada-led National Risk Profile Report.
- Supported climate change resilience and mitigation in the forest sector through the Forest Climate Change Program, by increasing awareness, understanding, uptake and use of climate

change mitigation and adaptation information, methods, tools and data by professional foresters, forest managers and other decision-makers.
- Continued to foster collaboration with governmental, private sector, academic, Indigenous, and non-profit organizations to work towards a more climate-resilient Canada through the Climate Change Adaptation Platform. This forum of experts, along with associated working groups, facilities the exchange of knowledge and dissemination of tools, addresses knowledge gaps, and builds capacity to enable decision-makers to take action on climate change and its impacts.

In support of Goal 14 – Life Below Water:

- NRCan completed assessments of the proposed marine protection areas, through the Marine Conservation Target program, to contribute to Canada's conservation goals of 25% offshore/coastal regions by 2025. Findings of these assessments can be found in GEOSCAN[lxii] as Open Files document and are publicly available.[3]

Additional information about how NRCan activities support United Nations' 2030 Agenda and Sustainable Development Goals are reflected under the NRCan 2020-23 Departmental Sustainable Development Strategy.[lxiii]

Innovation

NRCan worked in collaboration with the Privy Council Office and ECCC to launch the Program of Applied Research for Climate Action[lxiv] (PARCA). In 2022-23, PARCA conducted longitudinal surveys to study Canadians perspectives on climate change, the importance of communication like tailored strategies for clean technology adoption and income-based strategies for uptake of electric vehicles to improve climate action. NRCan also identified and launched research in key areas to harness behavioural science for improved program and policy design. This includes improving wildfire awareness, heat-pump adoption, home retrofits, home energy labelling, and zero emission vehicle adoption.

To optimize program delivery, the Department pilot-tested various hypotheses to increase Self-Identification Survey response rates to collect internal NRCan employment equity information on a voluntary basis. Results indicated an increase of 44% to 66% and the selected approach will be used to inform a department-wide strategy to address employment equity gaps in the Department and future human resource requirements.

[3] Findings of these assessments can be found in GEOSCAN as Open Files: OF8884 Hydrocarbon potential map of the Canadian Arctic; OF8897 High Arctic basins petroleum potential, northern Canada; and OF 8900 Resources assessments of northern Canadian sedimentary basins, 1937-2022

Key risks

The Department's ability to lead foundational science and share expertise for managing Canada's natural resources faces risks related to the increasing impact of climate change on the natural resource sectors, awareness of the increasing occurrence of natural and human-induced hazards, and the rapid pace of science and technological innovation while prioritizing economic recovery. To mitigate these risks, the Department focused on measures to align with other government departments for a cohesive federal approach while also leveraging strategic partnerships with Indigenous partners and external stakeholders to deliver our programs and policies. NRCan also leveraged its research and science expertise to enhance capacity in threat detection, identification and mitigation, as well as invested in research, development and demonstration (RD&D) projects that promote technological innovation while finding solutions to environmental challenges.

Results achieved

The following table shows, for Natural Resource Science and Risk Mitigation, the results achieved, the performance indicators, the targets and the target dates for 2022–23, and the actual results for the three most recent fiscal years for which actual results are available.

Departmental results	Performance indicators	Target	Date to achieve target	2020–21 actual results	2021–22 actual results	2022–23 actual results
Canadians have access to cutting-edge research to inform decisions on the management of natural resources	Number of times scientific products related to natural resources are accessed by Canadians	At least 450,000 quarterly average	March 2023	482,745	504,242	327,180[4]
	Percentage of environmental impact assessments demonstrating use of scientific and technical	Exactly 100%	March 2023	100%	100%	100%

[4] Many factors impact the volume of interest in the content and documents included in this indicator. Recency of cyclical reports, volume of additional documents, the public reach and audience size, changes in content design and findability amongst other factors impact the overall volume and relative change over time. As this data represents the interactions with content and documents, it does not represent the interest by Canadians in the subject matter.

	advice provided by NRCan					
	Number of times stakeholders acknowledge using NRCan's scientific and technical products in making their decisions	At least 30,250	March 2023	30,974	36,211	44,576
	Number of NRCan agreements that recognize data and/or information derived from an Indigenous Knowledge source and is used to inform NRCan science and/or research	4	March 2023	Not available	5	18[5]
	Percentage of foundational geospatial data that is current	At least 80%	March 2023	21%	31%	80%
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%	March 2023	100%	100%	100%

[5] Methodology adapted for 2022-23, thus target was not established.

	Percentage of emergency geomatics services provided to Canadians in a timely manner to assist during floods	100%	March 2023	100%	100%	100%
	Percentage uptime of the Canadian Wildland Fire Information System during the wildfire season	At least 97%	March 2023	97%	97%	99.5%
	Percentage of inspections of explosives sites rated safe[6]	At least 70% (90% by March 2025)	March 2023	73%	74%	77%
Communities and industries	Number of times NRCan	At least 34,000	March 2023	25,858	26,814	21,841[7]

[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] Many factors impact the volume of interest in the content and documents included in this indicator. Recency of cyclical reports, volume of additional documents, the public reach and audience size, changes in content design and findability amongst other factors impact the overall volume and relative change over time. As this data represents the interactions with content and documents it does not represent the interest in their subject matter.

are adapting to climate change	products and expertise on adaptation are accessed by Canadians	quarterly average				
	Percentage of Canadian communities and industries that have taken steps to adapt to climate change	At least 60% for communities At least 40% for businesses	March 2023	57% for communities 32% for businesses (from 2018 survey)	57% for communities 32% for businesses (from 2018 survey)	64% for communities (from 2022 survey) 45% for businesses (from 2022 survey)

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

Budgetary financial resources (dollars)

The following table shows, for Natural Resource Science and Risk Mitigation budgetary spending for 2022–23, as well as actual spending for that year.

2022–23 Main Estimates	2022–23 planned spending	2022–23 total authorities available for use	2022–23 actual spending (authorities used)	2022–23 difference (actual spending minus planned spending)
475,466,366	475,466,366	544,429,043	350,855,417	(124,610,949)

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

Human resources (full-time equivalents)

The following table shows, in full-time equivalents, the human resources the Department needed to fulfill this core responsibility for 2022–23.

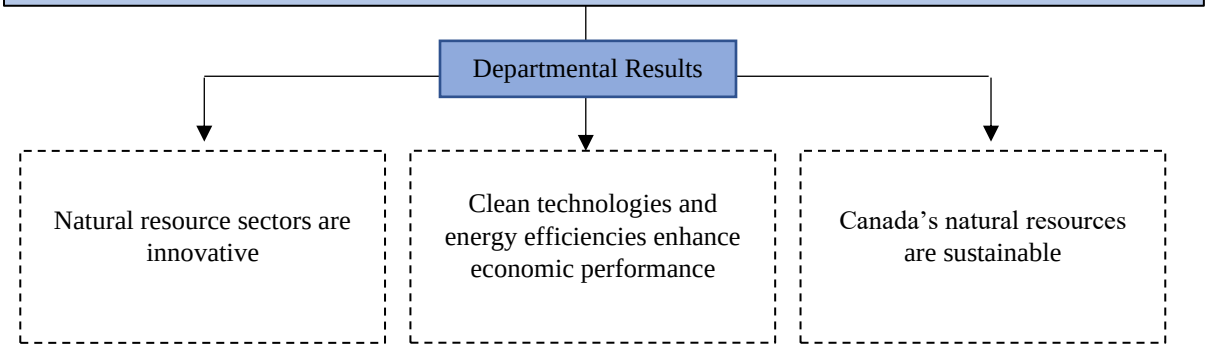
2022–23 planned full-time equivalents	2022–23 actual full-time equivalents	2022–23 difference (actual full-time equivalents minus planned full-time equivalents)
1,339	1,316	(23)

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

Innovative and Sustainable Natural Resources Development

Core Responsibility 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.



Results

Natural Resource sectors are innovative

Energy Innovation and Clean Technology

NRCan programs and initiatives continued to make advances in the development of technological solutions for natural resource sectors as we transition to net-zero emissions by 2050.

To support the energy transition, NRCan advanced work of the Clean Energy Ministerial[lxviii] forum Empowering People Initiative[lxix] as one of the co-leads of the initiative, to develop a Skills Development and Inclusivity for Clean Energy Transitions[lxx] report (September 2022) in partnership with the International Energy Agency. This report covers how best to overcome a broad range of challenges and how to create successful employment policies for all, including youth, women and marginalized communities through a series of international case studies, showcasing the critical role of skills development for successful clean energy transition.

The Clean Growth Hub[lxxi] delivered on its mandate as the federal clean technology focal point, helping stakeholders navigate available federal programs and support across 17 departments and agencies that help advance clean technology innovation and adoption. In 2022-23, the Hub supported 354 new clients through its single-window service, proactively engaging clean tech companies that are poised to be leaders in the clean technology sector. Through its Reconciliation, Equity, Diversity, and Inclusion Action Plan, the Hub provided tailored advice to equity-seeking groups and increased opportunities for diverse stakeholders in the clean technology sector.

In 2022-23, NRCan provided $115 million in funding to more than 350 projects to deliver targeted clean energy research, development and demonstration (RD&D) support through the Office of Energy Research and Development[lxxii]. These projects were carried out by innovative Canadian businesses, utilities, communities, and via world-class research in federal laboratories such as NRCan's CanmetENERGY[lxxiii] and CanmetMATERIALS[lxxiv] research centres. This included providing $65 million in funding to R&D projects at labs across five federal departments under the Energy Innovation Program[lxxv] and the Program of Energy Research and Development.[lxxvi]

NRCan staff visiting the CANMET-Devon facility

Overall, 69% of NRCan-funded energy RD&D projects advanced one or more technology readiness level. It typically takes 3 to 4 years to reach this level. These projects filed for over 500[8] patents or other intellectual property rights; created 296 platforms, software dataset and tools; influenced 121 codes, standards, or regulations; and directly reduced 2.9 [9]Mt of GHG emissions and reduced 24,600,000 m^3 of water annually and reduced 91,000 tonnes per year of waste already surpassing the 2027 program targets.[10] In addition, these projects have been successful in attracting investments, as every $1 of NRCan funding leveraged $2.50 in contributor funds.

Recognizing that carbon management plays an essential role in the transition to a prosperous net-zero economy, NRCan continued to develop Canada's *Carbon Management Strategy*. Under the EIP, NRCan announced a $81.5 million call for proposals for Carbon Capture, Utilization and Storage (CCUS) RD&D projects[lxxvii] to reduce the cost and increase performance of innovative early-stage CCUS technologies. NRCan supported the CCUS research of federal researchers and scientists, providing $13.5 million to 78 research projects in federal labs in 2022-23. NRCan also provided technical support to the Department of Finance during the design of the CCUS Investment Tax Credit.

[8] Please note this is not typical due to a small number of projects filing multiple patents in multiple jurisdictions.
[9] Combined results from Energy Innovation and the Clean Growth Programs.
[10] Clean Growth Program 2027 targets: reduce between 100,000 m^3 to 2,000,000 m^3 of water per year and between 20,000 to 30,000 tonnes of waste per year and between 0.3 to 0.7 Mt/CO2e per year. Energy Innovation Program target to reduce 4.25 Mt CO2e per year by 2030.

Various tax incentives like the Accelerated Capital Cost Allowance and Canadian Renewable and Conservation Expense were administered by NRCan to support manufacturing and adoption of clean energy technologies. In addition, NRCan contributed to the design of the Finance Canada led Investment Tax Credits for clean electricity and hydrogen.

NRCan successfully completed the Clean Growth Program (CGP) and Breakthrough Energy Solutions Canada (BESC) initiatives. A notable example of a completed project, funded at $2.8 million under BESC[lxxviii] – GBatteries – developed an ultra-fast, pulse charging method for lithium-ion batteries that reduces battery degradation and increases cycle life by a factor of four compared to conventional charging methods.

Under CGP, BESC and Impact Canada's Clean Technology Challenges, [lxxix] NRCan pioneered several successful program management innovations, such as 'Trusted Partnerships' and prize-based challenges, which informed new programs underway in 2022-23. These Trusted Partnership agreements with provincial and territorial partners allow both parties to leverage their expertise, co-design programs and co-fund projects to maximize impacts. Under this model, in 2022-23 NRCan committed up to $15 million as part of a joint RD&D funding call with Alberta Innovates' Hydrogen Centre of Excellence. In October 2022, NRCan announced the 10 semi-finalists[lxxx] of the Impact Canada Oil Spill Response Challenge,[lxxxi] that are each receiving up to $300,000 in funding to develop rapidly deployable oil spill response solutions. In addition, NRCan selected 25 projects to receive up to $53 million in funding for RD&D in industrial fuel switching, clean fuels production, and hydrogen codes and standards.

On the international stage, NRCan continued to provide leadership to accelerate clean energy innovation through the International Energy Agency[lxxxii] (IEA) and Mission Innovation[lxxxiii] (MI), including co-leading MI's Carbon Dioxide Removal[lxxxiv] (CDR) Mission. NRCan also participated in 22 of the IEA's Technology Collaboration Programme and provided expertise for the development of a series of IEA CCUS-related publications.

With the growth of severe and complex cyber threats, the protection, security and resilience of domestic and cross-border critical energy infrastructure remains a priority for NRCan. The Department contributed to the ongoing implementation of Canada's National Cyber Security Strategy[lxxxv] in collaboration with our federal, provincial, and industry partners. This work included the development of a series of webinars highlighting lessons learned and successes of the Cyber Security and Critical Energy Infrastructure Program. [lxxxvi]

The Department also provided funding to enhance the cyber security and resilience of domestic and cross-border energy infrastructure. With the federal announcement of the planned legislative framework to safeguard Canada's critical infrastructure, the *Critical Cyber Systems Protection Act*, the Department took the initial steps to prepare Canada's energy sector for the anticipated development of regulations. Internationally, NRCan implemented the Canada-U.S. Framework for Collaboration on Cybersecurity in the Energy Sector, a cross-border commitment to enhance the security and resilience of our cross-border critical energy infrastructure.

Green Mining Innovation

Part of the solution to climate change includes a battery ecosystem that will be environmentally friendly while supporting long term economic growth. NRCan coordinated federal engagement with partners like Accelerate ZEV coalition, Clean Energy Canada and the MaRS Innovation District, as well as other stakeholders to identify strategic priorities for the battery value chain and critical minerals in Canada. Funding in the amount of $603,220 was provided to Accelerate ZEV and the Canadian Battery Task Force to support their efforts to develop a Battery Innovation Roadmap. Alongside ECCC, the Department also supported Employment and Social Development Canada's efforts to provide Canadians with access to the skills and training required to benefit from employment opportunities available in the sector.

The Critical Minerals Research, Development and Demonstration program[lxxxvii] provided funding to advance the commercial readiness of emerging mineral processing operation and technologies. Research and development projects targeted upstream processing for raw materials used as inputs in selected critical mineral value chains. Projects for this initiative were carried out through CanmetMINING and included 31 joint R&D projects with the National Research Council of Canada, the Geological Survey of Canada, CanmetMATERIALS, and CanmetENERGY, in addition to over 80 other external collaborators. This program contributed to creating clean energy value chains in Canada and increased economic activity by attracting associated manufacturing in Canada.

Funding was also allocated to CanmetMINING for the development of a program for piloting and demonstrating, and subsequently accelerating, the development of new technologies that will produce key critical minerals for the electric vehicle industry while bolstering Canada's national security by strengthening supply chains. Over 50 letters of interest were received by the committee and further to rigorous review that examined both technical and economic merit, six proposals were accepted and announced by NRCan.[lxxxviii] Next steps include engaging with industry on how to best optimize R&D and efforts based on the results of the first round of projects.

Clean technologies and energy efficiencies enhance economic performance

Energy Efficiency

As power generation shifts to cleaner energy, using electricity more efficiently will be critical for reducing costs, averting blackouts, and cutting pollution. Energy efficiency reduces peak electricity demand and the need for additional fossil fuel generated electricity and can reduce costs that would otherwise be passed on to customers.

Regulating the energy use of products is one of the most cost-effective ways to reduce energy consumption, ensure a competitive, more sustainable and resilient economy, reduce energy costs, and support the goal of net-zero emissions by 2050. When combined, regulated energy efficiency standards, ENERGY STAR® certified products, and incentives for more efficient products drive

product innovation through cycles of continuous improvement. In 2022-23, amendments 13-16 to the Energy Efficiency Regulations under the *Energy Efficiency Act*[lxxxix] achieved 16 petajoules of cumulative annual energy savings and avoided 1.3 Mt of GHG emissions, while the ENERGY STAR® for Products[xc] program achieved an estimated 33 petajoules of cumulative annual energy savings and avoided about 3.5 Mt of GHG emissions.

To ensure that products associated with the ENERGY STAR®[xci] label met its high standards for energy performance, quality, and functionality, NRCan strengthened detection of non-compliance mechanisms by developing an inspections strategy and by initiating the Compliance Regulatory Energy Efficiency Database.

Through the Canada Greener Homes Initiative,[xcii] NRCan created jobs across Canada, fought climate change, and saved Canadians money by helping them make their homes more energy efficient. In 2022-23, this initiative received over 134,000 grant applications, including Indigenous retrofit projects and agreements and issued over $215 million in grants. With 248 Energy Advisors added in 2022-23, there were a total of 1,635 active Energy Advisors across Canada as of March 2023. February 2023 saw the launch of the Oil to Heat Pump Affordability Program[xciii] to support low to median income Canadian homeowners switch from oil-based home heating to highly efficient electric heat pumps.

Through the Industrial Energy Management Program, 35 energy-efficiency projects were implemented using program support tools (for example, ENERGY STAR®, ISO 50001, Superior Energy Performance®). NRCan also launched a Canadian version of the ISO 50001 Ready Canada/Ready Navigator[xciv] tool. To further drive energy performance and GHG emissions reductions in Canadian industrial sectors, NRCan launched the Green Industrial Facilities and Manufacturing Program[xcv] in February 2023 to offer cost-shared financial support for a holistic and comprehensive suite of energy efficiency measures.

NRCan's Energy Efficient Buildings activities supported the construction of highly energy-efficient buildings through the National Model Codes, certifying and recognizing top performing buildings, and benchmarking, labelling, and disclosing energy data to track progress and inform decision-making. In 2022-23, 11 projects were approved and funded through contribution agreements to help commercial and industrial organizations implement ISO 50001 to systematically track, analyze, and improve energy efficiency in their buildings.

NRCan continued to improve energy efficiency in Canada's buildings through voluntary initiatives like ENERGY STAR® Portfolio Manager®,[xcvi] a free online platform adapted for the Canadian market that allows

CanmetENERGY - Ottawa support to the Canadian Forces Housing Agency

NRCan's CanmetENERGY - Ottawa laboratory developed a 30-year carbon outlook for the Canadian Forces Housing Agency's portfolio of 11,600 residential housing units, including strategies for reaching zero emissions by 2050, and piloted the use of low-carbon design principles in the renovation of housing units at Canadian Forces Base Winnipeg.

building owners and operators to monitor, track and report on energy use, GHG emissions, and water and waste consumption. In 2022-23, Hydro Quebec and *Énergir* joined other utilities like NB Power, BC Hydro, Fortis BC, and Manitoba Hydro in adopting ENERGY STAR® Portfolio Manager®'s web services. NRCan observed an increase of 13,000 new buildings added to the tool. In addition, Delmanor's Seniors community in Aurora, Ontario was recognized as the first ENERGY STAR® Multifamily High-Rise Pilot Program[xcvii] building to be at least 15% more energy efficient than those built to the provincial energy code.

In addition, to accelerate the development and adoption of net-zero-energy-ready building codes and cleaner technologies, NRCan continued to fund the $48.3 million Energy-Efficient Buildings RD&D[xcviii] program. As of 2022-23, the program has supported 20 high-efficiency demonstration projects. NRCan also launched the Greener Neighbourhoods Pilot Program,[xcix] which is investing $35.5 million over five years to pilot the "Energiesprong" model of aggregated deep energy retrofits in up to six community housing neighbourhoods in Canada.

Digital Accelerator and Public Service Data Challenge

The Digital Accelerator co-led the first annual Public Service Data Challenge, a competition for public servants to showcase ideas using data assets to improve data systems and tools, with partners, including Statistics Canada, Treasury Board Secretariat, Canada School of Public Service, and the UK Global Government Forum. This year's winning team from Agri-food Canada developed a plan to use AI to improve advice and support for Canada's farmers and agricultural businesses.

The Codes Acceleration Fund[c] was launched in February 2023. It aims to accelerate the adoption and implementation of building codes, promote higher rates of compliance with adopted codes, and support market preparedness for ambitious code adoption. Provinces and territories have committed to adopting the base tier of the 2020 edition of the National Model Codes[ci] by 2024. Model codes for alterations to existing buildings are under development to trigger energy efficiency requirements for buildings undergoing significant renovations.

Supported by the Green Infrastructure Fund program, CanmetENERGY-Ottawa continued identifying knowledge gaps that hindered building code development, undertaking original research to address them, and providing direct assistance to committees updating Canada's National Building Code. In 2022-23, its research helped demonstrate the benefit of constructing smaller and more compact homes to achieve carbon reductions; these findings were then referenced in new sections of the code, making compliance easier for very efficient housing.

The Deep Retrofit Accelerator Initiative[cii] was launched in February 2023 to fund retrofit accelerators – organizations that support building owners through the deep retrofit process – to facilitate the development of deep retrofit projects in Canada in support of climate goals.

As well, the Department provided federal partners with support to transition to low-carbon, climate-resilient, and green operations through provision of an enhanced suite of Greening

Government technical services.[ciii] This included information sharing and capacity building sessions through a Community of Practice, and support for 8 projects to save energy and reduce GHG emissions in federal facilities.

As a result of the commitment to improve energy efficiency, the total annual energy savings resulting from adoption of energy efficiency codes, standards and practices was 99.3 PJ (approximately equivalent to the amount of energy that 916,513 homes would use in a year).

Cleantech activity in Canada contributes to clean growth and the transition to a low-carbon economy. Co-led with Innovation Science Economic Development Canada (ISED), the Clean Technology Data Strategy[civ] aims to ensure that data is readily available to understand the economic and environmental contribution of cleantech in Canada. NRCan and ISED continued to increase the knowledge and understanding on Canada's clean technology sector by:

- Generating statistical data in collaboration with Statistics Canada on the contribution of the clean technology sector to the Canadian economy (e.g., GDP, employment, exports, imports) through the Environmental and Clean Technology Products Economic Account. [cv]
- Completing an extensive new database of Canadian cleantech firms and subsequently launching a first-of-kind survey of pure-play[11] firms to understand the specific needs, opportunities, barriers, and challenges of smaller and pre-revenue clean technology companies.
- Providing guidance through the Clean Growth Hub for consistent cleantech data collection to clean tech programs. This included integration of equity, diversity, and inclusion considerations. Information on federal cleantech investments was collected to support the understanding of impacts of federal policies and programs on clean growth.

Canada's natural resources are sustainable

Energy and Climate Change Policy

The 2030 Emissions Reduction Plan[cvi] outlines a sector-by sector roadmap for Canada to reach its targets to reduce emissions by 40-45% below 2005 levels by 2030, and put Canada on the path to achieve net-zero emissions by 2050. To achieve these goals, NRCan provided strategic oversight for the development and application of over 30 federal climate measures, including policies, programs, regulations and services. This included new measures under the 2030 Emissions Reduction Plan (2022), as well as previously announced measures from *A Healthy Environment and a Healthy Economy* (2020) and the Pan-Canadian Framework for Clean

[11] A pure-play company specializes exclusively on a particular product or activity.

Growth and Climate Change[cvii] (2016). In addition to mitigating climate change, these measures contributed to keeping Canada's air clean, providing good jobs, and fostering a strong economy.

NRCan successfully co-led the 2022 Energy and Mines Ministers Conference[cviii] '*Navigating a Smooth transition to Net Zero'* to advance domestic discussions on energy security, opportunities for regional growth, advancing economic reconciliation with Indigenous peoples, strengthening value chains, and enabling Canada's energy transition with the province of Newfoundland and Labrador. During the conference, Minister Wilkinson highlighted the importance of energy security in both the global and Canadian context, and made key linkages between energy security, energy affordability, and climate change considerations. The conference also included a dedicated Indigenous Dialogues Session, which included Indigenous leaders from across Canada to engage directly with federal, provincial and territorial ministers on Indigenous inclusion in, and benefits from, energy and mining projects across Canada.

To ensure Canada is competitive and remains a leader in the transition to a low-carbon future, NRCan launched the Regional Energy and Resource Tables[cix] with provincial and territorial governments, in collaboration with Indigenous partners. The Regional Tables helped to accelerate opportunities to identify jurisdiction alignment across the most promising resource-based opportunities, such as hydrogen, liquid natural gas, medium-sized reactors and critical minerals, to create sustainable jobs, strong communities and thriving local economies in a net-zero future. As part of the Regional Tables, NRCan is establishing mechanisms for collaboration with Indigenous partners in each jurisdiction, including a trilateral approach underway in British Columbia, Newfoundland and Labrador, Ontario, and New Brunswick.

Further engagements with provinces and territories were held in 2022-23 to discuss Canada's climate and energy agenda. Through discussions on clean fuels and technology, critical minerals and electricity system modernization, Canada is building a greater understanding of challenges and opportunities to create pathways to net-zero, discover new opportunities for collaboration with industry leaders and help inform Canada's broader strategic priorities. For example, discussions on mining operations for critical minerals in the context of building globally competitive value chains, and, separately, on electrification and energy efficiency have informed the Canada Green Building Strategy.[cx]

Workers at the Heart of Canada's Prosperity

NRCan engaged with provinces and territories, Indigenous peoples, and a broad array of partners to advance shared priorities related to Canada's clean energy transition. To guide the government's efforts to ensure that Canadian workers can lead the economy of the future, NRCan released the Sustainable Jobs Plan and supported the Minister to table the proposed sustainable jobs legislation in Parliament, which will create a framework for accountability, engagement and transparency that will ensure we empower workers and communities while building economic opportunities in ways that give confidence to Canadians.

NRCan also participated in the Climate Technology Centre and Network Advisory Board,[cxi] highlighting the knowledge and expertise that has been cultivated in Canada. This platform showcased success on advancing people-centered policies and encouraged further actions from international partners to advance equity, diversity and inclusion in climate technology sector, largely focused on energy.

Participation during this forum was used to help inform and advance other bilateral and multilateral engagements including the 27th Conference of the Parties to the United Nations Framework Convention on Climate Change[cxii] (COP27), and the 15th United Nations Biodiversity Conference[cxiii] (COP15). During these events, NRCan highlighted Canada's strong commitment to ensuring a just and equitable energy transition for remote, isolated and indigenous communities across Canada and demonstrated these efforts by leading and participating in events designed to amplify the voices of underrepresented communities, including those of women, youth, and Indigenous Peoples.

Collecting Arctic beach samples to assess the ability of Arctic sediments to naturally degrade spilled oil through processes such as biodegradation and photodegradation

Through a partnership with Statistics Canada, ECCC and the Canada Energy Regulator, NRCan supported the development of an expanded survey on renewable fuels, and the addition of new pages to the Canadian Centre for Energy Information (CCEI) portal. NRCan continued its leadership role within this initiative by convening federal, provincial and territorial counterparts. NRCan participated in expert working groups aimed at improving harmonization of energy concepts and definitions in Canada. NRCan also released the Energy Fact Book 2022-2023 which is featured on the CCEI website.

Working Towards Meeting Canada's Marine Conservation Targets

NRCan's CanmetENERGY - Devon is undertaking bench- and pilot-scale scientific research to understand the migration and fate of natural and ship-sourced oil spills in Arctic ecosystems. A clearer understanding of the key oil weathering processes in cold water conditions, and the effects of solar energy and biodegradation on spilled oils, will allow sensitive ecosystems to be mapped, impact assessments to be better informed and the recovery of oil-affected areas to be accelerated. Ultimately this will benefit coastal and indigenous communities across the Canadian Arctic.

Lower Carbon Transportation

The Emissions Reduction Fund[cxiv] ($750 million) supports onshore and offshore oil and gas companies by providing funds to invest in green solutions to reduce GHGs and retain jobs in the sector. This includes:

- The Onshore Deployment Program[cxv] ($675 million) funded 81 projects totalling $134 million across British Columbia, Alberta, Saskatchewan, and Manitoba, representing 4.7Mt of CO2e emission reductions. Over 10 years, it is expected that these projects will reduce 29 megatons of carbon dioxide equivalent of emissions reductions.
- The Offshore Deployment Program[cxvi] ($42 million) supported projects from Newfoundland and Labrador's offshore service and supply sector targeted at offshore GHG emissions reductions and improving the environmental performance of oil spill related activities.
- All 18 projects under the Offshore RD&D Program[cxvii] ($33 million) were successfully completed and the program was closed out by Energy Research & Innovation Newfoundland & Labrador (ERI-NL). The average number of partners signed per agreement was 3, exceeding the target of at least 1. Proponents shared their early findings and lessons through 46 reports, presentations, and other knowledge products.

The Department continued to administer the $1.5 billion Clean Fuels Fund[cxviii] aimed at growing the clean fuels market to seizing the opportunities for clean fuels to build a sustainable future. The Clean Fuels Fund selected 66 projects for funding, including 32 production projects and 34 feasibility studies, for six different fuel types in nine jurisdictions. The program is also assessing 46 applications for Biomass Supply Chains and finalizing funding decisions for Indigenous projects.

Launched in December 2022, the Green Freight Program[cxix] is designed to reduce greenhouse gas emissions from on-road freight through fleet energy assessments, fleet retrofits, engine repowers, best-practice implementation and the purchase of low carbon vehicles. With $200 million allocated under Budget 2022, the Program provided training, tools and resources to help Canada's fleets lower their fuel consumption, operating costs and harmful vehicle emissions.

The $76 million Electric Vehicle Infrastructure Demonstration program[cxx] continued to support the demonstration of innovative next-generation electric vehicle charging and hydrogen refueling infrastructure in Canada. As of 2022-23, the program has supported 30 projects, including novel EV charging technologies and business models for multi-unit residential buildings and workplaces, transit electrification and battery repurposing.

NRCan led 80 working groups and meetings that brought together government and industry under Canada's Hydrogen Strategy.[cxxi] These meetings yielded 7 reports that developed Canada's understanding of the path forward for hydrogen, including supporting the development of codes and standards, providing an export market roadmap, and delving into the specific challenges facing aspects of the hydrogen value chain such as trucking, urban transit, and infrastructure. This will support Canada to leverage low-carbon hydrogen in hard-to-abate sectors to meet net-zero objectives by 2050. The information gathered and analysis conducted by these reports also informed a Biennial Report that will update Canada's Hydrogen Strategy (planned to be published late 2023).

NRCan has strengthened its strategic relationships with international partners, including through the signing of the Joint Declaration of Intent between the Government of Canada and the Government of the Federal Republic of Germany on establishing a Canada-Germany Hydrogen Alliance[cxxii] in August 2022. Through this agreement Canada and Germany jointly committed to the development of a transatlantic energy corridor and to support the ramp up of the global hydrogen industry. Since its signing, workshops and meetings have taken place on the European Unions' Renewable Energy Directive and certification, and to support collaboration amongst ports. Additionally, a Canada-Germany Atlantic Energy Roundtable was also launched to foster information sharing between various orders of government. In March 2023, a business delegation including Indigenous business leaders accompanied Minister Wilkinson and government officials to Berlin where delegates participated in the Berlin Energy Transition Dialogue, and the first Canada-Germany Energy Day Conference took place, which fostered industry MOUs and

Strengthening Canada's Steel and Electric Vehicle (EV) Value Chains

Transitioning to EVs also requires components like electrical steels, which have unique magnetic properties to reduce power loss. Electrical steels are critical for EV traction motors, but they were not produced in Canada. NRCan's CanmetMATERIALS - Hamilton laboratory developed novel electrical steel processing technologies in a unique facility, enabling a Canadian steelmaker to be one of the first producers in North America. Beyond EVs, electrical steels are also used to manufacture generators and transformers, all of which are critical to a clean energy future.

agreements to be signed that echo the commitments in the Hydrogen Alliance. Further progress with other international partners since 2021 includes the signing of several Memoranda of Understanding and agreements with key hydrogen markets such as the Netherlands, Japan, U.S., and South Korea.

To enable the commercialization of hydrogen products, new codes and standards are required to be developed and recognized by all levels of government. As a result, the Department is developing the Codes and Standards Road Map that prioritizes codes and standards based on their importance to the hydrogen value chain.

Modernizing Canada's electrical grid

NRCan completed the delivery of the $100 million Smart Grid Program, which promoted the modernization of grid infrastructure by funding the demonstration of promising, near-commercial smart grid technologies and the deployment of smart grid integrated systems across Canada. NRCan also secured renewal of funding for the demonstration stream based on the program's successes. The program funded 22 projects and included $6.1 million to Nova Scotia Power and $6.2 million to the New-Brunswick Power Corporation to develop, deploy and pilot solutions that integrate distributed energy resources, such as rooftop solar installations and battery storage, into the grid and to engage with communities on energy consumption and energy asset ownership.

As part of its commitment to the Electric Vehicle Initiative, the Department supported the development of the International Energy Agency's annual Global EV Outlook (GEVO) report, a marquee report, which analyzes recent developments in electric mobility around the world. In 2022-23, NRCan added 4,108 electric vehicle charging stations to Canada's network and a total of 42,438 charging stations are under development or completed. The installation of additional natural gas refueling stations was also accomplished successfully, bringing the total stations accessible across Canada to 13 of a planned 22. Meanwhile, the program selected 17 new hydrogen station projects, bringing program totals to 26 new hydrogen stations. Also, other important contributions were made to advance the goals of Canada's Emissions Reduction Plan at the G7 meeting in April 2023, including on liquified natural gas and natural gas, hydrogen, ammonia, and the phase-out of unabated fossil fuels.

In the interest of advancing a sustainable and equitable energy transition, clean energy innovation, connectivity, and low-carbon transportation, NRCan and the Canada Infrastructure Bank have signed a Memorandum of Understanding to reduce barriers to the adoption of zero emission vehicles. This strategic collaboration will facilitate the deployment of electric vehicle charger stations and hydrogen refueling stations.

NRCan provides funding towards the deployment of electric vehicle chargers across Canada

Electricity Resources

NRCan worked with other government departments and entities, including Infrastructure Canada and the Canada Infrastructure Bank, as well as Indigenous partners, provinces and utilities to advance clean electricity projects to support the transition away from coal and towards a net-zero electricity grid. This included work to advance key projects, such as the Atlantic Loop.[cxxiii] NRCan also worked on a coordinated approach to develop a framework and guiding principles for Indigenous engagement and consultations to support proposed projects.

As part of the implementation of the Small Modular Reactor Action Plan,[cxxiv] NRCan co-chaired three meetings of the Leadership Table alongside the chair of the Indigenous Advisory Council, and published the first Progress Update in Fall 2022. A second update is scheduled to be released in the fall of 2023. The Enabling Small Modular Reactor Program[cxxv] was launched in February 2023 and expected to start by March 2024. NRCan is conducting the application process with projects, including pertaining to supply chain, fuel supply and waste.

To ensure the safe management of radioactive waste continues to align with international standards and best practices that reflect the values and principles of Canadians, NRCan released the modernized Policy for Radioactive Waste and Decommissioning[cxxvi] for Canada on March 31, 2023. This policy is the result of more than two years of extensive and active engagement with Indigenous Peoples, interested Canadians, experts, waste generators and owners, and other levels of government.

Recognizing that advanced nuclear technologies such as small modular reactors present an opportunity to strengthen global energy security and lower emissions while creating economic growth, NRCan and the US Department of Energy, in a Joint statement on nuclear energy cooperation,[cxxvii] committed to explore methods to further diversify and strengthen the resilience of the global nuclear fuel supply chain to support current and future fuel needs. During 2022-23, NRCan also pursued program delivery for smart renewable energy and grid modernization projects including wind, solar, storage, geothermal and other renewables to support the transition electrify the economy.

To this end, the Smart Renewables and Electrification Pathways Program[cxxviii] (SREP) increased its budget to $1.56 billion and supported 122 smart renewable energy, grid modernization, and capacity projects, adding over 2,700 megawatts of new renewable generation capacity to the

electricity system. This includes 65 projects with Indigenous ownership. In Budget 2023, Canada announced an additional $3 billion over 13 years in NRCan funding, including for SREPs.

The Emerging Renewable Power Program[cxxix] (ERP) supported 3 geothermal power generating projects, 2 tidal energy projects and a bifacial solar project through contribution agreements. In addition, 9 studies and assessments have been funded under the program and the bifacial[12] solar project was successfully commissioned. Through its funding, the ERP mitigates the risk of emerging renewable power projects, allowing emerging renewables to play a larger role in Canada's electricity supply mix to reduce GHG emissions.

NRCan committed $12.7 million in 2022-23 in support of inter-provincial electricity transmission project predevelopment activities under the Strategic Interties Predevelopment Program. Further, the $250 million Electricity Predevelopment Program was also implemented in support of predevelopment activities necessary to advance large clean electricity infrastructure projects of regional and national significance.

NRCan completed delivery of the $100 million Smart Grid Program,[cxxx] which promoted the modernization of grid infrastructure by funding the demonstration of promising, near-commercial smart grid technologies and the deployment of smart grid integrated systems across Canada. NRCan also secured renewal of funding for the demonstration stream based on the program's successes. The program funded 22 projects and included $6.1 million to Nova Scotia Power and $6.2 million to the New-Brunswick Power Corporation to develop, deploy and pilot solutions that integrate distributed energy resources, such as rooftop solar installations and battery storage, into the grid and to engage with communities on energy consumption and energy asset ownership.

Wah-ila-toos is the new single-window initiative that streamlines federal funding for clean energy programs for rural, remote and Indigenous communities to reduce the administrative complexities, barriers, and fatigue experienced by these communities. In addition, a distinctions-based Indigenous Council was established to support Wah-ila-toos by providing guidance and advice on programs and policy development. The Indigenous Council will also direct an engagement process and develop recommendations on a long-term strategy for the clean energy transition in rural, remote, and Indigenous.

In 2022-23, $52.2 million was disbursed in grant and contribution agreements through the Clean Energy for Rural and Remote Communities program included under the Wah-ila-toos umbrella. In 2022-23, a second cohort of the Indigenous Off-Diesel Initiative (IODI) was launched. An additional 10 Indigenous Energy Champion were selected for the second cohort and will be eligible to receive funding for capacity building, energy planning and development of community energy projects. 14 Champions from the first cohort of IODI are currently finalizing their community clean energy projects.

[12] Bifacial solar panels capture sunlight from both the front and back of the panel.

Sustainable Forest Management and Cumulative effects

Canada has been managing its forests to ensure they are sustainable and maintained for future generations. Conservation efforts are key to ensure biodiversity and species protection. Critical to achieving these goals is the ability to measure and report progress on forest management practices. To ensure the resiliency and sustainability of Canada's forests, NRCan, on an annual basis, publishes the State of Canada's Forest Report[cxxxi] to highlight current challenges and opportunities facing Canada's forest sector.

NRCan established 10 agreements with other government agencies to advance the harmonization and accessibility of forest data. Through multi-agency collaborative efforts, the Multi-Agency Ground Plot database was created to enable the collection of soil samples from forests across Canada. These samples are then used in the development of the Common Attribute Schema for Forest Resource Inventory – a shared forest inventory and resource of data aimed at supporting sustainable forest management, carbon modeling and biodiversity assessments in Canada.

In collaboration with ECCC, the Department researched impacts of forest management practices on caribou habitat quality, in the context of climate change, which has informed efforts to protect the critical habitats of species at risk (SAR). Strong partnerships with Quebec's First Nations (Pessamit and Abitibiwinni) were either reinforced or initiated, notably through the production of scientific advice for the communities to assess the impacts of climate change and forest management on caribou habitats within projected conservation areas. Research agreements are currently in development for co-creation research projects with these communities. In addition, knowledge, data and tools critical to caribou habitat recovery and restoration were produced (including mitigation of resource development impacts on forest ecosystems). For example, in 2022-23, NRCan had seven contribution agreements with Indigenous communities to fund activities related to caribou habitat restoration and recovery.

To protect SAR and their habitat, NRCan continued to conduct research to inform forest management measures and best practices. Evaluation was conducted on how SAR (e.g., Woodland Caribou and Wood Turtle) respond to habitat change from sole and combined effects of natural causes (e.g., climate change, wildfires) and anthropogenetic (e.g., forestry and other natural resource development) activities. NRCan is developing knowledge, data, and tools to incorporate habitat for multiple SAR into existing long-term, strategic, landscape-scale management planning tools and techniques to evaluate trade-offs when prioritizing other resources like timber supply.

Gender-based analysis plus

NRCan programs and policies continued to apply GBA Plus to ensure that innovative solutions in support of the shift to a low carbon economy are inclusive. Here are some examples where NRCan used GBA Plus under this core responsibility to address potential barriers, leading to more inclusive and equitable opportunities.

The Smart Renewables and Electrification Pathways program (SREPs) supports policy decision-making that works to achieve the zero emissions by 2035 commitment. The program asks all

projects to report disaggregated data on hiring, including women, men, gender diverse people, racialized people, Indigenous people, persons with disabilities, and youth. All 2022-23 renewable energy and grid modernization projects that received funding through SREPs have included an Equity Diversity and Inclusion plan or equivalent public commitment.

The Smart Grid and Emerging Renewable Power programs require regular reporting and final reports. These programs collect disaggregated data on men, women, and gender diverse jobs created in the project. This data will provide a better understanding of participation in, access to, and the impacts of the programs on equity-seeking groups, as well as the current state of equity, diversity, and inclusion in the clean energy technology sector.

In launching the second cohort of the Indigenous Off-Diesel Initiative in 2022-23, the Wah-ila-toos initiative established the Indigenous Council, which is gender-balanced and includes a diversity of ages and regional representation, acted as a jury for the second Indigenous Off-Diesel Initiative cohort. The initiative further supports remote Indigenous communities experiencing barriers associated with accessing capital funding, capacity building, and related activities necessary to enable full participation in the renewable energy and natural resource sectors.

The Wah-ila-toos program collects, disaggregates, and tracks data for renewable energy projects in rural and remote communities, Indigenous ownership, and the participation of women and youth in projects.

Canada led the Equal by 30 Campaign,[cxxxii] a global effort under the Equality in Energy Transitions Initiative to advance the meaningful participation of women and other marginalized groups in the clean energy sector. Thirteen new signatories joined the campaign, bringing the total number to 192 signatories globally. Canada worked with Germany to release a G7 progress report on advancements towards greater equality in the energy sector.

The Energy Efficiency Program engaged with Indigenous partners, including through an Indigenous-led study, to further explore Indigenous perceptions, needs, and barriers to the uptake of energy efficiency solutions in Canada. The Oil to Heat Pump Affordability Grant was designed and launched in February 2023, focusing on low- to median-income households. To address program access barriers, some initiatives adapted funding and reporting flexibilities for Indigenous applicants.

The Government’s sustainable jobs approach was communicated through the interim Sustainable Jobs Plan[cxxxiii] for 2023-2025 released on February 17, 2023. This approach aims to advance equity and inclusion, and address barriers to representation in relevant industries by creating mechanisms, such as a Sustainable Jobs Partnership Council, to ensure that the Government is considering the perspectives of stakeholders and partners in developing its approach to support the shift to a low-carbon economy. The Plan also lays out the Government’s proposed approach to recently introduced sustainable jobs legislation, which will create a framework for accountability, engagement, and transparency to empower workers and communities while building economic opportunities that give confidence to Canadians.

United Nations 2030 Agenda for Sustainable Development and the Sustainable Development Goals

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

In support of Goal 7 – Affordable and Clean Energy, NRCan:

- Worked to de-risk capital costs through the Clean Fuels Fund to expand clean-fuel production capacity in new or existing facilities as well as provided support to undertake feasibility and front-end engineering and design studies to increase production and competitiveness of Canadian clean fuels.
- Supported 73 smart renewable energy and grid modernization deployment projects, including 39with Indigenous ownership through the Smart Renewables and Electrification Pathways Program (SREPs) which received a $600 million recapitalization in Budget 2022, increasing the total program budget to $1.56 billion. These projects will provide essential grid services while supporting Canada's equitable transition to an electrified economy and will add over 2,700 megawatts of new renewable energy to Canada's electricity system.
- Provided funding for 48 capacity building projects, through SREPs, to support the equitable transition to a cleaner electrical grid, helping communities and organizations acquire the knowledge and tools needed to develop renewable energy and grid modernization projects. In Budget 2023, Canada announced an additional $3 billion over 13 years in NRCan funding, including for SREPs.
- Initiated 159 contribution agreements and grants funding since the establishment of the Clean Energy for Rural and Remote Communities Program in 2017 for renewable energy projects including capacity building, large capital projects, innovation projects, and bioheat projects in Indigenous, rural, and remote communities across Canada.
- Undertook work to establish the enabling conditions for an offshore wind industry in Canada, including:
    - Drafting and then introducing Bill C-49 into Parliament, which, among other things, will expand the mandate of the two Offshore Petroleum Boards to include the regulation of offshore renewable projects.
    - Continuing to work with the Canada Energy Regulator (CER) to advance the development of new Offshore Renewable Energy Regulations under the *Canadian Energy Regulator Act*.
    - Launching, with the Impact Assessment Agency of Canada and provincial partners, two Regional Assessments of Offshore Wind Development in Nova Scotia and Newfoundland and Labrador in March 2023 that will identify gaps in existing information including through extensive engagement with stakeholders and Indigenous groups to inform future site selections of offshore wind projects.

    - Securing funding in Budget 2023 to design a program that will create new investments in government-led marine data collection efforts for offshore wind projects and support an offshore wind grid integration and transmission study in Atlantic Canada.
- Continued to play a global leadership role, through the Energy Efficiency Program, to increase energy efficiency and accelerate the clean energy transition in collaboration with international partners, including but not limited to involvement in the UN Global Alliance for Buildings and Construction, the IEA Energy Efficiency Hub and the IEA Energy Efficiency Working Party. The program also participated in the IEA Energy Efficiency Global Conference, Mission Efficiency and other affiliated IEA Technology Collaboration Programmes.
- Administered during the COVID-19 pandemic, the $750 million Emissions Reduction Fund (ERF), which provides funding, primarily in the form of repayable contributions, to eligible Canadian onshore (up to $675million) and offshore ($75million) oil and gas companies and Canadian innovators to invest in green solutions to reduce greenhouse gas (GHG) emissions and retain jobs in the sector.

In support of Goal 9 – Industry, Innovation and Infrastructure, NRCan:

- Continued to support the demonstration of innovative next-generation electric vehicle charging and hydrogen refueling infrastructure in Canada, including novel EV charging technologies and business models for multi-unit residential buildings and workplaces, transit electrification and battery repurposing.

In support of Goal 13 – Climate Action, NRCan:

- Planted over 27.9 million trees from 197 species on more than 1100 sites across Canada. This brings the total trees planted since the program's start in 2021 to over 110 million, including over 54 million planted under Environment and Climate Change Canada's Low Carbon Economy Fund in 2021. This program also supported 761 hectares of tree planting for habitat restoration for species at risk and species of interest, and 14,701 hectares for forest resilience to climate change.
- Supported 124 external research, development, and demonstration (RD&D) projects aimed at reducing greenhouse gas emissions by fostering innovation in the key areas of decarbonizing industry, communities, and transportation.

In support of Goal 15 – Life on Land, NRCan:

- Continued to support research on forest ecosystems, through the Sustainable Forest Management Program, to help ensure that Canada's forests remain healthy and productive, now and for generations to come. This work provided knowledge and tools to inform sustainable forest management practices and for protection of biodiversity.
- Continued its long-term ecosystem research at Turkey Lakes Watershed that provided a better understanding of the impacts of tree harvesting on stream chemistry in forests experiencing climate change and acidification recovery.

- Published research results from long-term monitoring studies about the effects of Spruce budworm, climate change and forest management on forest ecosystems and biodiversity in Quebec and Atlantic Canada. This contributed to better integration of sustainable forest management strategies when forests are impacted by multiple stressors (i.e., forestry, pests and drought) to continue the goods and services that the forests provide for users, especially Indigenous communities. It also improved maps of the northern Boreal forests, using remote sensing technologies supported forest inventory, sustainable forest management and wildfire risk management.

Additional information about how NRCan activities support United Nations' 2030 Agenda and Sustainable Development Goals are reflected under the NRCan 2020-23 Departmental Sustainable Development Strategy.[cxxxiv]

Innovation

NRCan promoted energy efficiency in Canadian homes, businesses and industry by searching for new partnerships and opportunities to experiment, innovate, and drive change. In 2022-23, two surveys were conducted by PARCA with over 2000 participants to identify and explore barriers and motivators to electric heat pump adoption. As well, an online survey of 2500 Canadian homeowner or homebuyers was conducted to inform how to increase the adoption of EnerGuide home energy label.

To advance digital science, NRCan's Digital Accelerator supported the use of artificial intelligence and machine learning to enable and foster a digital-driven culture in the Department.

In 2022-23, the Digital Accelerator delivered the following projects:

- Energy Star AI Detective: Developed an AI algorithm for identifying online misuse and infringements of the ENERGY STAR® name and mark.
- Mining Risk Mitigation: Used machine learning techniques to identify tailings ponds[13] within active and abandoned mines.
- Remote Communities Power Usage Forecasting: Explored and implemented machine learning algorithms to forecast the power-usage of remote northern communities.
- Flood Risk Mapping Project 1: Refined an existing approach using new RadarSat Constellation Mission data instead of old Satellite data.

To foster awareness of digital innovation and build a digitally driven culture within NRCan, the Digital Accelerator also partnered with Microsoft Azure, the Vector Institute and organized workshops for the Department on Machine Learning and the Fundamentals of artificial intelligence. The use of AI and machine learning will lead to more efficient, effective, and

[13] Tailing ponds are used to store leftover residue materials from the extraction process.

citizen-centric governance, ultimately benefiting Canadians by improving services, policies, transparency, and overall quality of life.

NRCan's Strategic Innovation Fund Net-Zero Accelerator Secretariat provided policy support to ISED's Net Zero Accelerator Initiative.[cxxxv] In 2022-23, NRCan reviewed 59 Statements of Interest for projects supporting cleantech and battery ecosystem and 37 Call-to-Action projects aimed at decarbonizing large industrial emitters in the natural resources sectors were reviewed. Moreover, NRCan provided support to ISED by providing input into investment policy decision-making processes and ensuring investment in priority natural resource projects, in areas of decarbonisation, clean energy and critical minerals.

Key risks

The Department's ability to lead in innovative and sustainable natural resources development faces risks related to the impact of climate change, as well as rapid pace of science and technological innovation as Canada and countries around the world shift to net-zero economies and increasingly demand low-carbon products. To respond to these risks, NRCan supported research, development, and demonstration projects to advance the technologies required for Canada's net-zero transition to near commercial readiness. NRCan also collaborated with other government departments to support federal approach for a transition to a low-carbon economy and leveraged strategic partnerships with Indigenous partners, external stakeholders and other levels of government to improve the environmental performance of Canada's natural resource sectors.

Results achieved

The following table shows, for Innovative and Sustainable Natural Resources Development, the results achieved, the performance indicators, the targets and the target dates for 2022–23, and the actual results for the three most recent fiscal years for which actual results are available.

Departmental results	Performance indicators	Target	Date to achieve target	2020–21 actual results	2021–22 actual results	2022–23 actual results
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 2023	69%	67%	100%[14]
	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 2023	100%	100%	100%
	Percentage of NRCan-funded clean energy innovation projects advancing along the innovation scale[15]	At least 50% of research, development and demonstration projects advance one level on the technological	March 2024	37%	59%	69%

[14] Results fluctuate based on program funding cohorts. These results are not typical due to a few outliers that skewed results. In future years NRCan anticipates results to range between 10% to 50% depending on the stage of program funding cohorts.
[15] Results fluctuate based on program funding cohorts.

		readiness scale by project completion (typically 3-4 years)				
	Percentage of innovative mining technologies developed by NRCan that move towards being ready for commercial use[16]	25%	March 2023	22%	28%	80%
	Number of initiatives enabled by NRCan to strengthen the cyber security and resilience of Canada's critical energy infrastructure[17]	At least 20	March 2023	Not available	27	27
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[18]	46%[19]	52%

[16] This indicator tracks progress on results at the completion of NRCan-funded projects. As many projects are still ongoing, the results do not represent the full program portfolio and serves only as an indication of progress to date. Results fluctuate based on program funding cohorts.
[17] Historical information is not available for all previous years as this indicator was added to Natural Resource Canada's Departmental Results Framework starting in 2020-21.
[18] This indicator tracks progress on results at the completion of NRCan-funded projects. As the program was extended through 2021-22 due to the COVID-19 pandemic, not enough projects that report on this indicator were completed in 2020-21 to meaningfully report.
[19] This indicator tracks progress on results at the completion of NRCan-funded projects. This is the first year that NRCan has reported on this indicator. As many projects are still ongoing, the figure represents a fraction of the full program portfolio and serves only as an indicator of progress to date.

	Ratio of partner investment to government spending in NRCan-funded energy innovation projects	At least 1:1	March 2023	2:1	2.5:1	2.5:1
	Total annual energy savings resulting from adoption of energy efficiency codes, standards and practices	Total Annual Energy Savings of 600 PJ	March 2030	66.7PJ	80.0PJ	99.3PJ
Canada's natural resources are sustainable	Percentage of Canadian electricity generated from non-GHG emitting sources	At least 90%	March 2030	83%	82.1%	Not available[20]

[20] Data not available until December 2023.

	Number of renewable energy projects in remote communities and off-grid industrial operations	115	March 2026	21[21]	9[22]	27[23]
	Amount of wood harvested compared to the sustainable supply	Harvest is less than sustainable supply	March 2023	156.2 million m3 total harvest versus total wood supply of 217.9 million m3. (SoF 2020 – data from 2018)	139.8 million m3 total harvest versus total wood supply of 218.1 million m3. (SoF 2021 - Data from 2019)	141.1 million m3 of harvest versus total wood supply of 215.3 million m3. (SoF 2022 - Data from 2020)
	Number of low-carbon recharging and refueling stations under development or completed	At least 34,500 electric vehicle charging stations At least 22 natural gas refuelling stations At least 25 hydrogen refuelling stations	March 2024	Electric Vehi-cle charging stations = 1,089 Natural gas refuelling stations = 22 Hydrogen refuelling stations = 15	Electric Vehicle charging stations = 25,365 Natural gas refuelling stations = 22 Hydrogen refuelling stations = 15	Electric Vehicle charging stations = 42,438 Natural gas refuelling stations = 22 Hydrogen refuelling stations = 26

[21] This indicator measures the number of completed renewable energy projects in remote communities and off-grid industrial operations in 2020-21.
[22] This indicator measures the number of completed renewable energy projects in remote communities and off-grid industrial operations in 2021-22.
[23] This indicator measures the number of completed renewable energy projects in remote communities and off-grid industrial operations in 2022-23. The program had a total of 130 contribution and grant agreements signed as of March 31, 2023: 45 for the BioHeat stream, 20 for Demonstration, 13 for Deployment and 52 for Capacity Building. By March 31, 2023, 57 projects were completed from the start of the program to that date.

	Reduction in greenhouse gas emissions resulting from NRCan-funded clean technology demonstrations	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 GHG direct and indirect reductions per year	March 2027 (Clean Growth Program) March 2030 (Energy Innovation Program)	Clean Grown Program: Not available[24] Energy Innovation Program: 1.85 Mt/year[25]	Clean Growth Pro-gram: 0.014 Mt/ year[26] Energy Innovation Program:2.19 Mt/year[27]	Clean Growth Program: 0.2 Mt/year Energy Innovation Program: 2.6 Mt/year

[24] Results are only reported once GHG emission reduction estimates have been assessed and validated at project completion and/or during the five-year outcomes reporting period. Program duration was extended through 2021-22 due to the COVID-19 pandemic.
[25] On track for 2030 target. Results are only reported once GHG emission reduction estimates have been assessed and validated at project completion and/or five-year project outcomes reporting. As GHG reductions for demonstration projects are only realized from the implementation, operation, replication of technologies or solutions, it may take several years for environmental outcomes to accrue.
[26] On track for 2027 target. Results are only reported once GHG emission reduction estimates have been assessed and validated at project completion and/or five-year project outcomes reporting. As GHG reductions for demonstration projects are only realized from the implementation, operation, replication of technologies or solutions, it may take several years for environmental outcomes to accrue.
[27] On track for 2030 target. Results are only reported once GHG emission reduction estimates have been assessed and validated at project completion and/or five-year project outcomes reporting. As GHG reductions for demonstration projects are only realized from the implementation, operation, replication of technologies or solutions, it may take several years for environmental outcomes to accrue.

	Percentage of NRCan's projects on innovation and sustainable development that engage Indigenous communities, organizations or governments	8%	March 2023	8.3%	17.17%	20%

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

Budgetary financial resources (dollars)

The following table shows, for Innovative and Sustainable Natural Resources Development, budgetary spending for 2022–23, as well as actual spending for that year.

2022–23 Main Estimates	2022–23 planned spending	2022–23 total authorities available for use	2022–23 actual spending (authorities used)	2022–23 difference (actual spending minus planned spending)
2,178,334,701	2,178,334,701	2,382,343,282	1,220,481,467	(957,853,234)

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

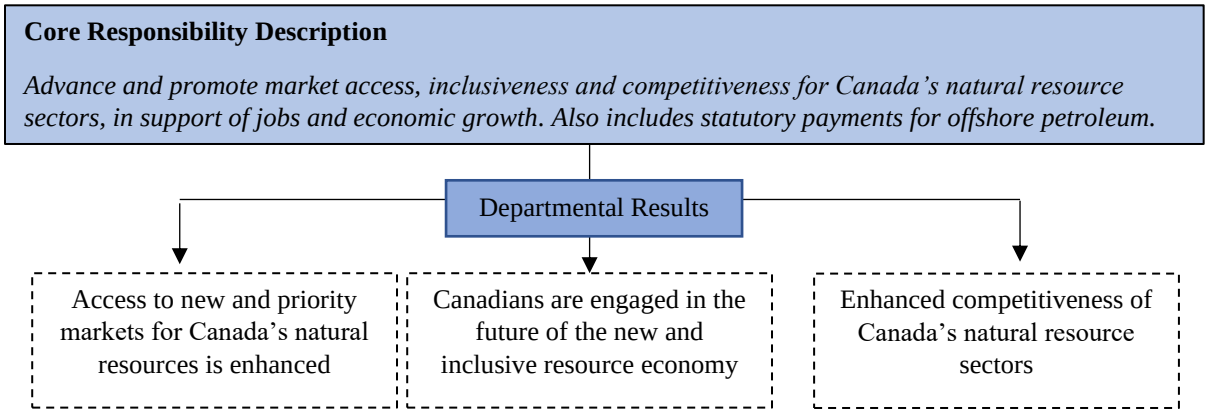
Human resources (full-time equivalents)

The following table shows, in full-time equivalents, the human resources the Department needed to fulfill this core responsibility for 2022–23.

2022–23 planned full-time equivalents	2022–23 actual full-time equivalents	2022–23 difference (actual full-time equivalents minus planned full-time equivalents)
1,874	1,986	112

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

Globally Competitive Natural Resource Sectors



Results

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

In 2022-23, NRCan participated in a variety of multilateral fora and working groups with international partners strengthened relations, highlighted Canada's leadership in clean energy, and advanced opportunities for collaboration on clean technology and innovations in the energy transition. This included the G7, G20, COP27, COP15, IEA, CEM, and MI. For example, the Department also participated in CERAWeek[cxxxix] in March 2023, which convened over 5,000 delegates from 87 countries, to engage representatives from industry to promote Canada as a key destination for foreign direct investments, as leaders gathered to advance new ideas, insight and solution to the biggest challenges facing the future of energy, the environment and climate.

NRCan consulted with Indigenous groups and supported the Canada Energy Regulator in its role to enforce regulations of energy infrastructure to ensure that projects were open, inclusive and transparent. Supported by NRCan, the Canada Energy Regulator held consultations for the North Eastern British Columbia (NEBC) pipeline Connector Project on behalf of the Government of Canada to allow for an early and thorough review process.

The Department committed to increasing competitiveness of the forest sector, domestically and internationally through the Expanding Market Opportunities[cxl] (EMO) Program which provides financial support to increase Canadian presence in forest products markets. In 2022-23, $14.6 million was allocated to support 204 projects through the EMO aimed at investing in market development activities in partnership with industry, provinces and territories.

Complementing the work of the EMO, NRCan collaborated with Global Affairs Canada (GAC) to ensure that Canadian exporters of legal and sustainable forest products were not affected by the in-market measures to address illegal logging and associated trade. NRCan and GAC also worked together with officials in the United States and stakeholders in Canada's packaging industry to minimize the administrative burden of the application of the U.S. *Lacey Act* border declaration to wood pallets, resulting in the sustained export flow of forest products.

NRCan and GAC also collaborated during the litigation process during the Canada-United States-Mexico Agreement (CUSMA) and the North American Free Trade Agreement (NAFTA) to defend Canada's forestry sector against unwarranted U.S. softwood lumber duties.

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

Youth Employment and Skills Strategy – Science and Technology Internship Program

In 2022-23, NRCan's Science and Technology Internship Program[cxli] invested $12.6 million to create 594 green jobs and training opportunities for youth aged 15 to 30 in the natural resource sectors, overdelivering on the target of 480. Internships and training opportunities took place in all provinces and territories. Preliminary results for 2022-23 indicate that 74% of youth were employment after the internship.

In 2022-23, nine organizations were selected to create 960 green jobs and training opportunities over the next two years. The program has ambitious equity targets for participants: 60% overall employment equity, including 50% women, 20% racialized youth, 15% Indigenous youth, 5% youth living with disabilities, and 10% youth in northern, rural, and remote locations.

NRCan's Youth Council

In December 2022, NRCan launched the first Youth Council, reaffirming the Government of Canada's commitment to protecting nature and biodiversity, recognizing the importance of engaging and hearing from youth on climate, energy and natural resource issues.

The Youth Council is made up of a team of young leaders who will provide perspectives on Canada's most pressing climate, energy, and natural resource related issues. The Council is focused on five key policy themes, including: zero emission vehicles, tree planting, green buildings, sustainable jobs, and Indigenous partnerships.

Minister Wilkinson and the NRCan Youth Council

Enhanced competitiveness of Canada's natural resource sectors

Forest Sector Competitiveness

Several measures were taken to strengthen collaboration with provinces, territories and Indigenous communities to achieve a national vision to make Canada a global leader in the forest bioeconomy. With the endorsement in October 2022 of the Renewed Forest Bioeconomy Framework,[cxlii] in collaboration with provincial and territorial partners, NRCan identified high-priority actions to accelerate Canada's bioeconomy. In addition, the Department worked with federal partners to renew federal forest sector programming: Budget 2023 announced $368.4 million in funding, providing a foundation for work with provinces, territories, and Indigenous communities to develop the forest bioeconomy over the next three years.

NRCan also supported the transformation of the forest sector to increase its economic sustainability and create new jobs and market opportunities for Canadian forest industry firms through three main initiatives: **Forest Innovation Program**,[cxliii] **Investments in Forest Industry Transformation Program**,[cxliv] and **Green Construction through Wood Program**.[cxlv]

The Forest Innovation Program:

In 2022-23, the program provided $23 million in funding to FP Innovations[cxlvi] to:

- Fund collaborative research and development and initiatives that show strong pre-commercial potential to support the forest sector
- Provide funding to the Canadian Wood Fibre Centre to enhance work on wood fibre optimization.

These include:

The *Fibre Solutions program* led by the Canadian Wood Fibre Centre[cxlvii] conducted innovative and applied research and development to provide solutions aimed at reducing risks associated with fibre supply, improve productivity and fuel the bioeconomy. The *Canadian Wood Fibre Centre* funded several projects, worth $1 million annually, over a three-year period (2020 to 2023). The type of projects funded varied in terms of technology transfer, social acceptability of biotechnology, de-risking the forest value chain, and enhanced forest inventory.

Through the development of innovative technologies, products and processes in the emerging bioeconomy, the *Forest Research Institute Initiative* conducted research that enables the development of different ISO standards for the pulp, paper and bioproducts industry. Also, the Assessment and Screening of Carbon Impact was developed to facilitate the assessment of carbon impacts for different forest product categories.

The *Transformative Technologies Collaborative Research program* conducted collaborative research and development projects on lime kiln decarbonization to promote sustainable pulp and paper mills, as the lime kiln is the most fossil-based, carbon-intensive process unit in a kraft mill. Cost benefit analysis for other options, based on a survey of 19 Canadian mills, was completed and a suitable demonstration plant was selected.

Further, the the Forest Innovation Program's *Forest Biorefinery Initiative* worked with CanMet labs and the National Research Council to refine technological solutions and information needed to support the forest sector's shift towards bioproducts and bioenergy production through forest biorefineries that enable fuller utilization of materials like a pulp and paper mill producing higher-value products such as biocomposites or bioplastics; as well as lower-value products such as green electricity, heat, and pellets. The Initiative supports research and development in areas such as feedstock supply for biorefineries and improving the efficiency of pulp mills allowing for biorefinery technology integration.

The Investments in Forest Industry Transformation Program:

The Program provided $84 million to support 45 capital investment, studies, and outreach projects. For example, $10 million was provided to Kruger Packaging to modernize its Place Turcot Containerboard Mill in Montréal. Once completed in 2025, the Place Turcot facility will be the first in North America to manufacture 100% recycled saturating kraft board, a product that

is used to make high-pressure laminates for furniture, countertops and decorative paneling from renewable, recycled wood fibre.

The Investments in Forest Industry Transformation program supported the de-risking of first-of-kind forest bioeconomy projects by paying up to 50% of project costs. In 2022-23, $3.6 million in funding was provided in collaboration with Via Separations Inc. to International Paper Company in Alberta for the implementation of a first-of-its-kind filtration technology aimed at reducing the energy intensity and carbon emissions associated with the kraft pulping process in pulp mills.

The Green Construction through Wood Program:

The Program supported a number of demonstration and R&D projects using mass timber in the reconstruction of elementary schools by meeting seismic requirements in some provinces. These projects are highly replicable especially in schools and other education and institutional buildings due to the biophilic advantages and the aesthetic of the exposed mass timber. Along with the Indigenous Forestry Initiative[cxlviii] (IFI) and the EMO program, these programs supported the forest sector from seed to market, helping support the diversification and resiliency of Canada's sector and the growth of Canada's forest bioeconomy.

NRCan also supported Indigenous economic development in the forest sector by supporting several new and ongoing Indigenous-led projects under the IFI[cxlix] for a total of $7.5 million. The IFI provided $83,506 to Digaa Enterprises Ltd. to seek markets and supply arrangements for wood fibre. The IFI also committed $400,000 from 2022-23 to 2023-24 to support the Union of Ontario Indians in the research and analysis of forest sector policy documents, regulations, opportunities, and barriers leading to the development of a comprehensive Anishinabek Nation Forest Strategy. In addition, the program worked in collaboration with the Indigenous Natural Resource Partnerships Program to support the implementation of 16 Indigenous forestry projects representing a total of over $4.5 million in funding from 2022-23 to 2024-25.

These projects are supporting opportunity scans, feasibility studies and business planning for potential forestry operations. Additionally, INRP funding is helping communities assess viable community energy plans, implement training courses with sustainable harvesting goals and expand ongoing wildfire risk reduction, chipping and biomass brush burning operations.

Provisions of Federal Leadership in the Minerals and Metals Sector

Canada has continued discussions to prioritize the production and development of critical minerals with enhanced strategic co-operation with likeminded partners to ensure globally competitive and sustainable mineral supply chains.

NRCan continued to collaborate with federal, provincial, and territorial governments to implement actions under the Canadian Minerals and Metals Plan[cl] (CMMP) in relation to the six strategic directions of the CMMP, including the launch of a Mineral Literacy Hub on MinesCanada.ca.[cli]

Backed by nearly $4 billion in funding, the Department is leading implementation of Canada's first Critical Minerals Strategy, which seeks to increase the supply of responsibly sourced critical minerals and support the development of domestic and global value chains for the green and digital economy. The Strategy takes a full value chain approach to the development of critical minerals – from exploration to recycling – with opportunities for all regions of Canada. Investments will be guided by five core objectives: supporting economic growth, competitiveness, and job creation; promoting climate action and environmental protection; advancing reconciliation with Indigenous peoples; fostering diverse and inclusive workforces and communities; and enhancing global security and partnerships with allies.

Minister Wilkinson at the annual convention of the Prospectors & Developers Association of Canada

The Department worked with the Argonne National Laboratory, which is funded by the United States Department of Energy, on the Joint Action Plan on Critical Minerals to advance mutual interest in securing critical mineral supply chains needed by key manufacturing sectors, including communications technologies, aerospace and defence, and clean technologies. CanmetMINING scientists participated in the first research and development project under the Canada-US Joint Action Plan - a joint exploratory research project on Life Cycle Inventory, with the Argonne National Laboratory funded by the U.S. Department of Energy and led on the Canadian side by the National Research Council of Canada.

Other progress under the Joint Action Plan included attracting and supporting investment and partnership opportunities. In addition, broader application of ESG practices and standards for mining and processing were promoted through multinational forums like the International Energy Agency's Critical Minerals Working Party, the Conference on Critical Materials and Minerals, the Sustainable Critical Minerals Alliance, the U.S.-led Energy Resource Governance Initiative, and the Minerals Security Partnership.

Nòkwewashk

Through 2022-23, NRCan maintained its commitment to Indigenous groups and partner departments to foster constructive dialogue and collaboration to implement Trans Mountain Expansion (TMX) initiatives. This included $135 million allocated for consultations and engagements with Indigenous communities to maintain NRCan's commitment to implement the Trans Mountain Expansion initiative. In addition, work on responses to the CER recommendations to address potential impacts to marine shipping also progressed. A status report that covers TMX initiatives for 2022-23 was made available in June 2023. NRCan coordinated with five other departments to secure $32 million through 2024-25 to fulfill Canada's commitments to TMX accommodation measures and recommendation responses.

In collaboration with Indigenous peoples and the CER, the Department supported Indigenous Advisory and Monitoring Committees (IAMCs) for TMX and the Enbridge Line 3 Replacement Program (Line 3) by providing $27.9 million in funding to renew both IAMCs for two years. A new $10 million funding model was also implemented for the IAMC-TMX to strengthen the role of IAMC-TMX Indigenous caucuses in decision-making while reducing the administrative burden. This work represented a positive demonstration of reconciliation in action by NRCan. Both the IAMC for TMX and Line 3 are reviewing the scope of their activities as they shift from construction activities to the operation phase.

To foster the economic participation of Indigenous communities in the natural resources sector, the Indigenous Natural Resource Partnerships program established 17 contribution agreements with Indigenous communities, across distinctions and jurisdictions, to support projects in critical minerals literacy, capacity building to help unlock investment opportunities in natural resource projects, and Indigenous-led forest programs.

As part of Phase I scoping discussions to inform the development of a National Benefit Sharing Framework (NBSF), NRCan led more than 80 engagements with National Indigenous Organizations, Indigenous economic development experts and organizations, Indigenous industry associations, industry associations, and provinces and territories. This framework will support Indigenous peoples and communities participate more meaningfully in and benefit from the development of natural resources projects on their territories.

NRCan also worked multilaterally to advance economic reconciliation by maintaining its support to implement the United Nations Declaration on the Rights of Indigenous Peoples[clii] (UNDRIP) legislation by developing initiatives such as the NBSF, which was included in the first UN Declaration Act Action Plan, and by contributing to the ongoing Justice Canada-led whole-of-government review of acts and regulations to ensure consistency with UNDRIP during the development of the sustainable jobs legislation and amendments to offshore petroleum legislation. NRCan also actively contributed to the development of the first Annual progress report on the implementation of the *United Nations Declaration on the Rights of Indigenous Peoples Act*, and to the development of the UN Declaration Act Action Plan, through which it engaged with natural resources sector industry – both Indigenous and non-Indigenous.

Energy Safety and Security, and Petroleum Resources

In 2022-23, NRCan worked with provinces, the Canada-Newfoundland and Labrador Offshore Petroleum Board, the Canada-Nova Scotia Offshore Petroleum Board, industry and other stakeholders to support safe and environmentally responsible petroleum-related activities.

NRCan supported the recommendations of the Offshore Oil and Gas Industry Recovery Task Force, and fulfilled the following commitments:

- advancing work on amending the Canada-Nova Scotia Offshore Petroleum Resources Accord Implementation Act and the Canada-Newfoundland and Labrador Atlantic Accord Implementation Act (the Accord Acts), to modernize the Acts, enable new clean energy opportunities, grow the economy, and protect Canada's environment for introduction through Bill C-49 in Parliament in May 2023; and
- pre-publishing the Canada–Newfoundland and Labrador Offshore Area Petroleum Operations Framework Regulations and the Canada-Nova Scotia Offshore Area Petroleum Operations Framework Regulations in June 2022.

Further, NRCan established a joint working group with Transport Canada to assess transport challenges related to exports of ammonia and hydrogen derivatives from Canada to global markets.

NRCan continued its efforts in promoting the sustainable development of Canada's resources by strengthening its global presence in the markets of natural resources and clean technologies to open trade opportunities, attract foreign investment and enhance cooperation. Along with ECCC and the Department of Finance, NRCan actively supported the development of the oil and gas emissions cap and enhanced methane regulations. In addition, NRCan supported the carbon capture, utilization and storage (CCUS) investment tax credit and Clean Hydrogen Investment tax credit, as well as the requirement for improved emissions performance for new oil and gas projects subject to a federal impact assessment.

Gender-based analysis plus

Advanced and promoted market access, inclusiveness, and competitiveness for Canada's natural resource sectors, in support of jobs and economic growth. NRCan applied GBA Plus to ensure that Canada's globally competitive Natural Resources sectors were also inclusive. These are some examples of how GBA Plus was applied.

The Indigenous Forestry Initiative funded recipients that self-identified as Indigenous Peoples exclusively. Unless exempted (e.g., Indigenous governments), recipients were required to submit a diversity plan by the end of the first year of their project. Projects that considered identity, gender, and multi-generation participation targets in their plans were given extra merit during the review process.

Science and Technology Internship Program – Green Jobs continues to use GBA Plus to identify barriers to employment opportunities and to enhance the program's delivery and reach. This means collecting and analyzing disaggregated data, building and maintaining relationships with stakeholders that work with under-represented youth to make the program more equitable and accessible, and developing resources to support employers in the creation of inclusive and welcoming workplaces in the natural resources sector.

The program surpassed its ambitious equity target of 60% participation by youth from at least one employment equity (EE) group, achieving a 79% participation rate from EE groups, including 47% women, 26% racialized youth, 34% Indigenous youth, and 8% youth living with disabilities.

Nòkwewashk provides participant funding to potentially impacted Indigenous groups to allow for meaningful participation in Crown consultation activities on natural resource projects. These consultations provide an opportunity for potentially impacted Indigenous groups to engage in meaningful dialogue on impacts to Indigenous and Treaty rights and interest. The program provided participant funding to Indigenous groups, including Peguis First Nation in Manitoba and Elk Valley Métis Nation in B.C. Additionally, Nòkwewashk provides advice to other sectors within NRCan on how to facilitate meaningful consultations and engagement with potentially impacted Indigenous groups.

United Nations 2030 Agenda for Sustainable Development and the Sustainable Development Goals

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

In support of Goal 7 – Affordable and Clean Energy:

- Delivered $1.5 million in Climate Finance to the United Nations Framework Convention on Climate Change (UNFCCC) - Climate Technology Center and Network (CTCN), starting a 4-year engagement to enable the CTCN's activities to support developing countries in achieving their SDG and climate objectives. This included climate technology deployment and innovation projects, development of regulations, codes and standards, capacity building, supporting skills and training, and leveraging convening power. These activities create economic and employment opportunities, including for women and girls, young people and Indigenous Peoples.

In support of Goal 12 – Responsible Consumption and Production and Goal 13 – Climate Action:

- Launched the Canadian Critical Minerals Strategy to build domestic value chains, from exploration to recycling. In addition, at COP15, Canada, along with 5 other countries launched

the Sustainable Critical Minerals Alliance to drive the global uptake of environmentally sustainable and socially inclusive and responsible mining, processing and recycling practices and responsible critical minerals supply chains. Research and development is ongoing to determine the viability of mining value from waste (e.g., tailings ponds).

In support of Goal 17 – Partnerships for the Goals:

- Participated in the UNFCCC CTCN Advisory Board, highlighting the knowledge and expertise that has been cultivated in Canada. This CTCN Advisory Board role is used to showcase success on advancing people-centred policies and encourage further actions from international partners to advance equity, diversity and inclusion in the climate technology sector. NRCan's representation in the CTCN AB directly informed climate technology negotiations at COP27.

Additional information about how NRCan activities support United Nations' 2030 Agenda and Sustainable Development Goals are reflected under the NRCan 2020-23 Departmental Sustainable Development Strategy.[cliii]

Innovation

To encourage Zero Emissions Vehicles (ZEV) uptake, NRCan's Program of Applied Research on Climate Action in Canada conducted a survey with 2,731 Canadians on Zero Emissions Vehicles adoption barriers. The results included misperceptions about zero-emissions vehicles, including underestimating ZEV driving range, performance relative to internal combustion engine vehicles, and overestimating costs. These misperceptions contribute to affordability and range anxiety being the key barriers to LDV ZEV adoption. Successfully shifting Canadians' beliefs about ZEVs – especially affordability, public charging availability, and social norms of ZEV ownership can increase intent to purchase a ZEV.

Key risks

Risks include challenges to competitiveness and environmental sustainability of the natural resource sectors, opportunities for workers affected by rapidly transforming natural resource sectors, ensuring energy security and affordability domestically and abroad throughout the transition to renewable energy systems, as well as maintaining public confidence and engagement, including of Indigenous Peoples, in natural resources development. NRCan addressed these risks by taking steps to establish Canada as an attractive economy for investment in the global market through numerous bilateral and multilateral engagements, as well as leveraging and strengthening existing relationships with Indigenous and domestic partners.

Results achieved

The following table shows, for Globally Competitive Natural Resource Sectors, the results achieved, the performance indicators, the targets and the target dates for 2022–23, and the actual results for the three most recent fiscal years for which actual results are available.

Departmental results	Performance indicators	Target	Date to achieve target	2020–21 actual results	2021–22 actual results	2022–23 actual results
Access to new and priority markets for Canada's natural resources is enhanced	Canada's share of U.S. and global imports of natural resources	25.1% (U.S.) 1.5% (Global)	December 2022	24.6% (U.S.) 1.5% (global imports)	28.4% (U.S.) 1.4% (global imports)	30.0% (U.S.) 1.5% (global imports)
	Increase in value of assets abroad owned by Canadian natural resource companies	$227 billion	December 2022	$240 billion	Not available[28]	Not available[29]
	Number of NRCan international engagements that support the development or expansion of trade and investment in natural resources	At least 40	March 2023	59	66	87

[28] Data not available until the end of 2023.
[29] Data not available until the end of 2024.

Canadians are engaged in the future of the new and inclusive resource economy	Number of joint products developed in collaboration with provinces and territories and released to Canadians	At least 12	March 2023	21	21	32
	Percentage of NRCan's projects that support participation of Indigenous communities, organizations or governments in Canada's natural resource economy	19%	March 2023	63.27%	72.44%	63%
Enhanced competitiveness of Canada's natural resource sectors	Economic value of anticipated natural resource projects supported by analysis and solutions[30]	$2.42 billion	March 2023	Not available	$22.7 billion[31]	$38.9 billion

[30] Actual results are not available for 2020-21 as the Major Projects Management Office Initiative funding sunset in March 2020.
[31] A more inclusive and comprehensive approach was taken when assessing natural resource projects in 2021-22. This included projects tracked by the Impact Assessment Agency of Canada's Assistant Deputy Minister Impact Assessment Secretariat for which NRCan contributed analysis and/or solutions.

	Number of times NRCan's economic and investment data are accessed	At least 400,000 quarterly average	March 2023	420,835	536,574	491,381

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

Budgetary financial resources (dollars)

The following table shows, for Globally Competitive Natural Resource Sectors, budgetary spending for 2022–23, as well as actual spending for that year.

2022–23 Main Estimates	2022–23 planned spending	2022–23 total authorities available for use	2022–23 actual spending (authorities used)	2022–23 difference (actual spending minus planned spending)
778,394,348	778,394,348	786,911,953	747,770,525	(30,623,823)

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

Human resources (full-time equivalents)

The following table shows, in full-time equivalents, the human resources the Department needed to fulfill this core responsibility for 2022–23.

2022–23 planned full-time equivalents	2022–23 actual full-time equivalents	2022–23 difference (actual full-time equivalents minus planned full-time equivalents)
482	495	13

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

Internal services

Description

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

- acquisition management services
- communication services
- financial management services
- human resources management services
- information management services
- information technology services
- legal services
- material management services
- management and oversight services
- real property management services

Supporting science in an open and accountable government

NRCan continued to implement the 2019 Scientific Integrity Policy[clvii] (SIP) by educating employees on new guidelines and embedding its principles to ensure that its principles are embedded in the design, conduct, management and use of the Department's science.

NRCan's Chief Science Advisor supported evidence-based decision-making within the Department by mobilizing executives and furthering significant connections between NRCan and academia. These engagements were useful to identify opportunities that can be expanded to other areas of collaboration like policy development.

Unique science trends and analysis derived from the Federal Science Expenditures and Personnel Survey were also used by the Department to support science and technology decision-making and policy.

Emergency management and cybersecurity

To enhance security of scientific activities, NRCan developed a comprehensive Cyber Security Strategy, accompanied by a detailed implementation plan spanning four years. This strategy aims to equip the Department with the necessary tools and measures to effectively manage cyber risks, fortify defenses against cyber attacks, enhance cyber event detection capabilities, mitigate the impact of security incidents, and foster the growth of cyber security skills, knowledge, and cultural awareness within the Department.

NRCan also revised its Cyber Security Event Management Plan to ensure alignment with the Government of Canada's Cyber Security Event Management Plan enhancing coordination and response capabilities to cyber security events.

NRCan developed an internal process for assessing the impacts of COVID-19. The approach looked at operations, programs and the recovery phase from March 2020 to December 2022. To better prepare for future crises, NRCan prepared a best practices and lessons learned report from these findings.

Strengthening federal science and reviewing NRCan's laboratory infrastructure

As part of an ongoing effort to consolidate parts of our science facilities into new world-class laboratories, NRCan worked closely with its internal scientific partners to meet Laboratories Canada's mandate across the nation. This resulted in consolidating the Department's laboratories in the National Capital Region and undertaking similar efforts to consolidate other smaller-scale labs through regional offices. These efforts consider the needs of scientists and collaborators, modernizing infrastructure, attracting and retaining talent, energizing collaboration among its partners, and building the next generation of federal scientific leadership.

The TerraCanada[clviii] Head Management Office is formally led by NRCan since April 2023. As such, the NRCan Head Management Office has been, and will continue to:

- Work diligently, through extensive consultation, to meet its mandate of modernizing infrastructure, attracting, and retaining talent, energizing collaboration between its multi-partner network and building the next generation of federal science leadership through serving as the neutral integrator of the five TerraCanada federal science and agency partners.
- Work closely with Laboratories Canada to ensure that TerraCanada is meeting the program vision of delivering collaborative lab space, via a sustainable and environmentally conscious approach.

Workforce and workplace

NRCan's hybrid work model was implemented in the fall of 2022 and aligned with the TBS expectations for the public service. Departmental telework guidelines were updated; tools have been developed and training was offered to help managers and employees understand their roles and responsibilities. A comprehensive procedure was developed for the approval of exceptions to hybrid model and an oversight committee put in place to ensure these requests are treated fairly and consistently across the Department. In office presence expectations remain at 40% of the work week or month for employees while eligible employees are expected to have an approved telework arrangement.

The Deputy Minister engaged with the equity and non-equity employee networks to discuss their concerns and follow-up actions regarding return to the workplace, and to develop an action plan in response to these concerns. NRCan was also one of five departments that collaborated on developing a tool for tracking and monitoring telework arrangements. Progress and overall health effects of people management and employee experience are measured regularly.

To cultivate and maintain a modern, agile, and inclusive workspace, NRCan put forward five actions for the continuous improvement of its workplace policies and processes:

- Foster a culture of innovation that encourages employees to think creatively and seek out new ideas. Create an environment where experimentation is promoted, and failure is perceived as an opportunity to learn.
- Embrace technology by investing in the latest technologies and tools that can help employees work more effectively and efficiently, like cloud software, collaboration tools and mobile devices.
- Provide training on new technologies and development opportunities that help employees acquire the skills they need, like communication and collaboration, to succeed in a digital workplace.
- Create a flexible work environment that allows employees to work from home or other remote locations three days a week, improving work/life balance and reducing stress.
- Promote diversity and inclusion to create a welcoming workplace for people of all backgrounds, cultures, and identities.

NRCan continues to promote a healthy and inclusive workplace for its employees through the continued implementation of the 2020-2023 Mental Health and Workplace Wellness Strategy. Following a study on the mental health of the executive community, a leadership learning plan was developed, and circles of discussion are planned in the fall 2023 to continue the dialogue on how to foster their mental health while promoting psychologically healthy and safe teams. Work is underway to raise awareness and improve management and employee competencies through the various networks and services available.

The Department leveraged technology and data analytics to support decision-making and operational efficiency. The Department invested in new digital tools and technologies to automate and digitize HR processes, such as adopting a workflow tool for salary transactions, and an automated application form to support accessibility, inclusion, diversity and equity.

The Circle of Nations continued to support the Department in honouring residential school survivors by commemorating the National Day for Truth and Reconciliation. This was complemented by cultural and historical learning events as well as Healing Circles throughout the month of September 2022.

Inclusion Diversity Equity and Accessibility

Several key activities supported NRCan to become more diverse in its workforce, made its culture more inclusive and had a more equitable impact on programs and policies for Canadians. The principles of inclusion, diversity, equity and accessibility (IDEA) were included in areas such as employment equity representation, creating a culture of safety and inclusion, updating external programs with IDEA perspective, and advancing reconciliation with Indigenous Peoples. The following results were achieved:

- Co-developing the publication of the 2022-2025 NRCan Accessibility Action Plan,[clix] an ambitious roadmap for the Department that integrates nine priority areas: Culture Shift; Accommodation; Employment; Built Environment; Information and Communication Technologies; Communication; Design and Delivery of Programs and Services; Procurement; and, Transportation. These areas incorporate accessibility into the Department's strategic and integrated business planning to ensure rapid resource allocation and alignment with other departmental priorities.
- Creation of the LGBT Purge Report Analysis subcommittee, a working group, co-chaired by a member of the Pride Network. The LGBT Purge Report (2018) provides a comprehensive account of the Canadian government's historic discrimination and persecution of LGBT individuals within the federal public service, the Canadian Armed Forces, and the Royal Canadian Mounted Police.
- NRCan exceeded its 60% completion rate for Departmental self-identification to inform the process of staffing, training and development programs and allow NRCan to continue to reduce representation gaps and barriers for all employees.
- Building the evidence base for advancing IDEA by identifying ways to measure and increase meaningful participation of under-represented groups.

In response to the Call to Action on anti-racism, equity, and inclusion in the Federal Public Service,[clx] NRCan established lists of candidates from Indigenous Peoples and Persons with disabilities to fill executive-level or similar positions with various tenures, language profiles, security requirements, conditions of employment, and locations within all federal organizations and agencies.

To comply with the principles of the Directive on the Duty to Accommodate, NRCan developed the Accommodation Centre of Expertise to make accessible information and resources. The Centre was also instrumental in assessing full-time telework requests and supported the Workplace Accessibility Passport to ensure employees can transfer position within the government without losing access to accommodation measures.

NRCan strengthened EDI data by collecting disaggregated and intersectional data. This helped identify gaps and opportunities to inform effective policy and program efforts making these more equitable and accessible for everyone, and to increase transparency and identify key areas of underrepresentation that require action.

NRCan completed its internal Pathways to Reconciliation framework and began to advance work to implement it. Outcomes of the Framework include the development of the Draft Policy on Ethics for Research Involving Indigenous Peoples and Territories to be launched in 2024. The draft United Nations Declaration Act Action Plan Measures on safe, secure, and equitable resource development for Indigenous women, girls and 2SLGBTQI+ peoples also constitute an effort towards reconciliation.

Pathways to Reconciliation Framework

NRCan contributed to the whole-of-government strategy to transform how the Department operates by completing the internal Pathways to Reconciliation Framework, which places inclusion and relationships with Indigenous partners at the centre of how the Department works. The Framework resulted in the development of a draft ethics policy for research with Indigenous peoples and territories. The objective of this policy is to lay the foundation for respectful and reciprocal relationships between Indigenous communities and NRCan employees.

NRCan committed to laying the foundation for cultural competency and respect and enabling the Department to transform how it engages Indigenous Peoples, moving away from transactional partnerships. Several initiatives are part of this process, such as collaborating and engaging with Indigenous peoples on natural resource projects; ensuring that Indigenous peoples and their communities consistently benefit equitably from natural resource development and building the capacity of Indigenous peoples to participate meaningfully in natural resource initiatives.

To help develop the skills, cultural awareness and understanding of how the Department's mandate impact First Nations, Métis and Inuit communities, the Circle of Nations advanced the following initiatives:

- Indigenous training for all NRCan employees by expanding cultural competency training opportunities, for example the Elders from across Canada series to support reconciliation and anti-racism.
- A series was offered to recognize survivors of residential schools. Participants shared their stories and attendees were able to honour their legacy and their resilience in recognition of the National Day of Truth and Reconciliation.
- In collaboration with the Pride Network, Two Spirit and transgender Elders shared teachings with staff. This included a panel discussion on Indigenous historical views of Two Spirit people.

Other initiatives were also held by the Circle of Nations such Indigenous Book Club events, Indigenous Speakers Series, partner spotlights, and cultural competency training.

Contracts awarded to Indigenous businesses

Natural Resources is a Phase 1 department and as such must ensure that a minimum 5% of the total value of the contracts it awards to Indigenous businesses by the end of 2022-23. In its 2023–24 Departmental Plan, the Department forecasted that, by the end of 2022–23, it would award 18.85 % of the total value of its contracts to Indigenous businesses.

As shown in the following table, Natural Resources Canada awarded 14.32 % of the total value of its contracts to Indigenous businesses in 2022–23.

Contracting performance indicators	2022-23 Results
Total value of contracts* awarded to Indigenous businesses† (A)	$43.87 million
Total value of contracts awarded to Indigenous and non-Indigenous businesses‡ (B)	$306 million
Value of exceptions approved by deputy head (C)	$0
Proportion of contracts awarded to Indigenous businesses [A / (B−C)×100]	14.32%

*Includes contract amendments with Indigenous businesses and contracts that were entered into with Indigenous businesses by means of acquisition cards. May include subcontracts.

†For the purposes of the 5% target, Indigenous businesses include Elders, band and tribal councils; businesses registered in the Indigenous Business Directory[clxi] for contracts under the Procurement Strategy for Aboriginal Business;[clxii] and businesses registered in a beneficiary business list for contracts with a final delivery in a modern treaty or self-government agreement area with economic measures as defined by Indigenous Services Canada.

‡Includes contract amendments.

NRCan conducted significant work in Nunavut and in other Comprehensive Land Claim Agreement areas, through the Polar Continental Shelf Program, the Surveyor General Branch, the Geo-mapping for Energy and Minerals program, and the Space-Based Earth Observation Program. As a result of these programs, NRCan has been able to award 14% of its total procurement budget to Indigenous businesses for 2022–23.

Planned outreach activities for Indigenous businesses in 2022–23 included utilizing and promoting the use of the Indigenous Business Directory for directed contracts where there were Indigenous capacity.

NRCan implemented a procurement strategy of tendering multiple information management and technology multi-year contracts for professional services that can be utilized throughout the Department. This procurement strategy has purposefully invited all qualified indigenous businesses to the tender and provided a small incentive within the point-rated evaluation criteria to indigenous businesses.

Internal procurement business processes have been modified to ensure all Indigenous businesses pre-qualified by Public Services Procurement Canada to provide goods and services through pre-competed instruments, are invited to every applicable NRCan Request for Proposal.

Employees are completing procurement training at the Canada School of Public Service. The proportion of procurement personnel who completed the Indigenous Considerations in Procurement course in 2022–23 is 90%, with the remaining 10% in progress. The proportion of procurement personnel who completed the Procurement in the Nunavut Settlement Area in 2022–23 is 19%.

Budgetary financial resources (dollars)

The following table shows, for internal services, budgetary spending for 2022–23, as well as spending for that year.

2022–23 Main Estimates	2022–23 planned spending	2022–23 total authorities available for use	2022–23 actual spending (authorities used)	2022–23 difference (actual spending minus planned spending)
177,157,722	177,157,722	225,928,072	221,019,352	43,861,630

Human resources (full-time equivalents)

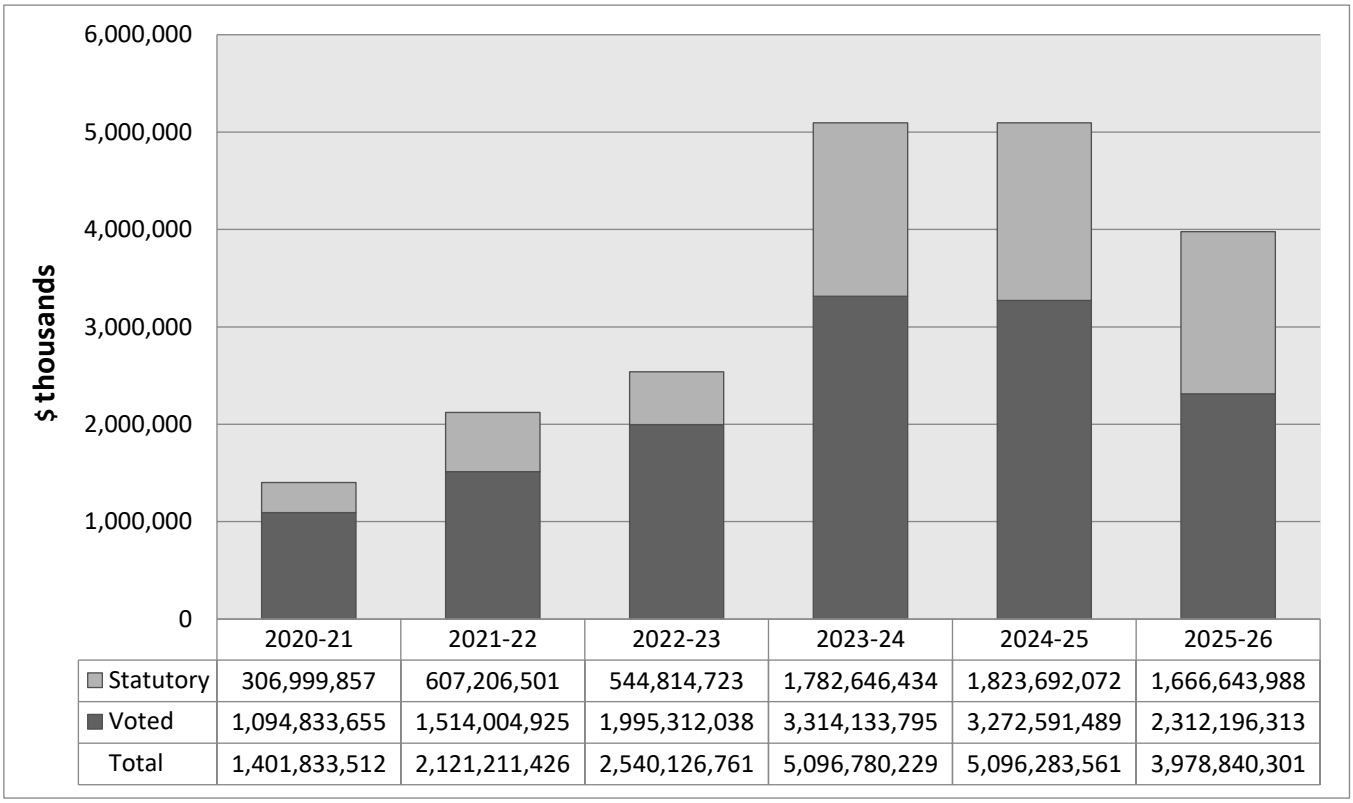
The following table shows, in full-time equivalents, the human resources the Department needed to carry out its internal services for 2022–23.

2022–23 planned full-time equivalents	2022–23 actual full-time equivalents	2022–23 difference (actual full-time equivalents minus planned full-time equivalents)
1,052	1,243	191

Spending and human resources

Spending

Spending 2020–21 to 2025–26



	2020-21	2021-22	2022-23	2023-24	2024-25	2025-26
Statutory	306,999,857	607,206,501	544,814,723	1,782,646,434	1,823,692,072	1,666,643,988
Voted	1,094,833,655	1,514,004,925	1,995,312,038	3,314,133,795	3,272,591,489	2,312,196,313
Total	1,401,833,512	2,121,211,426	2,540,126,761	5,096,780,229	5,096,283,561	3,978,840,301

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

Planned spending in Voted authorities from 2023-24 to 2025-26 is declining, mainly due to reduced funding profiles for major initiatives such as the Canada Greener Homes initiative, Smart Renewal Electrification Projects (SREP), Zero Emission Vehicle Infrastructure Program and the sunsetting of various other 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 shows a variation from 2023-24 to 2025-26 mainly due to the Atlantic Offshore Accounts. Statutory payment obligations under these accords are largely driven by oil and gas prices, production levels and anticipated corporate income taxes related to offshore operations. The planned spending is based on the Department's economic modeling forecasts prepared in the fall of 2022.

Budgetary performance summary for core responsibilities and internal services (dollars)

The "Budgetary performance summary for core responsibilities and internal services" table presents the budgetary financial resources allocated for Natural Resource Canada's core responsibilities and for internal services.

Core responsibilities and internal services	2022–23 Main Estimates	2022–23 planned spending	2023–24 planned spending	2024–25 planned spending	2022–23 total authorities available for use	2020–21 actual spending (authorities used)	2021–22 actual spending (authorities used)	2022–23 actual spending (authorities used)
1. Natural Resources Science and Risk Mitigation	475,466,366	475,466,366	602,987,396	634,663,235	544,429,043	207,697,165	326,773,358	350,855,417
2. Innovative and Sustainable Natural Resources Development	2,178,334,701	2,178,334,701	2,449,656,044	2,415,542,267	2,382,343,282	560,924,909	833,168,889	1,220,481,467
3. Globally Competitive Natural Resource Sectors	778,394,348	778,394,348	1,850,449,920	1,862,452,656	786,911,953	470,921,143	802,059,928	747,770,525
Subtotal	**3,432,195,414**	**3,432,195,414**	**4,903,093,360**	**4,912,628,158**	**3,713,684,278**	**1,239,543,217**	**1,962,002,175**	**2,319,107,409**
Internal Services	177,157,722	177,157,722	193,686,869	183,655,403	225,928,072	162,290,295	159,209,251	221,019,352
Total	**3,609,353,137**	**3,609,353,137**	**5,096,780,229**	**5,096,283,561**	**3,939,612,350**	**1,401,833,512**	**2,121,211,426**	**2,540,126,761**

The budgetary performance summary table above provides for the following:

- Main Estimates for 2022-23;
- Planned Spending for 2022-23, as reported in NRCan's 2022-23 Departmental Plan;
- Planned Spending for 2023-24 to 2024-25, as reported in NRCan's 2023-24 Departmental Plan;
- Total authorities available for use in 2022-23, reflects the authorities received including in-year funding; and
- Actual expenditures 2020-21 to 2022-23, as reported in the Public Accounts of Canada.

Actual spending for 2021-22 was $2.12 billion, a year-over-year increase of $719 million (51%) from 2020-21 actual spending. This increase is mainly due to:

- incremental spending of $376 million in grants and contributions to support oil and gas sector investments in green solutions to reduce greenhouse gas emissions, planting 2 billion trees by 2031, supporting homeowners in making homes more energy-efficient, accelerate the use of renewable energy and essential grid services, supporting young people to gain the skills and work experience for a successful transition into the labour market; and
- increased spending of $315 million in statutory transfer payments related to Offshore statutory programs, in particular for the Newfoundland Offshore Petroleum Resource Revenue Fund largely attributed to a higher royalty rate for the Hibernia field. Royalty amounts vary as a result of fluctuations in the price of oil, exchange rates, changes in production and timing of sales.

These increases in spending were offset by reduced spending due to the sunset of programs such as Clean Energy – ecoEnergy Renewable Power, Covid-19 Safety Measures in Forest Sector Operations.

Actual spending for 2022-23 was $2.54 billion, a year-over-year increase of $419 million (20%) from 2021-22 actual spending. This increase is mainly due to:

- incremental spending of $329 million in grants and contributions for programs aimed at improving efficiency in homes, planting 2 billion trees by 2031, providing smart renewable energy and electrical grid modernization projects, creating a more competitive and resilient forest sector and deployment of electric vehicle (EV) chargers and hydrogen refuelling stations across Canada.
- increased spending of $138 million in operating for programs supporting Canadians' ability to better plan and prepare for future floods, capturing carbon dioxide to be recycled for further usage or stored safely underground, securing the critical minerals required to transition to a low-carbon economy, recognizing and honouring the exceptional service of Atomic Workers, and helping Canadians make their homes more energy-efficient.

These increases in spending were offset by reduced spending due to:

- sunset of programs such as Impact Canada, Electric Vehicle & Alternate Infrastructure Deployment and Clean Technology – Clean Growth.
- reduced funding profile for NRCan's Science and Technology Internship Program, Spruce Budworm Early Intervention and Emissions Reduction Fund.
- decrease in transfer payments related to the Nova Scotia Offshore Revenue Account as a result of a reduction in forfeitures of security deposits for exploration licenses.

The variance of $330 million between planned spending of $3,609 million and total authorities of $3,939 million in 2022-23 is attributed to supplementary funding received as per the 2021 Speech from the Throne and the 2022 Fall Economic Statement announcements, in support of the following initiatives, to assist Canada's green recovery and climate action plan:

- support the decarbonization of on-road transportation and advance the electrification of fleets, accelerate energy system transformation and net-zero growth, partner with indigenous peoples on natural resources projects, ensure the safety of communities and increase forest resilience to wildfire in a changing climate, reduce the risk of spruce budworm outbreak in Atlantic, and ensure marine safety and ecosystem protection.

Of the $3,939 million total authorities in 2022-23, NRCan spent $2,540 million. The $1,399 million in unspent funding relates to several programs that encountered challenges throughout the fiscal year, mostly attributable to overall disruption in supply chains, labour shortages, seasonality of construction activity, oversubscription of programs resulting in longer review processes, compounded by complexities with the demand-driven nature of programs, and implementation of new processes to facilitate transfer of funds to provinces and territories. To mitigate the impact on program delivery, a significant amount of the unspent funding was reprofiled or carried forward into future years to ensure that funding will continue to be available to support the projects.

Human resources

The "Human resources summary for core responsibilities and internal services" table presents the full-time equivalents (FTEs) allocated to each of Natural Resource Canada's core responsibilities and to internal services.

Human resources summary for core responsibilities and internal services

Core responsibilities and internal services	2020–21 actual full-time equivalents	2021–22 actual full-time equivalents	2022–23 planned full-time equivalents	2022–23 actual full-time equivalents	2023–24 planned full-time equivalents	2024–25 planned full-time equivalents
1. Natural Resources Science and Risk Mitigation	1,206	1,263	1,339	1,316	1,266	1,260
2. Innovative and Sustainable Natural Resources Development	1,650	1,735	1,874	1,986	1,767	1,725
3. Globally Competitive Natural Resource Sectors	494	465	482	495	421	405
Subtotal	**3,350**	**3,463**	**3,695**	**3,797**	**3,454**	**3,390**
Internal Services	975	1,007	1,052	1,243	1,029	1,028
Total	**4,325**	**4,470**	**4,746**	**5,040**	**4,484**	**4,419**

For 2020-21 to 2022-23, the figures represent actual FTEs as reported in the Departmental Results Reports. The planned FTEs in all years align with figures identified in the 2022-23 Departmental Plan.

The increase in FTEs from 2020-21 to 2022-23 is due mostly to programs aimed at accelerating the development and adoption of clean technology and transition to net-zero by 2050. These include improving efficiency in homes, deploying EV chargers and hydrogen refuelling stations, investing in technology to capture carbon for future use or to safely store, planting 2 billion trees, supporting companies to produce clean fuels and funding for remote Indigenous communities to reduce diesel consumption for heat and power.

The decline in FTEs from 2023-24 to 2024-25 relates mostly to the reduction of funding profiles and the sunsetting and winding down of initiatives such as the Zero Emission Vehicle Infrastructure Program, Critical Minerals projects, Clean Technology hub, Emergency Management Strategy, the deployment of infrastructure for alternative transportation fuels and Greener Homes.

Expenditures by vote

For information on Natural Resource Canada's organizational voted and statutory expenditures, consult the Public Accounts of Canada.[clxiii]

Government of Canada spending and activities

Information on the alignment of Natural Resource Canada's spending with Government of Canada's spending and activities is available in GC InfoBase.[clxiv]

Financial statements and financial statements highlights

Financial statements

Natural Resource Canada's consolidated financial statements (unaudited) for the year ended March 31, 2023, are available on the Department's website.

Financial statement highlights

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

The consolidated financial statements were prepared using the department's accounting policies, which are based on Canadian public sector accounting standards resulting in figures that may differ from those provided in other sections of the Departmental Results Report prepared on an expenditure basis. A reconciliation between authorities used on an expenditure basis and the net cost of operations prepared on an accrual basis is set out in Note 3 of the Department's consolidated financial statements.

Condensed Consolidated Statement of Operations (unaudited) for the year ended March 31, 2023 (dollars)

Financial information	2022–23 planned results*	2022–23 actual results	2021–22 actual results	Difference (2022–23 actual results minus 2022–23 planned results)	Difference (2022–23 actual results minus 2021–22 actual results)
Total expenses	3,155,116,733	2,554,495,260	2,108,480,057	(600,621,473)	446,015,203
Total net revenues	35,291,035	30,001,841	31,037,657	(5,289,194)	(1,035,816)
Net cost of operations before government funding and transfers	3,119,825,698	2,524,493,419	2,077,442,400	(595,332,279)	447,051,019

* The 2022-23 Planned Results are provided in NRCan's 2022-23 Consolidated Future-Oriented Statement of Operations.

Total NRCan expenses of $2,554 million in 2022-23 consist of $1,600 million in transfer payments, mainly related to other levels of government under Globally Competitive Natural Resource Sectors and to Industry under Innovative and Sustainable Natural Resources Development, along with $954 million in other operating expenses. The NRCan total net revenues of $30 million in 2022-23 result from re-spendable revenues such as those from service fees and from the Geomatics Canada Revolving Fund.

The increase of $447 million in the net cost of operations before government funding and transfers in 2022-23 is mainly explained by an:

- Increase of $216 million in transfer payments to **Industry** mainly due to the Smart Renewables and Electrification Pathways Program and Investments in Forest Industry Transformation Program;

- Increase of $202 million in transfer payments to **Individuals** due mainly to the Greener Homes program; offset by a

- Decrease of $41 million in transfer payments to **Other levels of government** as a result of an overall decrease of $68 million mainly attributed to 2021-22 offshore forfeitures of exploration licenses, offset by an overall increase of $27 million in other various programs;

- Decrease of $83 million in transfer payments to **Non-profit organizations** due mainly to the Science and Technology Internship Program – Green Jobs initiative and the Emissions Reduction Fund; and an

- Overall increase of $148 million in operating expenses, mainly related to an:

- Increase of $72 million in salaries and employee benefits due to new or increased program funding, newly signed collective agreements, and vacation cash outs;
- Increase of $43 million in professional and special services due mainly to increases in trade services, surveying and mapping services, and due to increased use of cloud services; as well as
- Increase of $12 million in acquisitions of non-capital assets (e.g., machinery and equipment, including parts and consumable tools).

The variance of $595 million between the planned and actual net cost of operations before government funding and transfers is mainly attributed to less than planned spending in the following programs: Clean Fuels Fund and Codes and Standards, Greener Homes, and Growing Canada's Forest-2 Billion Trees.

The chart presenting NRCan's actual expenses by type for 2022-23[clxv] is available on the NRCan website.

Condensed Consolidated Statement of Financial Position (unaudited) as of March 31, 2023 (dollars)

Financial information	2022–23	2021–22 Restated	Difference (2022–23 minus 2021–22)
Total liabilities	1,060,458,774	889,012,161	171,446,613
Total net financial assets	947,510,358	768,066,953	179,443,405
Departmental net debt	112,948,416	120,945,208	(7,996,792)
Total non-financial assets	340,284,689	330,905,121	9,379,568
Departmental net financial position	227,336,273	209,959,913	17,376,360

Total NRCan liabilities of $1,060 million include $897 million in accounts payable and accrued liabilities. The increase of $171 million is mainly attributable to larger volume of contribution funding leading to an increase in payables at year-end and contribution holdbacks.

Total NRCan net financial assets of $948 million mainly consist of $924 million due from the consolidated revenue fund (CRF), which represents amounts that may be disbursed without further charges to the NRCan authorities.

Total NRCan non-financial assets of $340 million mainly consist of $336 million of tangible capital assets.

The departmental net financial position, which is the difference between the total non-financial assets and the departmental net debt, increased by $17 million in 2022-23 mainly due to an increase in capital assets and decreases in accounts receivable and advances held on behalf of government.

Corporate information

Organizational profile

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

Institutional head: Michael Vandergrift

Ministerial portfolio:

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

Enabling instrument:

- Department of Natural Resources Act[clxxii];
- Resources and Technical Surveys Act[clxxiii], and,
- Forestry Act[clxxiv].

Year of incorporation / commencement: 1994

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

Information on Natural Resources Canada raison d'être, mandate and role is available on the NRCan's website[clxxv].

Information on Natural Resources Canada mandate letter commitments is available in the Minister's mandate letter[clxxvi].

Operating context

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

Reporting framework

Natural Resource Canada's Departmental Results Framework and Program Inventory of record for 2022–23 are shown below.

Natural Resources Canada's Departmental Results Framework 2022-23

NRCan CORE RESPONSIBILITIES

Natural Resource Science and Risk Mitigation	Innovative and Sustainable Natural Resources Development	Globally Competitive Natural Resource Sectors	Internal Services
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.	**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**.	**Advance** and **promote market access**, inclusiveness and competitiveness for Canada's natural resource sectors, in **support of jobs and economic growth**.*	

DEPARTMENTAL RESULTS AND INDICATORS What is the department trying to achieve?

Natural Resource Science and Risk Mitigation	Innovative and Sustainable Natural Resources Development	Globally Competitive Natural Resource Sectors	Internal Services
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 ❖ Percentage of environmental impact assessments demonstrating use of scientific and technical advice provided by NRCan ❖ Number of times stakeholders acknowledge using NRCan's scientific and technical products in making their decisions ❖ Number of NRCan agreements that recognize data and/or information derived from an Indigenous Knowledge source and is used to inform NRCan science and/or research ❖ Percentage of foundational geospatial data that is current **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 ❖ Percentage of emergency geomatics services provided to Canadians in a timely manner to assist during floods ❖ Percentage uptime of the Canadian Wildland Fire Information System during the wildfire season ❖ Percentage of inspections of explosives sites rated safe **Communities and industries are adapting to climate change** ❖ Number of times NRCan products and expertise on adaptation are accessed by Canadians ❖ Percentage of Canadian communities and industries that have taken steps to adapt to climate change	**Natural resource sectors are innovative** ❖ Percentage of NRCan-funded innovation projects that result in new intellectual property, codes, standards or regulations ❖ Percentage of innovative forest products and decision tools informed by NRCan research that contribute to the environmental sustainability of Canada's forests ❖ Percentage of NRCan-funded clean energy innovation projects advancing along the innovation scale ❖ Percentage of innovative mining technologies developed by NRCan that move towards being ready for commercial use ❖ Number of initiatives enabled by NRCan to strengthen the cyber security and resilience of Canada's critical energy infrastructure **Clean technologies and energy efficiencies enhance economic performance** ❖ Percentage of NRCan-funded clean technology demonstration projects achieving their economic goals ❖ Ratio of partner investment to government spending in NRCan-funded energy innovation projects ❖ Total annual energy savings resulting from adoption of energy efficiency codes, standards and practices **Canada's natural resources are sustainable** ❖ Percentage of Canadian electricity generated from non-GHG emitting sources ❖ Number of renewable energy projects in remote communities and off-grid industrial operations ❖ Amount of wood harvested compared to the sustainable supply ❖ Number of low-carbon recharging and refueling stations under development or completed ❖ Reduction in greenhouse gas emissions resulting from NRCan-funded clean technology demonstrations ❖ Percentage of NRCan's projects on innovation and sustainable development that engage Indigenous communities, organizations or governments	**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 ❖ Increase in value of assets abroad owned by Canadian natural resource companies ❖ Number of NRCan international engagements that support the development or expansion of trade and investment in natural resources **Canadians are engaged in the future of the new and inclusive resource economy** ❖ Number of joint products developed in collaboration with provinces and territories and released to Canadians ❖ Percentage of NRCan's projects that support participation of Indigenous communities, organizations or governments in Canada's natural resource economy **Enhanced competitiveness of Canada's natural resource sectors** ❖ Economic value of anticipated natural resource projects supported by analysis and solutions ❖ Number of times NRCan's economic and investment data are accessed	

PROGRAM INVENTORY Covers 100 percent of the department's activities and resources

Natural Resource Science and Risk Mitigation	Innovative and Sustainable Natural Resources Development	Globally Competitive Natural Resource Sectors	Internal Services
Canadian Geodetic Survey: Spatially Enabling Canada Geological Knowledge for Canada's Onshore and Offshore Land Core Geospatial Data Canada-US International Boundary Treaty Canada Lands Survey System Geoscience for Sustainable Development of Natural Resources Pest Risk Management Forest Climate Change Climate Change Adaptation Explosives Safety and Security Geoscience to Keep Canada Safe Wildfire Risk Management Polar Continental Shelf program	Energy Innovation and Clean Technology Green Mining Innovation Fibre Solutions Sustainable Forest Management Cumulative Effects Lower Carbon Transportation Electricity Resources Energy Efficiency Energy and Climate Change Policy Innovative Geospatial Solutions	Forest Sector Competitiveness Provision of Federal Leadership in the Minerals and Metals Sector Energy Safety and Security, and Petroleum Resources Statutory Offshore Payments Natural Resources Canada's Indigenous Partnerships Office – West The Resource Partnerships Sector Youth Employment and Skills Strategy – Science and Technology Internship Program (Green Jobs) * Also includes statutory payments for offshore petroleum.	Management & Oversight Communications Legal Services Human Resources Financial Management Information Management Information Technology Real Property (Domestic) Materiel Management Acquisition Management

Supporting information on the program inventory

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

Supplementary information tables

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

- Reporting on Green Procurement
- Details on transfer payment programs
- Gender-based analysis plus
- Horizontal initiatives
- Up-front multi-year funding
- United Nations 2030 Agenda and the Sustainable Development Goals
- Response to Parliamentary Committees

Federal tax expenditures

The tax system can be used to achieve public policy objectives through the application of special measures such as low tax rates, exemptions, deductions, deferrals and credits. The Department of Finance Canada publishes cost estimates and projections for these measures each year in the Report on Federal Tax Expenditures.[clxxix] This report also provides detailed background information on tax expenditures, including descriptions, objectives, historical information and references to related federal spending programs as well as evaluations and GBA Plus of tax expenditures.

Organizational contact information

Mailing address:

Natural Resources Canada
580 Booth Street
Ottawa, Ontario
K1A 0E4
Canada

Email: media@nrcan-rncan.gc.ca

Website(s): https://natural-resources.canada.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 an appropriated department over a 3-year period. Departmental Plans are usually tabled in Parliament each spring.

departmental priority *(priorité)*

A plan or project that a department has chosen to focus and report on during the planning period. Priorities represent the things that are most important or what must be done first to support the achievement of the desired departmental results.

departmental result *(résultat ministériel)*

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

departmental result indicator *(indicateur de résultat ministériel)*

A quantitative measure of progress on a departmental result.

departmental results framework *(cadre ministériel des résultats)*

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

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

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

full-time equivalent *(équivalent temps plein)*

A measure of the extent to which an employee represents a full person-year charge against a departmental budget. For a particular position, the full-time equivalent figure is the ratio of

number of hours the person actually works divided by the standard number of hours set out in the person's collective agreement.

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

An analytical tool used to support the development of responsive and inclusive policies, programs and other initiatives; and understand how factors such as sex, race, national and ethnic origin, Indigenous origin or identity, age, sexual orientation, socio-economic conditions, geography, culture and disability, impact experiences and outcomes, and can affect access to and experience of government programs.

government-wide priorities *(priorités pangouvernementales)*

For the purpose of the 2022–23 Departmental Results Report, government-wide priorities are the high-level themes outlining the government's agenda in the November 23, 2021, Speech from the Throne: building a healthier today and tomorrow; growing a more resilient economy; bolder climate action; fighter harder for safer communities; standing up for diversity and inclusion; moving faster on the path to reconciliation; and fighting for a secure, just and equitable world.

horizontal initiative *(initiative horizontale)*

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

non-budgetary expenditures *(dépenses non budgétaires)*

Net outlays and receipts related to loans, investments and advances, which change the composition of the financial assets of the Government of Canada.

performance (*rendement)*

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

performance indicator *(indicateur de rendement)*

A qualitative or quantitative means of measuring an output or outcome, with the intention of gauging the performance of an organization, program, policy or initiative respecting expected results.

performance reporting *(production de rapports sur le rendement)*

The process of communicating evidence-based performance information. Performance reporting supports decision making, accountability and transparency.

plan *(plan)*

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

planned spending *(dépenses prévues)*

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

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

program *(programme)*

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

program inventory *(répertoire des programmes)*

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

result *(résultat)*

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

Indigenous business ***(enterprise autochtones)***

For the purpose of the *Directive on the Management of Procurement Appendix E: Mandatory Procedures for Contracts Awarded to Indigenous Businesses* and the Government of Canada's commitment that a mandatory minimum target of 5% of the total value of contracts is awarded to Indigenous businesses, an organization that meets the definition and requirements as defined by the Indigenous Business Directory.

statutory expenditures *(dépenses législatives)*

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

target *(cible)*

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

voted expenditures *(dépenses votées)*

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

Endnotes

i. 2030 Emissions Reduction Plan: Clean Air, Strong Economy, 2030 Emissions Reduction Plan: Clean Air, Strong Economy - Canada.ca
ii. Smart Renewables and Electrification Pathways Program, https://admin.natural-resources.canada.ca/climate-change/green-infrastructure-programs/sreps/23566
iii. Smart Grid Program, https://natural-resources.canada.ca/climate-change/green-infrastructure-programs/smart-grids/19793
iv. Enabling Small Modular Reactors Program, https://natural-resources.canada.ca/our-natural-resources/energy-sources-distribution/nuclear-energy-uranium/enabling-small-modular-reactors-program/24959
[v] Electric Vehicle Infrastructure Demonstration, https://natural-resources.canada.ca/climate-change/green-infrastructure-programs/electric-vehicle-infrastructure-demonstrations-evid/20467
vi. Critical Minerals Research, Development and Demonstration Program – Program funding opportunity information, https://www.canada.ca/en/campaign/critical-minerals-in-canada/federal-support-for-critical-mineral-projects-and-value-chains/crit-min-research-development-and-demonstration-program-wave-2.html
vii. Clean Fuels Fund, https://natural-resources.canada.ca/climate-change/canadas-green-future/clean-fuels-fund/23734
viii. Green Freight Program, https://natural-resources.canada.ca/energy-efficiency/transportation-alternative-fuels/greening-freight-programs/green-freight-program/20893
ix. Emissions Reduction Fund: working together to create a lower carbon future, https://natural-resources.canada.ca/science-and-data/funding-partnerships/funding-opportunities/current-funding-opportunities/emissions-reduction-fund/22781
[x] Energy Efficiency, https://natural-resources.canada.ca/energy-efficiency/10832
[xi] Energy Efficiency Regulations under the Energy Efficiency Act, https://natural-resources.canada.ca/energy-efficiency/energy-efficiency-regulations/guide-canadas-energy-efficiency-regulations/6861
[xii] ENERGY STAR for Products, https://natural-resources.canada.ca/energy-efficiency/energy-star-canada/energy-star-products/12519
xiii. Canada Greener Homes, https://admin.natural-resources.canada.ca/energy-efficiency/homes/canada-greener-homes-initiative/canada-greener-homes-grant/canada-greener-homes-grant/23441
xiv. Canadian Critical Minerals Strategy, https://www.canada.ca/en/campaign/critical-minerals-in-canada/canadian-critical-minerals-strategy.html#a1
xv. Critical minerals: an opportunity for Canada, https://www.canada.ca/en/campaign/critical-minerals-in-canada/critical-minerals-an-opportunity-for-canada.html
xvi. Canadian Minerals and Metals Plan, https://www.minescanada.ca/en/
xvii. Expanding Market Opportunities Program, https://natural-resources.canada.ca/science-and-data/funding-partnerships/funding-opportunities/forest-sector/expanding-market-opportunities-program/13133
xviii. Canada Germany Joint Declaration of Intent, https://natural-resources.canada.ca/climate-change-adapting-impacts-and-reducing-emissions/canadas-green-future/the-hydrogen-strategy/joint-declaration-intent-between-the-government-canada-and-the-government-the-federal/24607
xix. United Nations Declaration on the Right of Indigenous Peoples, https://www.ohchr.org/en/indigenous-peoples/un-declaration-rights-indigenous-peoples
xx. Canadian Forest Service Publications, https://cfs.nrcan.gc.ca/publications?id=40829
xxi. Indigenous Natural Resource Partnerships, https://natural-resources.canada.ca/our-natural-resources/indigenous-natural-resources/indigenous-natural-resource-partnerships/22197
xxii. Sustainable Jobs Plan, https://www.canada.ca/en/services/jobs/training/initiatives/sustainable-jobs/plan.html
xxiii. Regional Energy and Resource Tables, https://admin.natural-resources.canada.ca/climate-change/regional-energy-and-resource-tables/24356

xxiv. Green Jobs in Natural Resources, https://admin.natural-resources.canada.ca/climate-change/canadas-green-future/green-jobs/87
xxv. Skills Development and Inclusivity for Clean Energy Transitions, https://www.iea.org/reports/skills-development-and-inclusivity-for-clean-energy-transitions
xxvi. Indigenous Forestry Initiative, https://natural-resources.canada.ca/science-and-data/funding-partnerships/funding-opportunities/forest-sector/indigenous-forestry-initiative/13125
xxvii. Women in Cleantech Challenge, https://www.womenincleantech.ca/
xxviii. Energy Innovation Program, https://admin.natural-resources.canada.ca/science-and-data/funding-partnerships/opportunities/grants-incentives/energy-innovation-program/18876
xxix. National Adaptation Strategy, https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/national-adaptation-strategy.html
xxx. Adaptation Action Plan, https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/national-adaptation-strategy/action-plan.html#toc3
xxxi. Fighting and Managing Wildfires in a Changing Climate Program, https://natural-resources.canada.ca/our-natural-resources/forests/wildland-fires-insects-disturbances/fighting-and-managing-wildfires-changing-climate-program/25123
xxxii. RADARSAT Constellation Mission, https://www.asc-csa.gc.ca/eng/satellites/radarsat/
xxxiii. Cyber Security and Critical Energy Infrastructure Program, https://natural-resources.canada.ca/science-and-data/funding-partnerships/funding-opportunities/funding-grants-incentives/cyber-security-and-critical-energy-infrastructure-program-cceip/21762
xxxiv Space-Based Earth Observation program, https://www.asc-csa.gc.ca/eng/publications/sbeo/2020-engagement-paper-space-based-earth-observation.asp#3.2
xxxv Open Maps, https://open.canada.ca/en/open-maps
xxxvi. Geo.ca, https://geo.ca/home/index.html
xxxvii. Geo.ca, https://geo.ca/home/index.html
xxxviii. GEOSCAN, https://geoscan.nrcan.gc.ca/starweb/geoscan/servlet.starweb?path=geoscan/geoscan_e.web
xxxix. Open Maps, https://open.canada.ca/en/open-maps
xl. Open Science and Data Platform, https://osdp-psdo.canada.ca/en/about-osdp
xli. RADARSAT Constellation Mission, https://www.asc-csa.gc.ca/eng/satellites/radarsat/
xlii. Open Science and Data Platform, https://osdp-psdo.canada.ca/dp/
xliii. Geoscientific research in Canada's North, https://admin.natural-resources.canada.ca/earth-sciences/earth-sciences-resources/geoscientific-research-canadas-north/18215
xliv. Research support: Arctic logistics and field equipment for across Canada, https://admin.natural-resources.canada.ca/science-and-data/science-and-research/arctic-science/research-support-arctic-logistics-and-field-equipment-for-across-canada/10003
xlv. Flood Hazard Identification and Mapping Program, https://admin.natural-resources.canada.ca/science-and-data/science-and-research/natural-hazards/flood-hazard-identification-and-mapping-program/24044
xlvi. Canada's Risk Profiler, https://www.riskprofiler.ca/index.html
xlvii. Sendai Framework for Disaster Risk Reduction 2015-2030, https://www.undrr.org/publication/sendai-framework-disaster-risk-reduction-2015-2030
xlviii. Fighting and Managing Wildfires in a Changing Climate Program, https://natural-resources.canada.ca/our-natural-resources/forests/wildland-fires-insects-disturbances/fighting-and-managing-wildfires-changing-climate-program/25123
xlix. Emergency Management Strategy for Canada: Toward a Resilient 2030, https://www.publicsafety.gc.ca/cnt/rsrcs/pblctns/mrgncy-mngmnt-strtgy/index-en.aspx

l. Emerald ash borer, https://admin.natural-resources.canada.ca/our-natural-resources/forests/wildland-fires-insects-disturbances/top-forest-insects-and-diseases-canada/emerald-ash-borer/13377
li. Mountain pine beetle, https://admin.natural-resources.canada.ca/our-natural-resources/forests/wildland-fires-insects-disturbances/top-forest-insects-and-diseases-canada/mountain-pine-beetle/13381
lii. Spruce budworm, https://admin.natural-resources.canada.ca/our-natural-resources/forests/wildland-fires-insects-disturbances/top-forest-insects-and-diseases-canada/spruce-budworm/13383
[liii] Explosives Act and Regulations, https://natural-resources.canada.ca/our-natural-resources/minerals-mining/explosives-fireworks-and-ammunition/explosives/permits-licences-certificates-and-regulations-for-explosives/explosives-act-and-regulations/9837
[liv] Extractive Sector Transparency Measures Act, https://laws-lois.justice.gc.ca/eng/acts/E-22.7/page-1.html
[lv] Extractive Sector Transparency Office, https://laws-lois.justice.gc.ca/eng/acts/E-22.7/page-1.html
[lvi] 2 Billion Trees, https://www.canada.ca/en/campaign/2-billion-trees/2-billion-trees-program.html
lvii. Canada in a Changing Climate: Advancing our Knowledge for Action, https://admin.natural-resources.canada.ca/climate-change/canada-in-a-changing-climate/19918
lviii. Regional Perspectives Report, https://changingclimate.ca/regional-perspectives/
lix. Health Canada releases assessment report on effects of climate change on health, https://www.canada.ca/en/health-canada/news/2022/02/health-canada-releases-assessment-report-on-effects-of-climate-change-on-health.html
lx. Research support: Arctic logistics and field equipment for across Canada, https://admin.natural-resources.canada.ca/science-and-data/science-and-research/arctic-science/research-support-arctic-logistics-and-field-equipment-for-across-canada/10003
lxi. Earthquake risk information for emergency management and planning in Canada, https://www.riskprofiler.ca/
[lxii] GEOSCAN, https://geoscan.nrcan.gc.ca/starweb/geoscan/servlet.starweb?path=geoscan/geoscan_e.web
lxiii. Departmental Sustainable Development Strategy 2020 to 2023, https://natural-resources.canada.ca/nrcan/transparency/reporting-accountability/plans-performance-reports/nrcan-departmental-sustainable-d/departmental-sustainable-development-strategy-2020-2023/22961
lxiv. The Program of Applied Research on Climate Action in Canada, https://impact.canada.ca/en/behavioural-science/parca
lxv. GC InfoBase, https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html#start
lxvi. GC InfoBase, https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html#start
lxvii. GC InfoBase, https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html#start
lxviii. Clean Energy Ministerial, https://www.cleanenergyministerial.org/?cn-reloaded=1
lxix. Empowering People Initiative, https://www.cleanenergyministerial.org/initiatives-campaigns/empowering-people-initiative/
lxx. Skills Development and Inclusivity for Clean Energy Transitions, https://www.iea.org/reports/skills-development-and-inclusivity-for-clean-energy-transitions
lxxi. Clean Growth Hub, https://ised-isde.canada.ca/site/clean-growth-hub/en/about-clean-growth-hub
lxxii. Office of Energy Research and Development, https://natural-resources.canada.ca/science-and-data/funding-partnerships/opportunities/oerd/5711
lxxiii. CanmetENERGY, https://natural-resources.canada.ca/energy/energy-offices-and-labs/canmetenergy/5715
lxxiv. CanmetMATERIALS, https://natural-resources.canada.ca/science-and-data/research-centres-and-labs/canmetmaterials/canmetmaterials/8234
lxxv. Energy Innovation Program, https://natural-resources.canada.ca/science-and-data/funding-partnerships/opportunities/grants-incentives/energy-innovation-program/18876

lxxvi. Program of Energy Research and Development, https://admin.natural-resources.canada.ca/science-and-data/funding-partnerships/funding-opportunities/funding-grants-incentives/program-energy-research-development/4993
lxxvii. CCUS RD&D CFP, https://natural-resources.canada.ca/science-and-data/funding-partnerships/opportunities/grants-incentives/energy-innovation-program/ccus-rdd-call/23815
lxxviii. Ultra-fast charging of lithium-ion cells for the mass global adoption of electric vehicles, https://natural-resources.canada.ca/science-data/funding-partnerships/funding-opportunities/current-investments/ultra-fast-charging-lithium-ion-cells-mass-global-adoption-electric-vehicles/22613
lxxix. Canada Announces Grand Prize Winners of Impact Canada Challenges, https://www.canada.ca/en/natural-resources-canada/news/2022/03/canada-announces-grand-prize-winners-of-impact-canada-challenges.html
lxxx. Canada Announces Semi-Finalists of Impact Canada Oil Spill Response Challenge, https://www.canada.ca/en/natural-resources-canada/news/2022/10/canada-announces-semi-finalists-of-impact-canada-oil-spill-response-challenge.html
lxxxi. Oil Spill Response Challenge, https://impact.canada.ca/challenges/oil-spill-response/
lxxxii. International Energy Agency, https://www.iea.org/
lxxxiii. Mission Innovation, https://admin.natural-resources.canada.ca/climate-change/canadas-green-future/mission-innovation/18612
lxxxiv. Carbon Dioxide Removal Mission, http://mission-innovation.net/missions/carbon-dioxide-removal/
lxxxv. National Cyber Security Strategy, https://www.publicsafety.gc.ca/cnt/rsrcs/pblctns/ntnl-cbr-scrt-strtg/index-en.aspx
lxxxvi. National Cyber Security Strategy, https://www.publicsafety.gc.ca/cnt/rsrcs/pblctns/ntnl-cbr-scrt-strtg/index-en.aspx
lxxxvii. Critical Minerals Research, Development and Demonstration Program, https://www.canada.ca/en/campaign/critical-minerals-in-canada/federal-support-for-critical-mineral-projects-and-value-chains/crit-min-research-development-and-demonstration-program-wave-2.html
lxxxviii. Projects funded under CMRDD, https://www.canada.ca/en/natural-resources-canada/news/2023/03/projects-funded-under-the-critical-minerals-research-development-and-demonstration-cmrdd-program.html
lxxxix. Guide to Canada's Energy Efficiency Regulations, https://natural-resources.canada.ca/energy-efficiency/energy-efficiency-regulations/guide-canadas-energy-efficiency-regulations/6861
xc. ENERGY STAR for Products, https://natural-resources.canada.ca/energy-efficiency/energy-star-canada/energy-star-products/12519
xci. ENERGY STAR Canada, https://natural-resources.canada.ca/energy-efficiency/energy-star-canada/18953
xcii. Canada Greener Homes Grant, https://admin.natural-resources.canada.ca/energy-efficiency/homes/canada-greener-homes-initiative/canada-greener-homes-grant/canada-greener-homes-grant/23441
xciii. Oil to Heat Pump Affordability Program, https://natural-resources.canada.ca/energy-efficiency/homes/canada-greener-homes-initiative/oil-heat-pump-affordability-program-part-the-canada-greener-homes-initiative/24775
xciv. Get 50001 Ready Canada recognition with the Ready Navigator tool, https://natural-resources.canada.ca/50001-ready-canada
xcv. Green Industrial Facilities and Manufacturing Program, https://natural-resources.canada.ca/energy-efficiency/energy-efficiency-for-industry/green-industrial-facilities-and-manufacturing-program/20413
xcvi. ENERGY STAR® Portfolio Manager® Access Page, https://natural-resources.canada.ca/energy/efficiency/buildings/energy-benchmarking/3693
xcvii. ENERGY STAR® Multifamily High-Rise Pilot Program, https://natural-resources.canada.ca/energy-efficiency/buildings/new-buildings/energy-starr-multifamily-high-rise-pilot-program/21966
xcviii. Energy Efficient Buildings RD&D, https://natural-resources.canada.ca/netzerobuildings

xcix. Greener Neighbourhoods Pilot Program, https://natural-resources.canada.ca/science-and-data/funding-partnerships/opportunities/grants-incentives/greener-neighbourhoods-pilot-program/24889
c. Codes Acceleration Fund, https://natural-resources.canada.ca/energy-efficiency/buildings/codes-acceleration-fund/24794
ci. Latest editions of the National Model Codes now available, https://nrc.canada.ca/en/certifications-evaluations-standards/codes-canada/new-latest-editions-national-model-codes-now-available
cii. Deep Retrofit Accelerator Initiative, https://natural-resources.canada.ca/energy-efficiency/buildings/deep-retrofit-accelerator-initiative/24925
ciii. NRCan's Greening Government Services, https://natural-resources.canada.ca/energy-efficiency/buildings/nrcans-greening-government-services/3705
civ. Clean Technology Data Strategy, https://ised-isde.canada.ca/site/clean-growth-hub/en/clean-technology-data-strategy#About_us
cv. Environmental and Clean Technology Products Economic Account, 2021, https://www150.statcan.gc.ca/n1/daily-quotidien/221219/dq221219c-eng.htm
cvi. 2030 Emissions Reduction Plan: Clean Air, Strong Economy, https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/climate-plan-overview/emissions-reduction-2030.html
cvii. Pan-Canadian Framework on Clean Growth and Climate Change, https://www.canada.ca/en/services/environment/weather/climatechange/pan-canadian-framework.html
cviii. Energy and Mines Ministers' Conference, https://natural-resources.canada.ca/maps-tools-and-publications/publications/energy-publications/energy-reports-and-publications/energy-and-mines-ministers-conference/11102
cix. Regional Energy and Resource Tables, https://admin.natural-resources.canada.ca/climate-change/regional-energy-and-resource-tables/24356
cx. The Canada Green Buildings Strategy, https://natural-resources.canada.ca/public-consultations-and-engagements/the-canada-green-buildings-strategy/25009
cxi. About the Climate Technology Centre and Network (CTCN), https://www.ctc-n.org/about-ctcn
cxii. 27th Conference of the Parties to the United Nations Framework Convention on Climate Change, https://www.un.org/en/climatechange/cop27
cxiii. UN Biodiversity Conference: COP15 in Montréal, https://www.canada.ca/en/services/environment/wildlife-plants-species/biodiversity/cop15.html
cxiv. Emissions Reduction Fund: working together to create a lower carbon future, https://natural-resources.canada.ca/science-and-data/funding-partnerships/funding-opportunities/current-funding-opportunities/emissions-reduction-fund/22781
cxv. Backgrounder: Emissions Reduction Fund Onshore Program, https://www.canada.ca/en/natural-resources-canada/news/2021/11/backgrounder-emissions-reduction-fund-onshore-program.html
cxvi. Offshore Deployment Program - Emissions Reduction Fund, https://natural-resources.canada.ca/science-and-data/funding-partnerships/funding-opportunities/current-funding-opportunities/emissions-reduction-fund/offshore-deployment-program-emissions-reduction-fund/23114
cxvii. Offshore emissions reduction fund, https://natural-resources.canada.ca/science-and-data/funding-partnerships/funding-opportunities/current-funding-opportunities/emissions-reduction-fund/new-offshore-emissions-reduction-fund-helps-economy-and-environment/23091
cxviii. Clean Fuels Fund, https://natural-resources.canada.ca/climate-change/canadas-green-future/clean-fuels-fund/23734
cxix. Green Freight Program, https://natural-resources.canada.ca/energy-efficiency/transportation-alternative-fuels/greening-freight-programs/green-freight-program/20893

cxx. Electric Vehicle Infrastructure Demonstration (EVID) Program, https://natural-resources.canada.ca/climate-change/green-infrastructure-programs/electric-vehicle-infrastructure-demonstrations-evid/20467
cxxi. The Hydrogen Strategy, https://natural-resources.canada.ca/climate-change-adapting-impacts-and-reducing-emissions/canadas-green-future/the-hydrogen-strategy/23080
cxxii. Joint declaration of intent between the Government of Canada and the Government of the Federal Republic of Germany on establishing a Canada-Germany Hydrogen Alliance, https://natural-resources.canada.ca/climate-change-adapting-impacts-and-reducing-emissions/canadas-green-future/the-hydrogen-strategy/joint-declaration-intent-between-the-government-canada-and-the-government-the-federal/24607
cxxiii. Clean Power Roadmap for Atlantic Canada, https://natural-resources.canada.ca/energy/electricity-infrastructure/electricity-infrastructure-publications/clean-power-roadmap-for-atlantic-canada/24190
cxxiv. Canada's Small Modular Reactor Action Plan, https://admin.natural-resources.canada.ca/our-natural-resources/energy-sources-distribution/nuclear-energy-uranium/canadas-small-nuclear-reactor-action-plan/21183
cxxv. Enabling Small Modular Reactors Program, https://natural-resources.canada.ca/our-natural-resources/energy-sources-distribution/nuclear-energy-uranium/enabling-small-modular-reactors-program/24959
cxxvi. Canada's Policy for Radioactive Waste Management and Decommissioning, https://natural-resources.canada.ca/our-natural-resources/energy-sources-distribution/nuclear-energy-uranium/radioactive-waste/canadas-policy-for-radioactive-waste-management-and-decommissioning/24987
cxxvii. Joint Statement Between The Department of Energy of the United States of America and the Department of Natural Resources of Canada on Nuclear Energy Cooperation, https://www.canada.ca/en/natural-resources-canada/news/2023/03/joint-statement-between-the-department-of-energy-of-the-united-states-of-america-and-the-department-of-natural-resources-of-canada-on-nuclear-energ.html
cxxviii. Smart Renewables and Electrification Pathways Program, https://admin.natural-resources.canada.ca/climate-change/green-infrastructure-programs/sreps/23566
cxxix. Emerging Renewable Power Program, https://natural-resources.canada.ca/climate-change/green-infrastructure-programs/emerging-renewable-power/20502
cxxx. Smart Grid Program, https://natural-resources.canada.ca/climate-change/green-infrastructure-programs/smart-grids/19793
cxxxi. The State of Canada's Forests Annual Report, https://natural-resources.canada.ca/our-natural-resources/forests/state-canadas-forests-report/16496
cxxxii. Equal by 30 Campaign, https://www.equalby30.org/
cxxxiii. Sustainable Jobs Plan, https://www.canada.ca/en/services/jobs/training/initiatives/sustainable-jobs/plan.html
cxxxiv. Departmental Sustainable Development Strategy 2020 to 2023, https://natural-resources.canada.ca/nrcan/transparency/reporting-accountability/plans-performance-reports/nrcan-departmental-sustainable-d/departmental-sustainable-development-strategy-2020-2023/22961
cxxxv. Net Zero Accelerator Initiative, https://ised-isde.canada.ca/site/strategic-innovation-fund/en/net-zero-accelerator-initiative
cxxxvi. GC InfoBase, https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html#start
cxxxvii. GC InfoBase, https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html#start
cxxxviii. GC InfoBase, https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html#start
cxxxix. CERAWeek, CERAWeek by S&P Global | The World's Premier Energy Event
cxl. Expanding Market Opportunities Program, https://natural-resources.canada.ca/science-and-data/funding-partnerships/funding-opportunities/forest-sector/expanding-market-opportunities-program/13133
cxli. Green Jobs in Natural Resources, https://admin.natural-resources.canada.ca/climate-change/canadas-green-future/green-jobs/87
cxlii. Renewed Forest Bioeconomy Framework, https://www.ccfm.org/releases/renewed-forest-bioeconomy-framework/

[cxliii] Forest Innovation Program, https://natural-resources.canada.ca/science-and-data/funding-partnerships/opportunities/forest-sector/forest-innovation-program/13137
[cxliv] Investments in Forest Industry Transformation (IFIT), https://natural-resources.canada.ca/science-and-data/funding-partnerships/opportunities/forest-sector/investments-forest-industry-transformation/13139
[cxlv] Green Construction through Wood (GCWood) Program, https://natural-resources.canada.ca/science-and-data/funding-partnerships/opportunities/forest-sector/green-construction-through-wood-gcwood-program/20046
cxlvi. FPInnovations, https://web.fpinnovations.ca/
cxlvii. Canadian Wood Fibre Centre, https://natural-resources.canada.ca/research-centres-and-labs/forestry-research-centres/canadian-wood-fibre-centre/13457
cxlviii. Indigenous Forestry Initiative, https://natural-resources.canada.ca/science-and-data/funding-partnerships/funding-opportunities/forest-sector/indigenous-forestry-initiative/13125
cxlix. Indigenous Forestry Initiative, https://natural-resources.canada.ca/science-and-data/funding-partnerships/funding-opportunities/forest-sector/indigenous-forestry-initiative/13125
cl. Canadian Minerals and Metals Plan, https://www.minescanada.ca/en/
cli. Canadian Minerals and Metals, https://www.minescanada.ca/en/
clii. UN Declaration on the Rights of Indigenous Peoples, https://www.ohchr.org/en/indigenous-peoples/un-declaration-rights-indigenous-peoples
cliii. Departmental Sustainable Development Strategy 2020 to 2023, https://natural-resources.canada.ca/nrcan/transparency/reporting-accountability/plans-performance-reports/nrcan-departmental-sustainable-d/departmental-sustainable-development-strategy-2020-2023/22961
cliv. GC InfoBase, https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html#start
clv. GC InfoBase, https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html#start
clvi. GC InfoBase, https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html#start
clvii. Natural Resources Canada Policy on Scientific Integrity, https://admin.natural-resources.canada.ca/scientific-integrity/21665#a18
clviii. TerraCanada Science and Innovation (TerraCanada), https://science.gc.ca/site/science/en/laboratories-canada/phase-1-science-hubs/terracanada-science-and-innovation-terracanada
clix. Natural Resources Canada Accessibility Action Plan 2022–2025, https://www.canada.ca/en/privy-council/corporate/clerk/call-to-action-anti-racism-equity-inclusion-federal-public-service.html
clx. Call to Action on Anti-Racism, Equity, and Inclusion in the Federal Public Service, https://www.canada.ca/en/privy-council/corporate/clerk/call-to-action-anti-racism-equity-inclusion-federal-public-service.html
clxi. Indigenous Business Directory, https://www.sac-isc.gc.ca/eng/1100100033057/1610797769658
clxii. Procurement Strategy for Aboriginal Business, https://www.sac-isc.gc.ca/eng/1354798736570/1610985991318
clxiii. Public Accounts of Canada, http://www.tpsgc-pwgsc.gc.ca/recgen/cpc-pac/index-eng.html
clxiv. GC InfoBase, https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html#start
[clxv] Chart presenting NRCan's actual expenses for 2022-23, https://natural-resources.canada.ca/transparency/reporting-and-accountability/plans-and-performance-reports/departmental-results-reports/chart-presenting-nrcans-actual-expenses-type-for-2022-23/25413
clxvi Atomic Energy of Canada limited, https://www.aecl.ca/
clxvii Canada Energy Regulator, https://www.cer-rec.gc.ca/en/index.html
clxviii Canadian Nuclear Safety Commission, http://www.cnsc-ccsn.gc.ca/eng/
clxix Canada-Newfoundland and Labrador Offshore Petroleum Board, https://www.cnlopb.ca/
clxx Canada-Nova Scotia Offshore Petroleum Board, https://www.cnsopb.ns.ca/
clxxi Northern Pipeline Agency, https://northern-pipeline.canada.ca/home
clxxii Department of Natural Resources Act, https://laws-lois.justice.gc.ca/eng/acts/N-20.8/

clxxiii Resources and Technical Surveys Act, https://laws-lois.justice.gc.ca/eng/acts/R-7/
clxxiv Forestry Act, https://laws-lois.justice.gc.ca/eng/acts/F-30/
clxxv Raison d'être, mandate and role, https://natural-resources.canada.ca/transparency/reporting-and-accountability/plans-and-performance-reports/departmental-results-reports/raison-detre-mandate-and-role-who-we-are-and-what-we-do/25412
clxxvi Mandate letter commitments, https://pm.gc.ca/en/mandate-letters
clxxvii Operational Context, https://natural-resources.canada.ca/transparency/reporting-and-accountability/plans-and-performance-reports/departmental-results-reports/operating-context-2022-23-departmental-results-report/25411
clxxviii. GC InfoBase, https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html#start
clxxix. Report on Federal Tax Expenditures, https://www.canada.ca/en/department-finance/services/publications/federal-tax-expenditures.html