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2023 to 2027 Departmental Sustainable Development Strategy

National Research Council of Canada

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Executive summary

The National Research Council of Canada's (NRC) 2023 to 2027 Departmental Sustainable Development Strategy (DSDS) highlights the ways in which the department will contribute to the Government of Canada's Federal Sustainable Development Strategy (FSDS), including specific actions that will be taken to address all 3 dimensions of sustainable development— social, economic and environmental— as well as indicators and targets that will be used to measure success. This is the NRC's second DSDS; its first, developed in 2019, covered the period of 2020 to 2023 and included 26 commitments to support sustainable development.

This DSDS includes 59 sustainability commitments to be achieved over the next 4 years, each with its own performance metrics and targets. The DSDS reflects the NRC's key sustainable development priorities, including accelerating the development of clean, renewable fuels, and energy storage materials; developing the technologies needed to grow supply chains for low-carbon mobility and sustainable transportation; supporting the Canadian aviation and construction sector's decarbonization transition; investing in and supporting the growth of Canada's clean tech sector; increasing the value of plant-based proteins and their co-products, supporting strong and resilient Northern and Indigenous communities; improving the delivery of secure, affordable and high-speed internet services in rural and remote communities across Canada through new technologies; fostering an inclusive and diverse workplace; and, transforming NRC operations to ensure they are sustainable and climate resilient.

Transparency and accountability are central to the FSDS and corresponding departmental strategies; therefore, progress made against the NRC's DSDS commitments will be captured in 2 reports to be published in fall 2024-25 and 2025-26. These reports will outline key sustainability success stories, achievements to-date and areas where concerted effort will continue to be directed.

Section 1

Introduction to the Departmental Sustainable Development Strategy

The [2022 to 2026 Federal Sustainable Development Strategy \(FSDS\)](#) presents the Government of Canada's sustainable development goals and targets, as required by the [Federal Sustainable Development Act](#). This is the first FSDS to be framed using the 17 Sustainable Development Goals (SDGs) of the United Nations 2030 Agenda and provides a balanced view of the environmental, social and economic dimensions of sustainable development.

In keeping with the purpose of the Act to make decision-making related to sustainable development more transparent and accountable to Parliament, the NRC supports the goals laid out in the FSDS through the activities described in this Departmental Sustainable Development Strategy (DSDS).

The [Federal Sustainable Development Act](#) also sets out [7 principles](#) that must be considered in the development of the FSDS and DSDSs. These basic principles have been considered and incorporated in the NRC's DSDS.

In order to promote coordinated action on sustainable development across the Government of Canada, this departmental



strategy integrates efforts to advance Canada's implementation of the 2030 Agenda National Strategy, supported by the Global Indicator Framework (GIF) and Canadian Indicator Framework (CIF) targets and indicators. The strategy also now captures SDG initiatives that fell outside the scope of the previous FSDS to inform the development of Canada's Annual Report on the 2030 Agenda and the SDGs.

Section 2

The National Research Council of Canada's sustainable development vision

Climate change is impacting communities and economies within Canada and around the world, and will continue to do so in the years to come. The NRC is committed to fighting climate change and addressing major Canadian and international sustainability challenges facing industry and governments. In fact, climate change and sustainability has been selected as a key research theme for the NRC over the next 5 years. The NRC works with industry to develop the technologies, innovations and other solutions needed to create Canada's new climate economy, which will improve energy efficiency, reduce pollution and deliver benefits across all 3 dimensions of sustainable development—social, economic and environmental—to communities across Canada.

The NRC's climate change and sustainability activities focus on climate change adaptation and resilience, clean energy production and storage, low-carbon transportation, industrial decarbonization, and life in Northern and remote communities. Every year, the NRC's scientists publish over 100 peer-reviewed articles related to climate change and the environment, and work with industry, government and academic partners from across Canada and around the world to solve pressing challenges. Key sustainable development programs at the NRC include:

- **[Advanced Clean Energy program](#)**

For Canada to meet its 2030 emissions reduction targets of 40 to 45% and achieve net-zero emissions by 2050, focused research is required to develop clean energy technologies and bring them from the lab to the market. The Advanced Clean Energy program is accelerating the development of clean, renewable fuels, and energy storage materials and devices that will facilitate the transition to low- and zero-carbon fuel and the electrification of the energy supply, across all sectors. Program activities focus on battery and energy storage, low-carbon fuels, and hydrogen. The NRC will also expand its Advanced Clean Energy program to implement the Critical Battery Materials Initiative, as part of the [Canadian Critical Minerals Strategy](#), to advance research discovery and process optimization for battery materials through the utilization of self-driving labs.

- **[Clean and Energy-efficient Transportation program](#)**

In 2021, the transport sector was the second largest GHG emitter in Canada. It accounted for 22% of Canada's total greenhouse gas emissions, of which approximately 86% came from passenger vehicles. The Government of Canada set federal targets for zero emission vehicles to constitute 100% of light-duty vehicle sales by 2035 in the [2030 Emissions Reduction Plan: Canada's Next Steps for Clean Air and a Strong Economy](#), released in March 2022. In the context of a global transition to low-carbon modes of transportation, industry is adopting new technologies to meet government standards and increased consumer demand for more environmentally responsible vehicles. The Clean and Energy-efficient Transportation program is developing the technologies needed to grow supply chains for low-carbon mobility and sustainable transportation.

- **[Low-Emission Aviation program](#)**

As the aviation industry seeks to reduce its climate impact, disruptive technologies for low-emission aircraft are being developed, such as high-power or energy dense batteries, hydrogen systems, electric propulsion systems and novel aircraft configurations. The Low-Emission Aviation program is supporting the Canadian aviation sector's decarbonization transition by rapidly developing market-ready, sustainable solutions, establishing a collaborative ecosystem to stimulate the aviation industry's transition, and supporting government departments in developing technology policies and regulations.

- **[Materials for Clean Fuels Challenge program](#)**

The Materials for Clean Fuels Challenge program is developing new materials for zero-emission hydrogen as well as transportation fuels and chemical feedstocks across the continuum from discovery to commercialization. Through collaborative partnerships with key stakeholders, the program is bringing disruptive solutions to the design, development and delivery of clean fuels and chemicals in Canada. In so doing, the NRC is coordinating a national effort with leaders in academia and industry to catalyze the discovery and development of materials for early-stage exploratory technologies to decarbonize Canadian industry.

- **[Low Carbon Built Environment Challenge program](#)**

Working with industry, academia, governments and other stakeholders, the Low Carbon Built Environment Challenge program will accelerate decarbonization across the entire Canadian construction industry by supporting the development and use of low-carbon materials and systems, and improving operations and

maintenance approaches. The program will also support the development of carbon accounting and decision support methodologies that will reduce the life-cycle carbon emissions of buildings and infrastructure.

- **[Construction Sector Digitalization and Productivity Challenge program](#)**

The Construction Sector Digitalization and Productivity Challenge program will support new solutions to increase innovation potential and productivity in the construction sector through the use of digital technologies. These solutions will help empower construction professionals to innovate and choose fit-for-purpose, low-carbon building solutions, advance Canada's construction sector by implementing building information management across the value chain and reduce construction times through the use of modular construction.

- **[Arctic and Northern Challenge program](#)**

The Arctic and Northern Challenge program is committed to prioritizing Northern-led research projects that have a strong focus on Northern capacity building. By providing both research funding and scientific expertise, the program is supporting strong and sustainable Northern communities through applied technology and innovation. Working with Canadian and international partners from Northern communities, academia, industry and government, program research is examining 4 themes: housing, health, food and water.

- **[Ocean program](#)**

The Ocean program supports [Canada's Ocean Supercluster](#) and is committed to helping grow the blue economy by placing equal value on ocean health and economic gain. The program is aligned with the [United Nations Decade of Ocean Science for Sustainable Development \(2021-2030\)](#) and Canada's first [Blue Economy Strategy](#), and supports the development of technology in the following 4 areas to improve ocean health: coastal resilience, intelligent marine assets, pollution remediation and bio assets.

- **[Sustainable Protein Production program](#)**

The Sustainable Protein Production program supports the [Protein Industries Canada Cluster](#) and collaborates on projects and pursues research to increase the value of plant-based proteins and their co-products. The program works with industry to address existing challenges through sustainable production practices and innovations in processing and manufacturing. Its activities include creating novel approaches to solve

challenges faced by Canadian producers, and developing advanced tools and technologies to improve the quality, safety and traceability of Canadian plant protein products.

- **High-throughput and Secure Networks Challenge program**

The High-throughput and Secure Networks Challenge program is developing disruptive technologies and technologies that improve the cost and performance of delivering secure, affordable high-speed internet services in rural and remote communities across Canada. Going beyond the Canadian Radio-television and Telecommunications Commission's universal service objective of 50 Mbps download and 10 Mbps upload with unlimited data, the vision of this Challenge program is "1 Gb/s everywhere".

Between 2023 and 2027, the NRC will leverage its capabilities in Canada's innovation ecosystem to address climate and sustainability challenges that are focused on supporting Canada's GHG emission reduction targets of 40 to 45% below 2005 levels by 2030, and achieving net-zero emissions by 2050. The 2023 to 2027 DSOS demonstrates the NRC's ambition to support the FSDS, with commitments expanded to 59 from 26 in the 2020-23 DSOS.

Section 3

Listening to Canadians

As required by the [Federal Sustainable Development Act](#), the NRC has taken into account comments on the draft 2022 to 2026 FSDS made during the public consultation held from March 11 to July 9, 2022. During the public consultation, more than 700 comments were received from a broad range of stakeholders, including governments, Indigenous organizations, non-governmental organizations, academics, businesses and individual Canadians in different age groups and of various backgrounds. The draft FSDS was also shared with the appropriate committee of each House of Parliament, the Commissioner of the Environment and Sustainable Development and the Sustainable Development Advisory Council for their review and comment.

What we heard

Across the submissions received, the NRC identified sustainable development priorities and issues that affect Canadians. Most importantly, it was clear that all departments needed to achieve a greater balance among all 3 dimensions of sustainable development, and incorporate social and economic indicators into their strategies in order to strengthen the FSDS. Integrating Indigenous knowledge and cultural traditions into departmental sustainability activities was highlighted as critical to achieve meaningful impact across Canada, from coast to coast to coast. The importance of Indigenous rights, and the need for capacity building and funding for meaningful engagement, were emphasized in the report.

What we did

The NRC took the above-mentioned key priorities and issues into consideration in this DSDS. As part of this strategy, the NRC sought to capture a holistic view of sustainable development by expanding the collection of departmental actions to all research centre programs and enabling corporate services, which resulted in a comprehensive list covering social, economic and environmental development. This led to the addition of departmental actions from the Arctic and Northern Challenge program, which aims to increase Northern and Indigenous research and development

capacity, and integrate Traditional Knowledge to develop solutions that address pressing issues impacting the quality of life of Northern peoples. Actions identified in this strategy highlight the NRC's commitment to increasing intercultural competency and Indigenous participation in STEM by building effective relationships with Indigenous researchers, organizations, communities and businesses.

Please find more information on the FSDS public consultation and its results in the [FSDS Consultation Report](#)

Section 4

The National Research Council of Canada's commitments



The NRC commitments included in this report are focused on the 13 [Sustainable Development Goals](#) (SDGs) of greatest relevance to the NRC's research and technical services; however, the NRC is working to advance sustainable development across all the SDGs.



Goal 2: Support a healthier and more sustainable food system

FSDS context:

To sustain and grow Canada's food industry, the NRC will work with Canadian companies to research and develop climate resilient and nutritive crops, and sustainable marine bioproducts used in food. Additionally, the design of agriculture technologies that support faster and more precise crop development will be accelerated through investments and applications of digital platforms, regional alternative production technologies, data analytics and predictive modeling. The NRC's [Sustainable Protein Production program](#) will also work with collaborators to advance research and increase the value of plant-based proteins and their co-products, moving them up the value chain.

Under the food theme of the NRC's [Arctic and Northern Challenge program](#), the accessibility, availability and quality of Arctic and Northern food resources will be improved through applied research, and technology development and application. This program seeks to also improve food sovereignty in Canada. Food sovereignty is defined as an extension of food security that allows for production, distribution and consumption of food in a way that is consistent with one's culture and supports self-sufficiency. In an Arctic and Northern context, this includes access to traditional or locally produced foods that remain an important source of nutrition for Northern communities, including Indigenous communities.

Due to the rise in global temperatures, Canada and other higher latitude countries are expected to become more at risk to a wider variety of crop pathogens that could negatively impact crops and human health. In addition to global warming, there is an emerging public health and economic risk in Canada created by the cyanotoxins produced by blue-green algae that are contaminating drinking and recreational water, and natural health products. Through continued leadership in standards and certified reference materials for foods, the NRC will work to ensure food and

environmental safety and security for all Canadians, with a new emphasis on emerging natural toxins and pathogens due to climate change.

Target theme: Sustainable food systems

Target: By 2030, support improvement in the environmental performance of the agriculture sector by achieving a score of 71 or higher for the Index of Agri-Environmental Sustainability (Minister of Agriculture and Agri-food)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
Build knowledge for sustainable agriculture	<p>Conduct research on agriculture and marine food technologies to improve the sustainability, resiliency and security of Canada’s food system</p> <p>Programs: Aquatic and Crop Resource Development-Collaborative Science, Technology and Innovation Program-Sustainable Protein Production program</p>	<p>Performance indicator: Number of collaborations with clients supporting the development of technologies to improve agriculture or marine food systems</p> <p>Starting point: 25 collaborations</p> <p>Target: 35 collaborations by March 31, 2027</p>	<p>By advancing research on agriculture and marine food technologies, the NRC is enabling the sustainable transformation of Canadian agriculture and marine bioresources into food and higher value products.</p> <p>Relevant ambition and target: CIF ambition: Canadian agriculture is sustainable</p> <p>CIF indicator: Index of Agri-Environmental Sustainability (2.2.1)</p> <p>GIF target: By 2030, ensure sustainable food production systems and implement resilient agricultural practices that increase productivity and production, that help maintain ecosystems, that strengthen capacity for adaptation to climate change, extreme weather, drought, flooding and other disasters and that progressively improve land and soil quality (2.4).</p>

Implementation strategies supporting the goal

This section is for implementation strategies that support the goal “**Support a healthier and more sustainable food system**” but not a specific FSDS target

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
Enhance Indigenous and Northern food security	<p>Conduct applied research and develop technologies to improve the accessibility, availability and quality of culturally appropriate Northern food resources</p> <p>Program: Collaborative Science, Technology and Innovation Program-Arctic and Northern Challenge program</p>	<p>Performance indicator: Number of Northern-led research projects supporting the development of technologies to improve Northern and Arctic food resources</p> <p>Starting point: 0 in 2022-23</p> <p>Target: 4 per year starting in 2023-24</p>	<p>By participating in Northern-led projects dedicated to improving Northern and Arctic food resources, the NRC will support Northern and Arctic communities in having adequate economic and physical access at all times to quality foods that are safe and nutritious.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians have access to sufficient, affordable and nutritious food</p> <p>CIF indicator: Prevalence of food insecurity (2.1.1)</p> <p>GIF target: By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round (2.1).</p>
Ensure the safety of Canada's food system	<p>Develop measurement tools and standards related to food safety and environmental safety</p> <p>Program: Metrology</p>	<p>Performance indicator: Number of new certified reference materials (CRMs) related to food and environmental safety</p> <p>Starting point: 0</p> <p>Target: 5 by March 31, 2027</p>	<p>By developing new measurement tools such as CRMs, the NRC will help to ensure the safety and security of the Canadian food system and will support its protection against emerging natural toxins due to climate change.</p> <p>Relevant ambitions and targets: CIF ambition: N/A CIF indicator: N/A GIF target: N/A</p>



Goal 3: Support mental health and adopt healthy behaviors

FSDS context:

A holistic view of health encompasses physical, mental, emotional and spiritual wellbeing. In a Northern and Indigenous context, this definition is deeply connected to culture, and is dependent on a health care system focused on person-centred care that is accessible, comprehensive and appropriate. Cultural safety in health care, which refers to an environment that is both free of racism and discrimination and focused on reducing human error (e.g., due to mismanagement of information), is an important factor that underpins this definition of health. Under the health theme of the NRC's [Arctic and Northern Challenge program](#), the accessibility, comprehensiveness and appropriateness of Arctic and Northern health resources will be improved through applied research and technology development and application, thereby improving cultural safety.

Built environment also plays an important role in the physical and mental well-being of people. The NRC is advancing research to better understand the effects of the physical environment on human behaviour and well-being, and supporting the development of technologies and guidance to support improvements in the environments in which Canadians live, work and play.

Target theme: Mental health

Target: By March 2027, reduce the percentage of Canadians (aged 15+) with a mental disorder who have expressed that they have an unmet care need to 22% at most (Minister of Health)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
<p>Work with partners and stakeholders to expand access to mental health services</p>	<p>Conduct applied research and develop technologies to improve the accessibility, comprehensiveness and appropriateness of Northern health resources</p> <p>Program: Collaborative Science, Technology and Innovation Program-Arctic and Northern Challenge program</p>	<p>Performance indicator: Number of Northern-led research projects supporting the development of technologies to improve Northern and Arctic health resources</p> <p>Starting point: 0 in 2022-23</p> <p>Target: 4 per year starting in 2023-24</p>	<p>By participating in Northern-led projects focused on improving Northern and Arctic health technologies, the NRC will support the improvement of health resources in the North and Arctic and increased physical, mental, emotional and spiritual wellbeing.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians have healthy and satisfying lives</p> <p>CIF indicator: Percentage of Canadians who perceived their mental health as very good to excellent (3.7.1)</p> <p>GIF target: By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being (3.4)</p>



Goal 4: Promote knowledge and skills for sustainable development

FSDS context:

The NRC's [Arctic and Northern Challenge program](#) is committed to prioritizing Northern-led research projects with a strong focus on Northern capacity building. Selected projects focus on increasing Northern and Indigenous Research and Development (R&D) capacity (individual, organizational and community) to address pressing issues confronting Northerners. The program is guided by several key principles, including: building true partnerships based on mutual recognition, trust and transparency; following the "nothing about us, without us" principle by enabling the leadership of Northern First Nations, Inuit and Métis in research; protecting the rights of Northerners and Indigenous peoples living in the North to control and influence research conducted in their communities; and, respecting and including local Indigenous Knowledge and epistemologies in the design, execution and interpretation of research.

Implementation strategies supporting the goal

This section is for implementation strategies that support the goal **“Promote knowledge and skills for sustainable development,”** but not a specific FSDS target

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
<p>Support capacity in Indigenous communities</p>	<p>Increase Northern and Indigenous R&D capacity and conduct research to solve climate-driven challenges faced by Northerners</p> <p>Program: Collaborative Science, Technology and Innovation Program- Arctic and Northern Challenge program</p>	<p>Performance indicator: Number of Northern and Indigenous People trained through ANCP research projects*</p> <p>Starting point: 0 in 2022-23</p> <p>Target: 30 people per year starting in 2023-24</p> <p>*Training includes project-specific training, courses, mentoring, and experiential development</p>	<p>By conducting research projects, the NRC will support increased individual, organizational and community R&D capacity to address pressing issues confronting Northern and Arctic communities.</p> <p>Relevant ambitions and targets: CIF ambition: N/A CIF indicator: N/A GIF target: N/A</p>



Goal 6: Ensure clean and safe water for all Canadians

FSDS context:

The social, economic, cultural and spiritual well-being of Arctic and Northern communities is dependent upon safe and clean water. Under the water theme of the NRC’s [Arctic and Northern Challenge program](#), the availability, accessibility and quality of Arctic and Northern water resources will be improved through applied research and technology development and application.

Implementation strategies supporting the goal

This section is for implementation strategies that support the goal “**Ensure clean and safe water for all Canadians**” but not a specific FSDS target

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
Work with partners on drinking water quality	Conduct applied research and develop technologies to improve the availability, accessibility and quality of Northern water resource Program: Collaborative Science, Technology and Innovation Program- Arctic and Northern Challenge program	Performance indicator: Number of Northern-led research projects focused on improving Northern and Arctic water and sewage services Starting point: 0 in 2022-23	By participating in Northern-led research projects focused on improving Northern and Arctic water and sewage services, the NRC will support the development of technologies that will help increase the quality, availability and accessibility of the Northern safe water supply.

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
		<p>Target: 4 per year starting in 2023-24</p>	<p>Relevant ambitions and targets: CIF ambition: Canadians have access to drinking water and use it in a sustainable manner</p> <p>CIF indicator: Percentage of municipalities across Canada with sustained drinking water advisories (6.2.1)</p> <p>GIF target: By 2030, achieve universal and equitable access to safe and affordable drinking water for all (6.1)</p>



Goal 7: Increase Canadians' access to clean energy

FSDS context:

Critical minerals are essential inputs for renewable energy and clean technology applications, such as batteries for zero emission vehicles. The global demand for critical minerals and the manufactured products containing them is forecast to increase significantly in the coming decades to enable the transition to a green and digital economy. The NRC will contribute to the [Canadian Critical Minerals Strategy](#) through its [Advanced Clean Energy \(ACE\)](#) program. The ACE program will accelerate the development of clean, renewable fuels (low-carbon fuels and hydrogen), and energy storage materials and devices that will facilitate the transition to low- and zero-carbon fuel and the electrification of our energy supply. Under the program, the Critical Battery Materials Initiative will advance research discovery and process optimization for battery materials through the deployment of accelerated platforms supporting the Canadian battery supply chain. The NRC also supports Canada's clean energy transformation through its [Materials for Clean Fuels Challenge program \(MCF\)](#). The MCF program advances research in materials for hydrogen production and CO₂ conversion to high-value chemicals and fuels by developing technologies to convert renewable electricity, carbon dioxide and water into fuels and chemicals.

The Government of Canada has committed to reducing total GHG emissions by 30% below 2005 levels by 2030 to mitigate the harmful effects of climate change. One of Canada's challenges to successfully realizing its international climate commitments is that the Canadian construction sector is a significant producer of GHG emissions. Successfully reducing GHG emissions in this area will require a paradigm shift in construction technology, practice and regulations. The NRC's [Platform to Decarbonize the Construction Sector at Scale](#) will enable Canadian industry to build low-carbon construction tools, products, and services that reduce life cycle carbon and help to develop the

needed regulatory framework to systematically scale-up decarbonization through the development and implementation of new carbon-based codes, standards, and specifications.

Target theme: Renewable and non-emitting sources of electricity

Target: By 2030, 90%, and in the long term 100% of Canada's electricity is generated from renewable and non-emitting sources (Minister of Natural Resources)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
Invest in research, development and demonstration of clean energy technologies	<p>Advance research in material discovery and process optimization for battery materials, including the development of a suite of innovative tools to support the Canadian battery supply chain</p> <p>Program: Energy, Mining and Environment</p>	<p>Performance indicator: Number of research projects with clients or collaborators supporting battery material discovery and process optimization</p> <p>Starting point: 0</p> <p>Target: 30 by March 31, 2027</p>	<p>By conducting research projects with clients and collaborators, the NRC is advancing research in material discovery and process optimization, which will support Canada's clean energy transformation.</p> <p>Finally, by conducting research in material discovery and process optimization, the NRC is supporting the development of clean energy technologies such as low-cost solar cells, which will help reduce use of fossil fuels.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians have access to clean and renewable energy</p> <p>CIF indicator: Proportion of electricity generated from renewable and non-greenhouse gas emitting sources (7.3.1)</p>
	<p>Advance research in material discovery and process optimization for power harvesting, notably flexible and low-cost solar cells</p> <p>Program: Advanced Electronics and Photonics-Security and Disruptive Technologies-Nanotechnology</p>	<p>Performance indicator: Number of publications produced related to material discovery and process optimization for power harvesting</p> <p>Starting point: 10 in 2022-23</p> <p>Target: 40 by March 31, 2027</p>	

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
			GIF target: By 2030, increase substantially the share of renewable energy in the global energy mix (7.2)

Target theme: Energy efficiency

Target: By 2030, 600 petajoules of total annual energy savings will be achieved as a result of adoption of energy efficiency codes, standards and practices from a baseline savings of 20.0 petajoules in 2017 to 2018 (Minister of Natural Resources)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
<p>Develop and implement energy efficiency codes and regulations</p>	<p>Support the Canadian Board for Harmonized Construction Codes in the development of potential energy efficiency provisions for the 2025 National Model Codes</p> <p>Program: Construction</p>	<p>Performance indicator: Number of jurisdictions that have adopted updated energy efficiency requirements for new construction set out by the 2025 editions of the National Model Codes</p> <p>Starting point: 0 in 2022-23</p> <p>Target: 13 by September 30, 2027</p>	<p>By including the National Model Codes updated requirements related to energy efficiency and greenhouse gas emissions mitigation in new and altered buildings and homes, and for regulating operational greenhouse gas emissions, the NRC will help reduce energy usage and the costs incurred by building owners and operators.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians reduce their energy consumption</p> <p>CIF indicator: Annual energy savings resulting from adoption of energy efficiency codes, standards and practices (7.1.1)</p> <p>GIF target: By 2030, double the global rate of improvement in energy efficiency (7.3)</p>
		<p>Performance indicator: Number of jurisdictions that have adopted updated energy efficiency requirements for alterations to existing buildings set out by the 2025 editions of the National Model Codes</p> <p>Starting point: 0 in 2022-23</p> <p>Target: 13 by September 30, 2027</p>	

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
		<p>Performance indicator: Number of jurisdictions that have adopted updated requirements for the mitigation of operational greenhouse gas emissions set out by the 2025 editions of the National Model Codes</p> <p>Starting point: 0 in 2022-23</p> <p>Target: 13 by September 30, 2027</p>	
<p>Invest in research, development and demonstration of energy efficiency technologies</p>	<p>Support the development of industry carbon accounting tools and zero- or low-carbon construction materials</p> <p>Program: Construction</p>	<p>Performance indicator: Number of Canadian Construction Materials Centre validated low-carbon products, tools and services that are in use in the built environment</p> <p>Starting point: 0 in 2022-23</p> <p>Target:12 by March 31, 2027</p>	<p>By working with industry, academia and other stakeholders, the NRC is supporting the development of carbon accounting and decision support methodologies that will minimize, and ultimately eliminate, the life-cycle carbon emissions of buildings and infrastructure.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians reduce their energy consumption</p> <p>CIF indicator: Annual energy savings resulting from adoption of energy efficiency codes, standards and practices (7.1.1)</p> <p>GIF target: By 2030, double the global rate of improvement in energy efficiency (7.3)</p>

Target theme: Clean fuels

Target: By 2030, increase Canada’s capacity to produce clean fuels by 10% over 2021 levels
(Minister of Natural Resources)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
Invest in research, development and demonstration of clean fuels	Accelerate the development of clean, renewable fuels (low-carbon fuels and hydrogen) Program: Energy, Mining and Environment	<p>Performance indicator: Number of research projects with academia and industry supporting research in materials for hydrogen production and CO2 conversion</p> <p>Starting point: 40 in 2022-23</p> <p>Target: 60 by March 31, 2027</p>	<p>By conducting R&D projects to develop new technologies with collaborators, the NRC is supporting the development of new materials for zero-emission transportation fuels and chemical feedstocks.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians have access to clean and renewable energy</p> <p>CIF indicator: Proportion of electricity generated from renewable and non-greenhouse gas emitting sources (7.3.1)</p> <p>GIF target: By 2030, increase substantially the share of renewable energy in the global energy mix (7.2)</p>
		<p>Performance indicator: Number of clean fuel technology demonstration reaching technology readiness level (TRL) 5</p> <p>Starting point: 4</p> <p>Target: 8 by March 31, 2027</p>	



Goal 8: Encourage inclusive and sustainable economic growth in Canada

FSDS context:

Canada is committed to reducing its emissions to 40 to 45% below 2005 levels by 2030, and achieving net-zero by 2050. Going forward, there is an opportunity to build our communities in a way that addresses climate change and supports a stronger economy. Canada stands to gain from the environmental benefits of climate action, as well as the economic opportunities associated with an accelerated clean growth transition. The federal government supports a growing clean technology industry in Canada as a key enabler of sustainable development. The NRC is investing in clean technologies through the [Industrial Research Assistance Program](#) (NRC IRAP)—Canada's leading innovation assistance program for small and medium-sized businesses (SMEs). NRC IRAP assists approximately 10,000 SMEs each year by providing advice, connections, and funding to increase their innovation capacity and take ideas to market. The NRC is also contributing to sustainable growth by providing a broad range of research and technical services to industry clients and collaborators to accelerate commercial development and support business innovation.

Inclusive and sustainable growth requires equitable access to the digital tools that support participation in the economy of the 21st century, however, hundreds of thousands of Canadians still do not have basic, high-speed internet access. If they do, connections are too often and easily affected by weather or internet traffic volumes, and limited by data restrictions. As more and more people work and learn from home, their service bills are also rising with growing bandwidth needs. The NRC's [High-throughput and Secure Networks Challenge program](#) is developing technologies that improve the cost and performance of delivering high-speed internet services in rural and remote communities across Canada.

Target theme: Support for workers and business

Target: By 2026, there are at least 245,000 jobs in the cleantech products sector, an increase from 2019 (Minister of Innovation, Science and Industry)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
Support growth in the clean tech products sector	<p>Advance the development of clean technologies to drive economic growth and technological competitiveness</p> <p>Program: National Research Council of Canada Industrial Research Assistance Program (NRC IRAP) *</p> <p>*Performance indicators listed for NRC IRAP will be monitored by the NRC until IRAP’s transition to the new Canada Innovation Corporation by 2025</p>	<p>Performance indicator: Number of clean technology projects supported</p> <p>Starting point: 571 in 2022-23 Target: 567 projects per year*</p> <p>*Target is based on the average number of projects from FY2019-23. Since NRC IRAP does not have sector-specific funding allocation, the number of clean technology projects supported by NRC IRAP over a given fiscal year is dependent on the projects presented by clients and whether those are meeting the criteria in place.</p> <hr/> <p>Performance indicator: Value (\$) of clean technology projects supported</p> <p>Starting point: \$83.3M in 2022-23 Target: \$78.6M in contribution agreement value per year. *</p>	<p>By providing advice, connections, and funding to Canadian small and medium-sized businesses (SMEs), NRC IRAP is supporting the growth of Canada’s clean tech sector and helping Canadian SMEs increase their innovation capacity and take ideas to market.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians contribute to and benefit from sustainable economic growth</p> <p>CIF indicator: Jobs in the clean technology products sector (8.6.1)</p> <p>GIF target: N/A</p>

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
		<p>*Target is based on the average number of projects from FY2019-23. Since NRC IRAP does not have sector-specific funding allocation, value of clean technology projects supported by NRC IRAP over a given fiscal year is dependent on the projects presented by clients and whether those are meeting the criteria in place.</p>	
Other	<p>Provide research and technical services to industry clients and collaborators to help Canadian businesses grow, innovate and commercialize technologies</p> <p>Programs: Advanced Electronics and Photonics-Nanotechnology-Security and Disruptive Technologies, Aerospace, Aquatic and Crop Resource Development, Automotive and Surface Transportation, Construction, Digital Technologies, Energy Mining and Environment, Herzberg Astronomy & Astrophysics, Human Health Therapeutics, Medical Devices, Metrology, Ocean, Coastal and River Engineering</p>	<p>Performance indicator: Percentage of R&D clients surveyed who report positive benefits of working with NRC (e.g., increased jobs, sales, R&D capacity and other benefits)</p> <p>Starting point: 89% in 2022-23</p> <p>Target: At least 90% each year starting in 2023-24</p>	<p>By providing a broad range of research and technical services to industry clients and collaborators, the NRC furthers their capacity to bring innovative products, services and processes to market, which in turn supports increased economic growth and competitiveness.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians contribute to and benefit from sustainable economic growth</p> <p>CIF indicator: N/A GIF target: N/A</p>

Target theme: Connectivity in Canada

Target: By 2030, ensure that 100% of Canadians have access to broadband speeds of at least 50 Mbps download and 10 Mbps upload (Minister of Rural Economic Development)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
Invest in broadband capacity across Canada	<p>Develop technologies that will enable 5G next-generation high-speed telecommunications networks</p> <p>Program: Collaborative Science, Technology and Innovation Program-High-throughput and Secure Networks Challenge program</p>	<p>Performance indicator: Number of technologies developed (e.g., prototypes, models, demonstrations, proof of concepts, research platforms, system architectures)</p> <p>Starting point: 30 from 2019-20 to 2022-23</p> <p>Target: 55 by March 31, 2027</p>	<p>By developing disruptive technologies that improve the cost and performance of delivering secure, affordable and high-speed internet services in rural and remote communities, the NRC is supporting increased broadband across Canada.</p> <p>Relevant ambitions and targets: CIF ambition/target: N/A CIF indicator: N/A GIF target: N/A</p>



Goal 9: Foster innovation and green infrastructure in Canada

FSDS context:

[Canada's National Adaptation Strategy](#) identified risks to physical infrastructure as one of the most consequential domains of climate change impacts, but also noted that physical infrastructure has the greatest potential to avert or mitigate potential climate change consequences. Existing infrastructure needs to be adapted to withstand future hazards and better sustain service levels and protect communities, and new infrastructure must be located and built with our future climate in mind. Equally important, new infrastructure must also be designed to contribute to a low-carbon future with innovative technology aimed at reducing greenhouse gas emissions. The NRC will address this challenge through the [Climate Resilient Built Environment Initiative](#) (CRBE) which is included in [Canada's Adaptation Action Plan](#). Specifically, the NRC will coordinate and support efforts to reduce the climate adaptation knowledge gap and accelerate the development of climate-smart codes, standards, and guidance. The NRC will also conduct pilot studies of nature-based solutions to mitigate riverine and coastal flooding. In addition, as part of its national [Platform to Decarbonize the Construction Sector at Scale](#), the NRC will support the development of performance-based codes to allow the construction industry to innovate in developing fit-for-purpose low-carbon solutions.

Furthermore, the NRC, through its Advanced Clean Energy program, will support innovation by establishing platforms to facilitate the development of industry led solutions for technical challenges in critical mineral upstream and midstream value chains for current and next-generation, high-performance batteries. This work will help to accelerate the development of advanced materials technologies and their commercialization into new products.

Target theme: Green infrastructure and innovation

Target: By 2023 and each year thereafter until 2026, 30% of Sustainable Development Technology Canada’s portfolio of SD Tech Fund-supported technologies are commercialized annually (Minister of Innovation, Science and Industry)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
Invest in the deployment and adoption of clean technologies	Support industry in addressing technical challenges in critical mineral value chains through conducting collaborative R&D Program: Energy, Mining and Environment	Performance indicator: Number of platforms commissioned to perform collaborative research in the area of processes and materials discovery for the mid-stream battery supply chain Starting point: 0 Target: 2 by March 31, 2027	By developing platforms, which are self-driving laboratories that combine robotics and artificial intelligence to accelerate materials discovery, the NRC will help industry develop solutions for technical challenges in the critical mineral value chains and provide Canadian firms with a competitive advantage. Relevant ambitions and targets: CIF ambition/target: N/A CIF indicator: N/A GIF target: N/A

Target: By fiscal year 2027 to 2028, the federal share of the value of green infrastructure projects approved under the Investing in Canada Plan will reach \$27.6 billion (Minister of Intergovernmental Affairs, Infrastructure and Communities)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
Develop and implement climate-resilient codes and standards	<p>Develop new and improved building codes, regulations, standards, and guidelines to take action against climate change risks</p> <p>Programs: Construction-Ocean, Coastal and River Engineering</p>	<p>Performance indicator: Number of new standards and guidance documents produced against climate change risks</p> <p>Starting point: 0 in 2022-23*</p> <p>Target: 30 by March 31, 2026</p> <p>*30 standards and guidance documents were produced from 2016-2021 through the Climate Resilient Buildings and Core Public Infrastructure Initiative</p>	<p>By developing new and improved building codes, regulations, standards, and guides, the NRC is helping to ensure that Canadian infrastructure is resilient to top climate change risks.</p> <p>Furthermore, by developing new climate-related guidelines and best practices, and new risk mapping and prediction tools, the NRC will help to ensure that the Canadian railway system and freight railway operators and regulators will be better prepared for climate change risks.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians have access to modern and sustainable infrastructures</p> <p>CIF indicator: N/A</p> <p>GIF target: Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all (9.1)</p>
	<p>Develop new guidelines and best practices that address specific climate-related challenges (gaps) for the passenger railway systems in Canada</p> <p>Program: Automotive and Surface Transportation</p>	<p>Performance indicator: Number of guidelines or best practices developed to address climate related challenges for the railway transits system</p> <p>Starting point: 0 in 2022-23</p> <p>Target: 5 guidelines by March 31, 2027</p>	
Other	<p>Develop new risk mapping tools to reduce railway transportation interruptions by predicting risks for key railway corridors, including climate-related risks.</p> <p>Program: Automotive and Surface Transportation</p>	<p>Performance indicator: Number of new risk mapping tools developed and adopted by freight railway operators and regulators.</p> <p>Starting point: 0 in 2022-23</p> <p>Target: At least 3 by March 31, 2027</p>	



Goal 10: Advance reconciliation with Indigenous Peoples and take action on inequality

FSDS context:

The NRC is building relationships with Indigenous researchers, innovators and communities to advance equity for First Nations, Inuit and Métis peoples and to bridge knowledge systems to create new forms of knowledge that can be brought to bear on the critical issues of our time. Aligned with the [Truth and Reconciliation Calls to Action](#), the NRC's Indigenous relationship building strategy has 4 key priorities: 1) developing intercultural competency among employees, 2) strengthening Indigenous participation in STEM, 3) strengthening research relationships with Indigenous peoples and organizations, and 4) supporting Indigenous business innovation. The NRC is also working in collaboration with Indigenous communities and language experts to develop speech- and text-based technologies that will contribute to the revitalization of Indigenous languages.

Canada's [Employment Equity Act](#) exists to increase the representation of designated groups in the workforce and address barriers that may prevent group members from accessing jobs, promotions and other opportunities. The designated groups—Indigenous Peoples, women, persons with disabilities and racialized persons—have historically been disadvantaged and continue to face disproportionate levels of unemployment, underemployment and barriers in the workplace. The NRC is working to not only remove barriers in hiring practices and systems, but also put in place programs that foster an inclusive and diverse workplace. The [NRC Accessibility Plan 2023-2025](#) aims to improve the experiences of persons with disabilities who work for the organization and those using its services. Implementation of the plan will include addressing the physical accessibility of NRC buildings and research facilities for persons with disabilities, as well as digital accessibility so web content can be used by everyone, including those with visual, motor, auditory and cognitive impairments.

Furthermore, through partaking in the [Government of Canada’s Procurement Strategy for Indigenous Businesses](#), the NRC will support increased participation of Indigenous businesses in federal procurement and create more opportunities for Indigenous businesses to succeed and grow.

Target theme: Advancing reconciliation with First Nations, Inuit and the Métis communities

Target: Between 2023 and 2026, and every year on an ongoing basis, develop and table annual progress reports on implementing the [United Nations Declaration on the Rights of Indigenous Peoples Act](#) (Minister of Justice and Attorney General of Canada)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
Implement the <i>United Nations Declaration on the Rights of Indigenous Peoples Act</i>	Develop intercultural competency, resources and training to strengthen research relationships with Indigenous researchers and communities Program: Internal Services-Indigenous Engagement	Performance indicator: Number of resources (e.g., toolkits) developed to help strengthen Indigenous relationships Starting point: 0 in 2022-23 Target: 5 by March 31, 2027	By developing resources such as toolkits and delivering training sessions to NRC employees, the NRC will help develop intercultural competency within the organization and build intentional relationships with Indigenous researchers, innovators, and communities to advance equity for First Nations, Inuit and Métis communities. By developing speech- and text-based technologies, in collaboration with Indigenous communities and language experts, the NRC is supporting Indigenous language students, educators, translators, transcribers and other language
	Work with Indigenous communities and language experts to develop technologies that contribute to the revitalization of Indigenous languages Program: Digital Technologies	Performance indicator: Number of language communities that adopt the methodologies and software for their community Starting point: 16 in 2022-23	

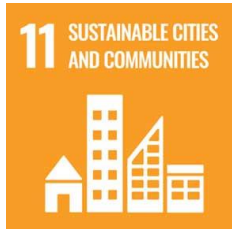
Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
	<p>Use Traditional Knowledge in study design, data collection, project implementation, training and/or technology advancement</p> <p>Program: Collaborative Science, Technology and Innovation Program-Arctic and Northern Challenge program</p>	<p>Target: 24 by March 31, 2027</p> <p>Performance indicator: Percentage of research projects that integrate traditional knowledge from Indigenous Peoples</p> <p>Starting point: 0 in 2022-23</p> <p>Target: 75% by March 31, 2027</p>	<p>professionals, and contributing to the revitalization of Indigenous languages.</p> <p>By integrating traditional knowledge in ANCP projects, and by developing applied technologies, the NRC is helping ensure that project outputs address the pressing issues that impact the quality of life of Northern peoples and will support strong and sustainable Northern communities through applied technology and innovation.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians live free of discrimination and inequalities are reduced</p> <p>CIF indicator: N/A</p> <p>GIF target: By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status (10.2)</p>

Target theme: Taking action on inequality

Target: Each year, the federal public service meets or surpasses the workforce availability for women, Indigenous persons, persons with a disability and members of a visible minority (President of the Treasury Board)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
<p>Advance gender equality in the Government of Canada</p>	<p>Increase representation of Employment Equity designated groups (Indigenous Peoples, women, racialized persons and persons with disabilities) at the NRC</p> <p>Program: Internal Services-Human Resources branch</p>	<p>Performance indicator: Ratio of the NRC workforce made up of underrepresented groups relative to Canadian average labour market availability</p> <p>Starting point: Results in 2022-23 Women: 1.0 Indigenous Peoples: 0.6 Racialized persons: 1.0 Persons with disabilities: 0.6</p> <p>Target: TBC *</p> <p>*The NRC is undertaking an Employment Systems review in 2023-2024 that will inform targets for the next 3 years (up to and including 2026-2027)</p>	<p>By having a workforce representative of Canada's diverse population, the NRC is advancing equity and diversity, supporting innovation, and enhancing scientific and knowledge advancement.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians live free of discrimination and inequalities are reduced</p> <p>CIF indicator: N/A</p> <p>GIF target: By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status (10.2)</p>
<p>Foster diversity, inclusion and accessibility in the federal public service</p>	<p>Execute the NRC Accessibility Plan 2023-2025 to ensure that NRC is an accessible employer</p> <p>Program: Internal Services-Human Resources branch</p>	<p>Performance indicator: Percentage of accessibility plan actions completed as planned</p> <p>Starting point: 0</p> <p>Target: 100% by March 31, 2025</p>	<p>By implementing the NRC Accessibility Plan, the NRC will identify, remove and prevent barriers to accessibility and help create a respectful and inclusive workplace and culture.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians live free of discrimination and inequalities are reduced</p>

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
			<p>CIF indicator: N/A</p> <p>GIF target: By 2030, empower and promote the social, economic and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status (10.2)</p>
	<p>Support the Government of Canada's Procurement Strategy for Indigenous Businesses through contracting with Indigenous businesses</p> <p>Program: Internal Services-Finance and Procurement Services branch</p>	<p>Performance indicator: Percentage of procurement contracts with Indigenous businesses.</p> <p>Starting point: 1.8% in 2022-23</p> <p>Target: 5% by March 31, 2025</p>	<p>By supporting the Government of Canada's Procurement Strategy for Indigenous Business, the NRC is helping Indigenous businesses succeed and grow through increased opportunities in the procurement process.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians live free of discrimination and inequalities are reduced</p> <p>CIF indicator: N/A</p> <p>GIF target: Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies and action in this regard (10.3)</p>



Goal 11: Improve access to affordable housing, clean air, transportation, parks, and green spaces, as well as cultural heritage in Canada

FSDS context:

Polluted air contributes to more than 15,000 premature deaths in Canada each year. It also intensifies asthma and other respiratory conditions, costing our economy \$114 billion¹ per year overall. In addition to having a huge impact on our health, black carbon, the second biggest contributor to global warming after carbon dioxide, exacerbates global warming in snow-covered territories by darkening their surface. To help improve the air quality of Canadian communities, the NRC is working to increase the precision of measuring black carbon emissions. New discoveries will be able to assist Canadian companies with assessing and improving their environmental performance. Through the Government of Canada's [Horizontal Initiative on Addressing Air Pollution](#), the NRC will also contribute to the development of new solutions to improve indoor air quality, such as equipping Canadians with better information to help reduce radon exposure and developing solutions to decrease wildfire smoke exposure. Furthermore, the NRC will support the development and deployment of novel sensors to enable precise, real-time mapping of environmental pollutants, overcoming the technological limitations of what is currently used to monitor Canada's vast and remote landscape.

Implementation strategies supporting the goal

This section is for implementation strategies that support the goal “**Improve access to affordable housing, clean air, transportation, parks, and green spaces, as well as cultural heritage in Canada,**” but not a specific FSDS target

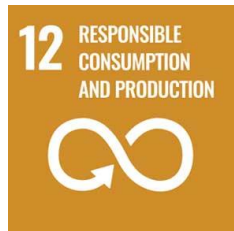
¹ [Health Impacts of Air Pollution in Canada: Estimates of morbidity and premature mortality outcomes – 2021 Report](#)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
<p>Research the impacts of air pollution</p>	<p>Support industry to develop innovative building solutions, standards, and guidelines to reduce health risk from indoor air pollution</p> <p>Program: Construction</p>	<p>Performance indicator: Number of standards, guides and guidelines addressing health risks associated to indoor air pollution</p> <p>Starting point: 5 in 2022-23</p> <p>Target: 8 by March 31, 2027</p>	<p>By developing new innovative building solutions, standards, and guidelines addressing health risks associated to indoor air pollution, the NRC is supporting improved air quality and health in Canada, and will provide Canadians with the tools to make informed decisions to reduce their exposure to indoor air pollutants.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians live in healthy, accessible, and sustainable cities and communities</p> <p>CIF indicator: N/A GIF target: N/A</p>
		<p>Performance indicator: Number of new technologies addressing health risks associated to indoor air pollution evaluated in research projects</p> <p>Starting point: 30 in 2022-23</p> <p>Target: 35 by March 31, 2027</p>	

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
	<p>Develop sensor technologies to deliver environmental pollutants data to environmental scientists, regulators and all levels of government and industry</p> <p>Program: Advanced Electronics and Photonics-Security and Disruptive Technologies-Nanotechnology</p>	<p>Performance indicator: Number of sensor projects for environmental monitoring developed</p> <p>Starting point: 7 as of 2022-23</p> <p>Target:14 by March 31, 2027</p>	<p>By developing sensors for pollutants, the NRC is helping environmental scientists, regulators, other government departments and industry access quality data on pollutants and supporting research on air and water pollution.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians live in healthy, accessible, and sustainable cities and communities</p> <p>CIF indicator: N/A GIF target: N/A</p>

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
	<p>Support the development of guidelines to help mitigate the impact of wildfire smoke on populations</p> <p>Program: Aerospace-Construction</p>	<p>Performance indicator: Number of wildfire flights conducted to collect spatial and temporal profiles of wildfire plumes</p> <p>Starting point: 0 in 2022-23</p> <p>Target: 5 by March 31st, 2027</p>	<p>By conducting wildfire flights, the NRC will be able to collect spatial and temporal profiles of wildfire plumes and assess its contribution to indoor air pollution which will help determine air quality protection measures and support the development of guidelines for healthy cities and communities.</p> <p>CIF Ambition: Canadians live in healthy, accessible, and sustainable cities and communities.</p> <p>CIF Indicator: N/A</p> <p>GIF Target: N/A</p>

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
	<p>Develop the next generation of black carbon and methane measurement instruments</p> <p>Program: Metrology</p>	<p>Performance indicator: Number of black carbon measurement instruments developed through NRC research projects with external partners</p> <p>Starting point: 1 in 2022-23</p> <p>Target: 2 by March 31, 2027</p>	<p>By developing the next generation of black carbon and methane measurement instruments, the NRC is supporting government and industry partners in reducing harmful air pollutants such as black carbon.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians live in healthy, accessible, and sustainable cities and communities</p> <p>CIF indicator: N/A GIF target: N/A</p>
	<p>Publish new datasets on air pollutants to support emissions research and monitoring</p> <p>Program: Aerospace-Metrology</p>	<p>Performance indicator: Number of datasets of high-resolution sampling made available for research and monitoring of emissions</p> <p>Starting point: 0 in 2022-23</p> <p>Target: 1 by March 31, 2027</p>	<p>By generating datasets on air pollutants for research and monitoring, the NRC will help in the evaluation of emissions trends and ultimately support emission reductions.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians live in healthy, accessible, and sustainable cities and communities</p> <p>CIF indicator: N/A GIF target: N/A</p>



Goal 12: Reduce waste and transition to zero-emission vehicles

FSDS context:

Greening government operations and moving towards a low-carbon government is important to achieving Canada's goals for environmental and sustainable development. The NRC is committed to making its operations sustainable and climate resilient, while minimizing waste and maximizing recycling and composting. For example, the NRC's Environmental Management System directives aim to reduce and prevent impacts to the environment and human health by identifying the roles and responsibilities of NRC employees, tenants and contractors for managing wastewater, petroleum, halocarbons and hazardous waste.

In the context of a global transition to low-carbon modes of transportation, industry needs to adopt new technologies to comply with strict government standards and increased consumer demand for more environmentally responsible vehicles. The NRC's [Clean and Energy-efficient Transportation program](#) will develop new technologies to support Canadian industry leadership in the growing supply chains associated with low-carbon mobility and sustainable transportation. Through the NRC's Canada-wide network of experts and facilities, the program will help drive Canada's sustainable mobility evolution by developing, optimizing and testing technology solutions aimed at improving vehicle efficiency as well as infrastructure performance and safety.

Target theme: Zero-emission vehicles

Target: Aim is to have 35% of medium- and heavy-duty vehicle sales being zero emission by 2030 and 100% by 2040 for a subset of vehicle types based on feasibility (Minister of Transport; Minister of Environment and Climate Change)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
<p>Make zero-emissions vehicles more affordable and improve supply</p>	<p>Conduct research on clean and energy efficient transportation, including on addressing the technical requirements for adoption of electric and connected vehicles</p> <p>Program: Automotive and Surface Transportation</p>	<p>Performance indicator: Number of research projects with external partners supporting clean and energy efficient transportation</p> <p>Starting point: 111 from 2020-21 to 2022-2023</p> <p>Target: 55 per year starting in 2023-24</p>	<p>By conducting research projects focused on clean and energy efficient transportation, the NRC is supporting Canada’s transition to low-carbon modes of transportation</p> <p>Relevant ambitions and targets: CIF ambition: Canadians consume in a sustainable manner</p> <p>CIF indicator: Proportion of new light duty vehicle registrations that are zero-emission vehicles (12.1.1)</p> <p>GIF target: N/A</p>
	<p>Develop innovative technologies and support the development of policies to decarbonize the aviation industry</p> <p>Program: Aerospace</p>	<p>Performance indicator: Number of external partners involved in decarbonization projects.</p> <p>Starting point: 9 in 2022-23</p> <p>Target: 12 per year starting in 2023-24</p>	<p>By collaborating with industry partners on decarbonization-related projects, the NRC is supporting the development of disruptive technologies for low-emission aircrafts such as high-power or energy dense batteries, hydrogen systems, electric propulsion systems and novel aircraft configurations, which will reduce the environmental impact of the aviation industry.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians consume in a sustainable manner</p> <p>CIF indicator: N/A</p>

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
			GIF target: N/A
	<p>Develop reliable measurement and quality assurance protocols for electric vehicles and rapid charging stations</p> <p>Program: Metrology</p>	<p>Performance indicator: Number of new measurement standards developed for electric vehicles charging stations</p> <p>Starting point: 0 in 2022-23</p> <p>Target: 1 by March 31, 2027</p>	<p>By developing new measurement tools and quality assurance protocols, the NRC will help increasing electric vehicle performance and support the implementation of standards of rapid charging stations.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians consume in a sustainable manner</p> <p>CIF indicator: N/A GIF target: N/A</p>
		<p>Performance indicator: Number of new prototype measurement tools developed with external partners to diagnose faults in electric vehicle power electronics</p> <p>Starting point: 0 in 2022-23</p> <p>Target: 1 by March 31, 2027</p>	

Target theme: Federal leadership on responsible consumption

Target: By 2030, the Government of Canada will divert from landfill at least 75% by weight of non-hazardous operational waste (all ministers)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
Maximize diversion of waste from landfill	Complete waste audits for large buildings and report the annual rate of diversion of waste from landfill Program: Special Purpose Real Property	<p>Performance indicator: Percentage by weight of non-hazardous operational waste diverted from landfill</p> <p>Starting point: 65% in 2022-23</p> <p>Target: 75% by weight of non-hazardous operational waste diverted from landfill annually by 2030</p>	<p>By diverting non-hazardous operational waste and plastic waste from landfill, the NRC is helping reduce emissions from the production, transportation, and disposal of material.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians consume in a sustainable manner</p> <p>CIF indicator: Total waste diversion per capita (12.3.1)</p> <p>GIF target: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse (12.5)</p>
		<p>Performance indicator: Percentage by weight of plastic waste diverted from landfill</p> <p>Starting point: 55% in 2022-23</p> <p>Target: 75% by weight of plastic waste diverted from landfill annually by 2030</p>	

Target: By 2030, the Government of Canada will divert from landfill at least 90% by weight of all construction and demolition waste (all ministers)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
Maximize diversion of waste from landfill	<p>Ensure public tender construction project general contractors track and disclose the amount of construction and demolition waste generated, as well as the amount diverted from landfill</p> <p>Program: Special Purpose Real Property-Office of Facilities Renewal Management</p>	<p>Performance indicator: Percentage by weight of construction and demolition waste diverted from landfill in Crown-owned buildings for applicable projects</p> <p>Starting point: 47% in 2022-23</p> <p>Target: 90% by weight of non-hazardous operational waste diverted from landfill annually by 2030</p>	<p>By diverting construction and demolition waste from landfill, the NRC is helping reduce emissions from the production, transportation and disposal of material.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians consume in a sustainable manner</p> <p>CIF indicator: Total waste diversion per capita (12.3.1)</p> <p>GIF target: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse (12.5)</p>

Target: The Government of Canada’s procurement of goods and services will be net-zero emissions by 2050, to aid the transition to a net-zero, circular economy (all ministers)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
<p>Disclose embodied carbon in construction</p>	<p>Disclose the amount of embodied carbon in the structural materials of major construction projects, based on material carbon intensity or a life-cycle analysis</p> <p>Program: Special Purpose Real Property-Office of Facilities Renewal Management</p>	<p>Performance indicator: Percentage of major construction projects that disclose embodied carbon for structural materials.</p> <p>Starting point: 0% in 2022-23</p> <p>Target: 100% of major construction projects disclose embodied carbon for structural materials by 2030</p>	<p>By tracking the amount of embodied carbon in the structural materials of major construction projects, the NRC will develop a better understanding of emissions associated to its major construction projects and develop mitigation strategies.</p> <p>Relevant ambitions and targets: CIF ambition: N/A CIF indicator: N/A GIF target: N/A</p>
	<p>Reduce embodied carbon from structural materials of major construction projects by 30%, starting in 2025, using recycled and lower-carbon materials, material efficiency and performance-based design standards.</p> <p>Program: Special Purpose Real Property-Office of Facilities Renewal Management</p>	<p>Performance indicator: Percentage of reduction in embodied carbon from the structural materials of major construction projects completed during the year</p> <p>Starting point: 0% in 2022-23 (this is a new requirement in 2023-24)</p> <p>Target: 30% reduction by 2025</p>	
<p>Transform the federal light-duty fleet</p>	<p>New light-duty and executive fleet vehicle purchases will include zero-emission vehicles (ZEVs) or hybrids</p> <p>Program: Special Purpose Real Property</p>	<p>Performance indicator: Percentage of light-duty and executive fleet vehicles that are ZEVs or hybrids</p> <p>Starting point: 7% in 2022-23</p>	<p>By purchasing zero emission vehicles or hybrids, the NRC is reducing greenhouse gas emissions from conventional fleet operations and enhancing sustainable consumption.</p> <p>Relevant ambitions and targets:</p>

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
		<p>Target: 100% of light-duty and executive fleet vehicles are ZEVs or hybrid by 2030</p>	<p>CIF ambition: Canadians consume in a sustainable manner</p> <p>CIF indicator: Proportion of new light duty vehicle registrations that are zero-emission vehicles (12.1.1)</p> <p>GIF target: Implement the 10-year framework of programmes on sustainable consumption and production, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries (12.1).</p>
	<p>Optimize and rationalize federal vehicle fleet management through application of telematics and development of a fleet strategic plan</p> <p>Program: Special Purpose Real Property</p>	<p>Performance indicator: Percentage reduction in Scope 1 GHG emissions from conventional fleet relative to fiscal year 2005-06 levels</p> <p>Starting point: 57% reduction in 2022-23 (153 ktCO₂e)</p> <p>Target: 40% reduction by 2025</p>	

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
Strengthen green procurement criteria	<p>Build capacity in green procurement to incorporate "greening" criteria into NRC procurement practices (e.g., carbon reduction, sustainable plastics, training) to aid the transition to a net-zero, circular economy</p> <p>Program: Internal Services-Finance and Procurement Services branch</p>	<p>Performance indicator: Percentage of "green"-trained procurement officers</p> <p>Starting point: 98% in 2022-23</p> <p>Target: 100% every year starting in 2023-24</p>	<p>By incorporating environmental considerations into purchasing decisions, the NRC is helping suppliers reduce the environmental impact of goods and services delivered, and their supply chains.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians consume in a sustainable manner</p> <p>CIF indicator: Proportion of businesses that adopted selected environmental protection activities and management practices (12.2.1)</p> <p>GIF target: Promote public procurement practices that are sustainable, in accordance with national policies and priorities (12.7)</p>

Implementation strategies supporting the goal

This section is for implementation strategies that support the goal “Reduce waste and transition to zero-emission vehicles,” but not a specific FSDS target

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
Boost the supply of critical minerals for the green and digital economy	<p>Support the development of new or improved battery recycling processes to boost critical minerals supply chains</p> <p>Program: Energy, Mining and Environment</p>	<p>Performance indicator: Number of critical minerals projects that advance by one or more technology readiness level (TRL)</p> <p>Starting point: 0</p> <p>Target: 10 by March 31, 2027</p>	<p>By conducting research projects with clients and collaborators, the NRC will advance the development of new or improved battery recycling processes that will help boost the supply of critical minerals and support Canada's clean energy transformation.</p> <p>Relevant ambitions and targets: CIF ambition/target: N/A CIF indicator: N/A GIF target: N/A</p>
Remediate high-priority contaminated sites	<p>Continue to monitor, risk-manage or remediate identified contaminated sites</p> <p>Program: Internal Services-Health, Safety and Environment branch</p>	<p>Performance indicator: Number of site files that are closed or have long-term risk management plans in place</p> <p>Starting point: 11 in 2022-2023</p> <p>Target: 12 by March 31, 2027</p>	<p>By assessing contaminated sites and implementing remediation activities, the NRC is reducing risks from contaminated sites on human health and the environment.</p> <p>Relevant ambitions and targets: CIF ambition/target: N/A CIF indicator: N/A GIF target: N/A</p>
Research innovative solutions for plastics	<p>Develop and deploy a Decision Support System (DSS) to reduce the risks of plastics to the environment, wildlife and human health</p> <p>Programs: Ocean, Coastal and River Engineering-Energy, Mining and Environment-Aquatic and Crop Resources Development-Collaborative Science,</p>	<p>Performance indicator: Percentage of users reporting that the DSS is an effective tool in supporting policy and management decisions to reduce the potential risks of plastics to the environment, wildlife and human health</p>	<p>By developing and deploying a DSS, the NRC will give researchers and policymakers greater understanding of plastic pollution distributions and risks to Canada's aquatic systems. It will also support the reduction of plastic pollution and mitigate risks of exposure to the environment and human health.</p>

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
	Technology and Innovation Program-Ocean program	<p>Starting point: N/A (the development of the DSS tool was at 50% completion in March 2023)</p> <p>Target: 90% in 2026-27</p>	<p>Relevant ambitions and targets: CIF ambition: N/A CIF indicator: N/A GIF target: N/A</p>
	<p>Reduce plastic waste from food packaging by developing technologies for sustainable plastic sources and packaging</p> <p>Program: Automotive and Surface Transportation</p>	<p>Performance indicator: Number of technologies developed supporting sustainable food packaging</p> <p>Starting point: 1 in 2022-23</p> <p>Target: 3 by March 31, 2027</p>	<p>By developing technologies for sustainable packaging, especially for food applications, the NRC will support the development of new products with potential for biomass and recycled plastics reclamation and the use of compostable plastics.</p> <p>Relevant ambitions and targets: CIF ambition/target: N/A CIF indicator: N/A GIF target: N/A</p>



Goal 13: Take action on climate change and its impacts

FSDS context:

Climate change is impacting all Canadian industrial sectors, requiring them to adapt and change to create a new climate economy. Some of Canada's industries emit large amounts of carbon dioxide and other greenhouse gases, and require low-carbon alternatives to their products and processes. All industries are facing increasing risks from temperature rise, extreme weather events, flooding and other climate change impacts. The NRC has a unique mandate to work with industry to develop the technologies, innovations and tools needed to create a new climate economy. The NRC's areas of focus for climate change activities include: clean energy production and storage, low-carbon transportation, industrial decarbonization, and adaptation and resilience.

Looking at its own footprint, the NRC seeks to be a global leader in green government operations. Going forward, the NRC will create a real property portfolio plan to determine the most cost-effective pathway to achieving net-zero, climate-resilient real property operations by 2050. In addition, the NRC will: use 100% clean electricity by 2025, by producing or purchasing renewable electricity; ensure all-site renewal work is future proofed by integrating decarbonization into the building management plans; adopt a net-zero requirement for all new construction; and, reduce its real property portfolio by 20% to reduce recapitalization, operational and maintenance costs for a sustainable real property portfolio.

Target theme: Federal leadership on greenhouse gas emissions reductions and climate resilience

Target: The Government of Canada will transition to net-zero carbon operations for facilities and conventional fleets by 2050 (all ministers)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
<p>Implement the Greening Government Strategy through measures that reduce greenhouse gas emissions, improve climate resilience, and green the government's overall operations</p>	<p>Conduct whole building (or asset) life-cycle assessments for major building and infrastructure projects</p> <p>Program: Special Purpose Real Property</p>	<p>Performance indicator: Percentage of major building and infrastructure projects having completed whole building (or asset) life-cycle assessment in reporting year</p> <p>Starting point: 0% in 2022-23 (this is a new requirement in 2023-24)</p> <p>Target: 100% major buildings and infrastructure projects having completed whole building (or asset) life-cycle assessment*</p> <p>*Target will be formalized as part of the NRC's Real Property Strategy at the end of 2023-24. Reporting will start in 2024-25.</p>	<p>By completing whole building (or asset) life cycle assessments, the NRC will be better positioned to quantify the amount of embodied carbon that is associated with its major infrastructure projects, and use this information as a design tool to reduce emissions.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians reduce greenhouse gas emissions</p> <p>CIF indicator: Greenhouse gas emissions (13.1.1)</p> <p>GIF target: Integrate climate change measures into national policies, strategies and planning (13.2)</p>
	<p>Adopt the use of clean electricity through Public Services and Procurement Canada (PSPC) Power Purchase Agreement (PPA)</p> <p>Program: Special Purpose Real Property</p>	<p>Performance indicator: Percentage of eligible sites participating in PSPC's clean electricity PPA</p> <p>Starting point: 0% in 2022-23</p> <p>Target: 100% of eligible sites participating when clean electricity PPA becomes available*</p>	<p>By participating in the purchase of clean electricity, the NRC will contribute to the Government of Canada's objectives of greening its procurement, lowering its emissions and encouraging the transition to a clean economy.</p> <p>Relevant ambitions and targets CIF ambition: Canadians reduce greenhouse gas emissions</p>

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
		*Target date to be confirmed once PPA is implemented	<p>CIF indicator: Greenhouse gas emissions (13.1.1)</p> <p>GIF target: Integrate climate change measures into national policies, strategies and planning (13.2)</p>
	<p>Recommission large energy-intensive buildings on a regular cycle</p> <p>Program: Special Purpose Real Property</p>	<p>Performance indicator: Percentage of total building footprint with recommissioning activities completed in reporting year</p> <p>Starting point: 9% in 2022-23</p> <p>Target: 10% per fiscal year starting in 2023-24</p>	<p>By recommissioning its buildings on a regular cycle through actions such as optimizing energy efficiency, implementing smart building technologies, the NRC is ensuring that its buildings are operating efficiently and reducing GHG emissions.</p> <p>Relevant ambitions and targets CIF ambition: Canadians reduce greenhouse gas emissions</p> <p>CIF indicator: Greenhouse gas emissions (13.1.1)</p> <p>GIF target: Integrate climate change measures into national policies, strategies and planning (13.2)</p>
	<p>Report building energy, water usage and waste generated using Energy Star Portfolio Manager for all new office leases and lease renewals for space over 500m² landlords</p>	<p>Performance indicator: Percentage of office leases (> 500 m²) that are reporting energy, water and waste generation using Energy Star Portfolio Manager</p> <p>Starting point: 0% in 2022-23</p>	<p>Buildings with the highest scores will generally minimize energy use and therefore GHG emissions from heating and electricity (where applicable).</p>

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
	<p>Program: Special Purpose Real Property</p>	<p>Target: 100% by 2025</p>	<p>By reporting on the GHG emissions of leased space, the NRC will be able to better monitor GHG emission performance in subsequent lease negotiations.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians reduce their greenhouse gas emissions</p> <p>CIF indicator: Greenhouse has emissions (13.1.1)</p> <p>GIF target: Integrate climate change measures into national policies, strategies and planning (13.2)</p>
	<p>Report on GHG emissions from the majority of leased office space</p> <p>Program: Special Purpose Real Property</p>	<p>Performance indicator: Percentage of leased office floor area reporting GHG emissions</p> <p>Starting point: 0% in 2022-23 (GHG emissions from leased facilities are not currently reported)</p> <p>Target: 30% by 2025</p>	
<p>Modernize through net-zero carbon buildings</p>	<p>Design and construct all new buildings (including build-to-lease and public-private partnerships) to be net-zero carbon unless a life-cycle cost-benefit analysis indicates net-zero-carbon-ready construction</p> <p>Program: Special Purpose Real Property-Office of Facilities Renewal Management</p>	<p>Performance indicator: Percentage reduction in GHG emissions from real property from fiscal year 2005-06</p> <p>Starting point: 48% reduction in 2022-23 (37,216 ktCO₂e)</p> <p>Target: 70% reduction by 2030</p>	<p>By taking actions such as rationalizing its portfolio, sharing facilities and reducing demand for energy or switching to lower carbon sources of energy, the NRC is reducing GHG emissions from its real property operations.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians reduce greenhouse gas emissions</p>
<p>Apply a greenhouse gas reduction life-cycle cost analysis for major building retrofits</p>	<p>Incorporate GHG emissions reduction into the departmental decision-making process using GHG options and a life cycle costing analysis methodology for all major retrofits. Disclose the amount of embodied carbon in the structural materials of major</p>		<p>CIF indicator: Greenhouse gas emissions (13.1.1)</p>

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
	construction projects, based on material carbon intensity or a life-cycle analysis. Program: Special Purpose Real Property-Office of Facilities Renewal Management		GIF target: Integrate climate change measures into national policies, strategies and planning (13.2)

Target: The Government of Canada will transition to net-zero carbon national safety and security fleet operations by 2050 (ministers with national safety and security fleets)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
Improve environmental performance of national safety and security fleets	Help develop state-of-the-art fleet platforms and technologies for the Royal Canadian Navy and the Canadian Coast Guard to enable green and sustainable fleet operations Program: Ocean, Coastal and River Engineering	Performance indicator: Number of projects with clients or collaborators supporting sustainable fleet operations Starting point: 36 in 2022-23 Target: 36 active projects per year starting in 2023-24	By developing fleet platforms and new technologies, the NRC is enhancing the capability and sustainability of Canada's defence fleets. Relevant ambitions and targets: CIF ambition: Canadians reduce greenhouse gas emissions CIF indicator: Greenhouse gas emissions (13.1.1) GIF target: N/A

Target: The Government of Canada will transition to climate resilient operations by 2050 (All ministers)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
<p>Reduce risks posed by climate change to federal assets, services and operations</p>	<p>Develop plans to reduce the climate risk of mission critical assets with moderate to high risks</p> <p>Program: Special Purpose Real Property-Office of Facilities Renewal Management</p>	<p>Performance indicator: Percentage of mission critical assets with moderate to high risks related to climate change that have a risk mitigation plan</p> <p>Starting point: 0% in 2022-23 (Asset-level climate risk and vulnerability assessment initiated in 2023)</p> <p>Target: 100% by March 31, 2027</p>	<p>By developing a climate resilient real property portfolio plan, the NRC will be better positioned to prioritize its real property assets for a detailed risk assessment and the implementation of adaptation measures.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians are well-equipped and resilient to face the effects of Climate change</p> <p>CIF indicator: Proportion of municipal organization who factored climate change adaptation into their decision-making process (13.3.1)</p> <p>GIF targets: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries (13.1)</p> <p>Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning (13.3)</p>

Implementation strategies supporting the goal

This section is for implementation strategies that support the goal “Take action on climate change and its impacts,” but not a specific FSDS target

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
Collaborate on emergency management and disaster risk reduction	Collaborate with Health Canada to reduce the impacts of extreme heat through pilot studies Program: Construction	Performance indicator: Number of pilot studies completed to reduce the impacts of extreme heat Starting point: 0 Target: 4 by March 31, 2026	By conducting pilot studies, the NRC will support the development of innovative solutions to prevent and mitigate negative health consequences resulting from extreme heat events. Relevant ambitions and targets: CIF ambition: Canadians are well-equipped and resilient to face the effects of Climate change CIF indicator: N/A GIF target: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries (13.1)
	Help Canadian industry develop emergency flood barriers and support communities in emergency response planning Program: Ocean, Coastal and River Engineering	Performance indicator: Number of clients supported with emergency response planning and the development of flood barriers Starting point: 13 in 2022-23 Target: 5 active clients per year starting in 2023-24	By working with industry and community clients with emergency response planning and in the development of flood barriers, the NRC is supporting increased resilience to extreme weather events and other environmental factors on Canada’s shorelines and infrastructure. Relevant ambitions and targets:

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
			<p>CIF ambition: Canadians are well-equipped and resilient to face the effects of climate change</p> <p>CIF indicator: N/A</p> <p>GIF target: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries (13.1)</p>
	<p>Develop resilient infrastructure designs, and advance technologies and decision-making tools for resilient asset management,</p> <p>Programs: Construction-Ocean, Coastal and River Engineering</p>	<p>Performance indicator: Number of decision-making tools updated or developed to support public infrastructure management</p> <p>Starting point: 0 in 2022-23</p> <p>Target: 10 by March 31, 2028</p>	<p>By developing new technologies and decision-making tools, the NRC will support increased resilience to extreme weather events and other environmental factors on Canada's buildings, shorelines and infrastructure.</p> <p>Relevant ambitions and targets: CIF ambition: Canadians are well-equipped and resilient to face the effects of climate change</p>
		<p>Performance indicator: Number of projects with clients or collaborators related to resilient shores</p> <p>Starting point: 31 in 2022-23</p> <p>Target: 31 active projects per year starting in 2023-24</p>	<p>CIF indicator: N/A</p> <p>GIF target: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries (13.1)</p>



Goal 14: Conserve and protect Canada's oceans

FSDS context:

Canadians depend on the oceans for trade, food security, energy and employment. Across the globe, we also rely on the ocean as a natural ally against climate change, and as a vital source of oxygen. Increased human activity and warmer water temperatures have had disastrous effects on the overall health of the ocean. As a result, its ability to sustain life and support human needs is rapidly decreasing. Similar to the "green" economy, the "blue" economy is a growing effort to ensure that ocean resources are used in a sustainable way for economic growth. The NRC's Ocean program supports [Canada's Ocean Supercluster](#) and is helping grow Canada's blue economy, by placing equal value on ocean health and economic gain and supporting the development of technology to improve ocean health. At the close of its Ocean program, by 2027, the NRC's goal is to see progress towards the ocean being on the path to recovery. Technology themes of the program include: coastal resilience, intelligent marine assets, pollution remediation, and bio assets.

Target theme: Ocean protection and conservation

Target: Conserve 25% of marine and coastal areas by 2025, and 30% by 2030, in support of the commitment to work to halt and reverse nature loss by 2030 in Canada, and achieve a full recovery for nature by 2050 (Minister of Fisheries, Oceans and the Canadian Coast Guard)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
Build knowledge of coastal and marine ecosystems and marine protected areas	<p>Develop innovative ocean health modelling and monitoring technologies to enable better understanding and prediction of climate change impacts on oceans and potential solutions</p> <p>Program: Aquatic and Crop Resources Development-Digital Technologies</p>	<p>Performance indicator: Number of modeling and monitoring tools developed to better understand and predict climate change impacts on oceans and estuaries.</p> <p>Starting point: 0</p> <p>Target: 5 by March 31, 2027</p>	<p>By developing new modelling and monitoring technologies, the NRC will support increased understanding of pollution and climate change impacts on Canada’s marine ecosystems and support conservation efforts.</p> <p>Relevant ambitions and targets: CIF ambition: Canada protects and conserves marine areas and sustainably manages ocean fish stocks</p> <p>CIF indicator: Proportion of marine and coastal areas conserved (14.1.1)</p> <p>GIF target: By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans (14.2)</p>
	<p>Support Canada in understanding and mitigating the impacts of extreme weather events and other environmental factors on Canada’s shorelines and related infrastructure</p> <p>Program: Ocean, Coastal and River Engineering</p>	<p>Performance indicator: Number of publications on the impacts of extreme weather events and other environmental factors on Canada’s shorelines and related infrastructure</p> <p>Starting point: 7 in 2022-23</p>	<p>By conducting research on resilient shorelines and related infrastructure, the NRC is helping ensure that Canada has the capabilities to mitigate the impacts of extreme weather events and other environmental factors.</p> <p>Relevant ambitions and targets:</p>

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
		<p>Target: 28 by March 31, 2027</p>	<p>CIF ambition: Canada protects and conserves marine areas and sustainably manages ocean fish stocks</p> <p>CIF indicator: Proportion of marine and coastal areas conserved (14.1.1)</p> <p>GIF target: By 2020, conserve at least 10% of coastal and marine areas, consistent with national and international law and based on the best available scientific information (14.5)</p>

Implementation strategies supporting the goal

This section is for implementation strategies that support the goal “**Conserve and protect Canada’s oceans,**” but not a specific FSDS target

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
<p>Reduce marine litter and support the Canada-wide Strategy on Zero Plastic Waste</p>	<p>Generate and disseminate knowledge on micro and nanoplastics pollution to improve the availability of accurate information to predict accumulation zones</p>	<p>Performance indicator: Number of project partners participating in data sharing agreements (including academia, science-based departments and agencies,</p>	<p>By developing new technologies and methods to assess plastic pollution, the NRC will help reduce barriers to assess plastic pollution in Canada’s water ways,</p>

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada's 2030 Agenda National Strategy and SDGS
	<p>and plastic pollution pathways in different marine environments</p> <p>Programs: Ocean, Coastal and River Engineering-Energy, Mining and Environment-Aquatic and Crop Resources Development-Metrology-Collaborative Science, Technology and Innovation Program-Ocean program</p>	<p>Canadian SMEs, and Indigenous organizations)</p> <p>Starting point: 0 in 2022-23</p> <p>Target: 10 partners by March 31, 2027</p>	<p>and support prevention and reduction of plastic pollution.</p> <p>Relevant ambitions and targets: CIF ambition: Canada protects and conserves marine areas and sustainably manages ocean fish stocks</p> <p>CIF indicator: N/A</p> <p>GIF target: N/A</p>



Goal 15: Protect and recover species, conserve Canadian biodiversity

FSDS context:

Canada's conservation network is as diverse as it is unique—and it consists of more than just national wildlife areas and national parks. The Government of Canada is recognizing lands and waters that are managed in a manner that achieves long-term conservation of biodiversity, maintains ecosystems and supports healthy populations of wild species. These areas are known as other effective area-based conservation measures (OECMs). The NRC will assess its owned properties for opportunities to conserve biodiversity through impact and species-at-risk assessments, and for recognition as OECMs using established pan-Canadian criteria.

Target theme: Conservation of land and fresh water

Target: Conserve 25% of Canada's land and inland waters by 2025, working toward 30% by 2030, from 12.5% recognized as conserved as of the end of 2020, in support of the commitment to work to halt and reverse nature loss by 2030 in Canada, and achieve a full recovery for nature by 2050 (Minister of Environment and Climate Change)

Implementation strategy	Departmental action	Performance indicator, starting point and target	How the departmental action contributes to the FSDS goal and target and, where applicable, to Canada’s 2030 Agenda National Strategy and SDGS
Conserve natural spaces	Assess NRC properties for suitability and recognition as other effective area-based conservation measures (OECMs) Program: Internal Services-Health, Safety and Environment branch	Performance indicator: Number of NRC properties assessed for suitability as OECMs Starting point: 1 in 2022-2023 Target: All 12 NRC-owned properties assessed by March 31, 2027	By assessing its properties for suitability as OECMs, the NRC will identify which areas are managed to achieve positive long-term outcomes in conservation and biodiversity outside of protected areas. Relevant ambitions and targets: CIF ambition/target: N/A CIF indicator: N/A GIF target: N/A

Section 5

Integrating sustainable development

In addition to the commitments included in the previous tables, the National Research Council of Canada will continue to integrate sustainable development into its internal operations to ensure they are sustainable and climate resilient. This includes actions such as: performing a real property portfolio level climate vulnerability assessment to better understand the impacts of climate change and extreme weather events to NRC real property; assessing the risk of climate change impacts for mission critical assets; and developing an implementation plan for replacing or converting existing heating, ventilation, air conditioning and refrigeration (HVAC&R) systems to support emission reductions.

The NRC is also integrating sustainable development in its project selection process for funding. For instance, projects funded through [the New Beginnings Initiative](#) are selected in part based on how they address climate change and sustainability. Furthermore, climate change and sustainability has also been designated as one of the priorities in the NRC Strategic Plan 2024-2029, with NRC research centres and branches including activities in their own strategic plans to address climate change and sustainability



The NRC will continue to ensure its decision-making process includes consideration of the FSDS goals and targets through its Strategic Environmental Assessment (SEA) process. In accordance with the Cabinet Directive on the Environmental Assessment of Policy, Plan and Program Proposals, the NRC undertakes a preliminary or full strategic environmental assessment for all proposals that require ministerial or Cabinet approval. The NRC's Health, Safety and Environment Branch works with the proposal lead to identify the potential impacts on the environment and the FSDS goals and targets, and determine whether a full SEA is required.

A detailed SEA review is required if the implementation of the proposal could result in important environmental effects in Canada or abroad. A public statement is also required to demonstrate that environmental effects including the impacts on achieving the FSDS goals and targets of the approved policy, plan or program have been considered during the proposal development and decision-making process. The NRC will continue to adhere to the Directive and release a public statement if future proposals require a detailed SEA.