Natural Sciences and Engineering Research Council of Canada

2020-21

**Departmental Plan** 

The Honourable Navdeep Bains, P.C., M.P. Minister of Innovation, Science and Industry

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## From the Minister

It is my pleasure to present the 2020–21 Departmental Plan for the Natural Sciences and Engineering Research Council of Canada (NSERC). We are working across the Innovation, Science and Economic Development Portfolio to enhance Canada's innovation performance, improve conditions for business investments, increase Canada's share of global trade and build a fair and efficient marketplace that promotes consumer choice and competition.

We will continue to work with provinces, territories, municipalities, Indigenous groups, industry, stakeholders and all Canadians to deliver an economic agenda that is growing an internationally competitive, knowledge-based economy while achieving our environmental goals.



The Honourable Navdeep Bains Minister of Innovation, Science and Industry

In support of these goals, NSERC is well positioned to improve the international competitiveness of Canadian research in natural sciences and engineering. Through investments in discovery research and post-secondary research partnerships with Canadian businesses and communities, and the implementation of equity, diversity and inclusion measures, NSERC will contribute to the generation of new knowledge, the supply of highly skilled people and the development of innovations for Canada.

Through all these initiatives and more, we are continuing to deliver our commitment to fostering a dynamic and growing economy that creates jobs, opportunities and a better quality of life for all Canadians.

## From the President

It is my pleasure to present NSERC's 2020–21 Departmental Plan.

Since 1978, NSERC has played a critically important role in the evolution of natural sciences and engineering research in Canada. As the newly appointed president of this prestigious organization, I am proud to take on the leadership and commitment to support research excellence.

NSERC's Departmental Plan for the coming year articulates our objectives and intended results for making Canadian natural sciences and engineering research internationally competitive, developing a pool of highly skilled people, and ensuring that the results of the research we fund is used for the benefit of all Canadians.



Dr. Alejandro Adem President

In doing so, NSERC will work in collaboration with our partners, the Social Sciences and Humanities Research Council, the Canadian Institutes for Health Research, the Canada Foundation for Innovation and other agencies to provide equitable and inclusive participation in the research system; to support early career researchers and to strengthen Indigenous research capacity in Canada through our Discovery and Research Partnership Programs and policies.

NSERC will contribute to research training and talent development in Canada through our scholarships and programs such as Collaborative Research and Training Experience (CREATE) and PromoScience.

We will work to advance research partnerships through the full implementation of the newly established Alliance Grants to support research projects led by strong, complementary, collaborative teams. We will also increase support for collaborative innovation projects involving businesses, colleges and polytechnics to simplify, streamline and address the changing dynamics of applied research in Canada.

Alejandro Adem

## Plans at a glance

Over the coming year, NSERC will continue to focus on the implementation of the Government of Canada's investments in fundamental and applied research and training and will continue to work with the Social Sciences and Humanities Research Council (SSHRC) and the Canadian Institutes for Health Research (CIHR) to develop and implement policy priorities of the Canada Research Coordinating Committee.

#### **Discovery Research**

- Equity Diversity and Inclusion: provide equitable access to funding opportunities; equitable and inclusive participation in the research system for Canadian researchers; and data and analyses for NSERC decision making informed by equity, diversity and inclusion.
- Early Career Researchers: provide access to funding opportunities designed to support the establishment of academic research careers; develop skills, experience and opportunities; and establish reporting standards to track, monitor and inform decisions.
- Indigenous Research: help mobilize Indigenous knowledge; strengthen Indigenous research capacity in Canada; and identify new actions to be taken in collaboration with Indigenous communities to support research and training.

#### **Research Training and Talent Development**

- Canada Graduate Scholarship Program: with CIHR and SSHRC create 500 more master's level scholarship awards and 167 more three-year doctoral scholarship awards.
- PromoScience: provide sustained focus on youth and their teachers with a particular emphasis on underrepresented groups such as girls and Indigenous youth in science and engineering. It is estimated that about one million young Canadians will be reached on an annual basis.
- Collaborative Research and Training Experience (CREATE): provide opportunities for research trainees to develop technical and professional skills, and gain experience in enriched and varied research environments, including work integrated learning.
- Healthy Cities Research Training Platform: in collaboration with CIHR and SSHRC, select and support one platform to develop an interdisciplinary, inter-sectoral training initiative that will generate cutting-edge knowledge and build science capacity and solutions-based research related to healthy cities.

#### **Research Partnerships**

- In 2020–21, NSERC will fully implement the Alliance Grants, a commitment of over \$60 million in new awards to support research projects led by strong, complementary, collaborative teams that will generate new knowledge and accelerate the application of research results to create benefits for Canada.
- College and Community Innovation: increase support for collaborative innovation projects involving businesses, colleges and polytechnics and engage with stakeholders to identify changes needed to simplify, streamline and address the changing dynamics of applied research in communities and colleges in Canada.

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

# Core responsibilities: planned results and resources, and key risks

This section contains detailed information on the department's planned results and resources for each of its core responsibilities. It also contains information on key risks related to achieving those results.

# Funding Natural Sciences and Engineering Research and Training Description

The Natural Sciences and Engineering Research Council of Canada (NSERC), through grants, fellowships and scholarships, promotes and supports research and research training in the natural sciences and engineering to develop talent, generate discoveries, and support innovation in pursuit of economic and social outcomes for Canadians.

#### **Planning highlights**

## Departmental Result: Canada's natural sciences and engineering research is internationally competitive.

This result is aligned with the Government of Canada's mandate to support innovation ecosystems across the country. NSERC contributes to this mandate by supporting research excellence. The levers to influence this result and its indicators will be primarily delivered through NSERC's funding envelopes and mechanisms. NSERC will continue to support the Minister of Innovation, Science and Industry in his mandate to drive mission-oriented research to address the great challenges of our age, including climate change, clean growth, and a healthy society.

In 2020–21, NSERC will continue to support scientists, engineers and trainees at postsecondary institutions across Canada through its funding opportunities under the Discovery Research Program as well as the Research Training and Talent Development Program and the Research Partnerships Program.

The publication of research results in peer-reviewed journals is one measure of discovery and knowledge generated in the natural sciences and engineering (NSE) in Canada, while the citation of these publications provide a measure of knowledge flow and the influence of Canadian researchers in the NSE. The ranking of Canada among OECD nations on the average citation in the NSE is an indicator of Canada's international competitive strength in NSE research. Based on the most recent data available (2017), Canada ranked 15th among the 35 OECD countries with an Average Relative Citation (ARC) score of 1.30 (Switzerland ranked first with an ARC of 1.72). It should be noted that a small change in the ARC value can lead to a large shift in the ranking of a country.

In 2020–21, NSERC will continue to work with CIHR and SSHRC on the implementation of the Early Career Researcher (ECR) Action Plan. This will include providing access to research funding opportunities designed to support the establishment of ECR's academic research careers, supporting ECRs in developing the required skills, experience and opportunities to establish their research careers, and establishing reporting standards to accurately track, monitor and inform decisions regarding the success of ECRs in academia.

In 2020–21, NSERC will continue its targeted investments in ECRs through the Discovery Launch Supplements<sup>i</sup> initiated in 2018–19. These supplements valued at \$12,500 each, provide timely resources to support ECRs as they establish their research programs and hire students in diverse areas ranging from environmental sciences and agriculture to information and communications technologies.

The new investments from Budget 2018 have also supported the Tri-agency Equity, Diversity and Inclusion (EDI) Action Plan<sup>ii</sup>. In 2020–21, NSERC will continue to work with CIHR and SSHRC on the implementation of the Tri-agency EDI Action Plan. The plan comprises close to two dozen initiatives developed around three key objectives:

- equitable access to funding opportunities
- equitable and inclusive participation in the research system
- data and analyses for decision making informed by equity, diversity and inclusion

Implementation measures in 2020–21 will focus on advancing the inclusion of EDI considerations into research design, and moving towards a more comprehensive understanding of research excellence. Training for review committee members and staff alike will continue in order to establish the agencies as leaders in embedding EDI in research.

In an effort to promote and maintain a diversified base of high-quality research in small universities across Canada, in 2015 NSERC launched the pilot program, Discovery Development Grants<sup>iii</sup>, a complementary program element to the Discovery Grants program<sup>iv</sup>. Given the success of this pilot, NSERC increased the award levels in 2018–19 and, in 2019–20, confirmed that this will be an ongoing initiative. Eligibility for the program has been further expanded for 2020–21.

International collaboration enables Canadian researchers to keep abreast of the latest research results and to leverage international research capacity. It is expected that, by the end of 2020–2021, 47 percent of NSERC-funded research will involve international collaboration. In 2020–21, NSERC will continue to seek opportunities to participate in international funding opportunities and leverage NSERC's investments by providing opportunities for international collaboration. In 2018–19, NSERC became a member of the Belmont Forum<sup>v</sup>, a partnership of funding organizations, international science councils, and regional consortia committed to the

advancement of interdisciplinary science, for understanding, mitigating and adapting to global environmental change. Membership provides greater opportunities to influence the selection of topics for calls for proposals and increase alignment with Canadian research strengths. NSERC will continue to participate in the Belmont Forum annual plenary meeting, providing Canadian context and input to newly proposed Collaborative Research Actions<sup>vi</sup>. NSERC participated in the second Belmont Forum Arctic call on Resilience in Rapidly Changing Arctic Systems<sup>vii</sup> and has set aside \$300,000 per year over three years for this initiative, starting in 2019–20, for Canadian researchers successful in the competition.

The Discovery Frontiers grants support a limited number of large international activities, opportunities or projects that are of high priority in the context of advanced research in Canada. NSERC will launch a process in 2020–21 to identify emerging/current national research priorities and global challenges from the Canadian research community's perspective. This will be drawn upon to choose the topic for the next Discovery Frontiers competition, to be held in 2021–22.

NSERC will also continue to engage Canadian government departments and research organizations to support scientists and engineers as they engage in research in Canada's traditionally strong industries – including, but not limited to, automotive, aerospace and agrifood – to increase productivity and innovation, especially as we transition to a low-carbon economy. In partnership with CIHR and SSHRC, NSERC made a special call for proposals on Artificial Intelligence, Health and Society<sup>viii</sup> through the Collaborative Health Research Projects program. NSERC also formed a number of collaborations with other government departments, including the Whales Science for Tomorrow<sup>ix</sup> initiative with the Department of Fisheries and Oceans and the Advancing Climate Change Science in Canada<sup>x</sup> initiative with Environment and Climate Change Canada. These initiatives are in addition to the ongoing joint Research Partnership grant and Discovery Research supplements with the Department of National Defence.

In 2020–21, NSERC will continue to work in collaboration with the SSHRC and CIHR to support the Canada Research Coordinating Committee (CRCC), which aims to improve collaboration, co-ordination and harmonization among the granting agencies and the Canada Foundation for Innovation<sup>xi</sup> (CFI) to the benefit of researchers and research trainees across Canada. NSERC will also continue to support CRCC priorities of building Canadian capacity to identify and respond to emerging areas of research, such as the Arctic, antimicrobial resistance and quantum computing, developing a research strategy with Indigenous communities, and supporting the development of early career researchers (ECR).

## Departmental Result: Canada has a pool of highly skilled people in the natural sciences and engineering.

NSERC supports the government of Canada's commitment to promoting gender equity, diversity and inclusion in the Sciences. Through its funding opportunities, NSERC supports the attraction, retention and development of highly qualified and skilled people in the NSE in Canada. By providing grants and scholarships, NSERC helps build the human capital required to enable a strong, globally competitive research and innovation system in Canada. Researchers, students and young people benefit from the grant, scholarship and award funding, which supports postsecondary university research and training as well as some outreach activities at universities, museums, science centres, and community-based organizations. NSERC currently supports over 37,700 students and postdoctoral fellows. As a result of increased support from Budget 2018, it is anticipated that until the end of 2022–23 this number will increase by 2,500 per year. Over the course of the coming year, NSERC, in collaboration with CIHR and SSHRC, will explore new measures to contribute to the development of talent in Canada. A particular focus will be given to improve training opportunities for agency-supported doctoral students and Postdoctoral Fellows, with a view to ensuring their successful transition to research careers inside and outside academia and ensure greater retention and utilization of postdoctoral fellows in the research enterprise.

NSERC will continue its national leadership of science and engineering promotion in Canada. Promoting an understanding of science, technology, engineering and mathematics (STEM) to young Canadians may encourage them to study the NSE at the post-secondary level. NSERC will continue its partnerships with like-minded organizations to support Science Odyssey<sup>xii</sup> and Science Literacy Week<sup>xiii</sup>.

In 2020–21, NSERC will continue to deliver its PromoScience grants<sup>xiv</sup> in STEM fields, with a sustained focus on science teachers and on underrepresented groups such as girls and Indigenous youth. It is estimated that about one million young Canadians will be reached on an annual basis. To increase the reach of the PromoScience program, NSERC will implement a two-year Science Communication Skills grant pilot program that will allow non-profit science promotion organizations to offer science communication skills to students and professors.

To further strengthen the promotion of STEM fields to Canadian youth, in 2020–21, NSERC will continue to deliver two programs launched in 2018 that utilize the micro-funding instrument promoted by Treasury Board (for payments of up to \$1,000). The NSERC Student Ambassadors program<sup>xv</sup> addresses a gap in engaging youth to mentor other young Canadians by carrying out STEM outreach activities directed at underrepresented youth groups. The NSERC Young Innovators program<sup>xvi</sup> addresses a gap in participation in STEM-related competitions at the regional, national and international levels, by supporting the participation of individuals in such competitions. In 2020–21, NSERC will dedicate up to \$400,000 to fund up to 400 young

Canadian STEM ambassadors or competition participants through these two programs. The measurement of outcomes for these grants is limited to individuals and organizations sharing the results publicly.

In partnership with Ingenium Foundation, NSERC will continue to deliver the Ingenium-NSERC STEAM Horizon Awards<sup>xvii</sup> in 2020–21. These five awards given annually (two specifically to eligible Indigenous students) promote the fields of science, technology, engineering, art and design, and mathematics (STEAM) to the next generation of scientists and engineers. The award will be given to individuals who clearly demonstrate inspiring achievements in these fields by applying their passion to have an impact on their community.

Through its scholarship, fellowship and grant funding opportunities, NSERC will continue to support the development of highly qualified people who are "marketplace-ready" in the NSE. NSERC aims for 30 percent of its supported research trainees to gain industrial experience in 2020–21. NSERC will continue to deliver the Collaborative Research and Training Experience<sup>xviii</sup>(CREATE) funding opportunity, which provides enhanced opportunities for research trainees to develop technical and professional skills, and to gain experience in enriched and varied research environments, including work-integrated learning. These actions align with the government priority of helping employers create more co-op placements for students in STEM fields. CREATE will also continue to support international and multidisciplinary research through partnership with the German Research Foundation DFG<sup>xix</sup>, and by allowing CREATE initiatives to involve researchers from the social and health sector.

In 2019–20 NSERC, in collaboration with CIHR and SSHRC, launched a Healthy Cities Research Training Platform<sup>xx</sup> to develop an interdisciplinary, inter-sectoral training initiative that will generate cutting-edge knowledge and build capacity for the implementation of science and solutions-based research related to healthy cities. In 2020–21, one platform will be selected and supported at the level of \$5 million over six years.

As part of Budget 2019, new funding was awarded through the federal research granting agencies to help more students access graduate studies and further improve equity, diversity and inclusion in the research ecosystem. This investment includes \$114 million over five years, starting in 2019–20, to create 500 more master's level scholarship awards and 167 more three-year doctoral scholarship awards annually through the Canada Graduate Scholarship Program<sup>xxi</sup>. With these additional funds, NSERC will continue to provide direct support to the students. In addition, based on the recommendations stemming from the Scholarships and Fellowships Study and the Horizontal Skills Review, NSERC will consider potential program refinements in 2020 for its scholarships and fellowships programs.

As part of ongoing implementation of the Tri-agency EDI Action Plan, in 2020–21 NSERC will continue to work with CIHR and SSHRC on updating the questionnaire for collection of self-

identification information, establishing reporting standards to provide coordinated publication of program participation and success rates, and apply Gender-based Analysis Plus (GBA+) across all programs. In addition, continued implementation of the Dimensions pilot program<sup>xxii</sup> will help facilitate a postsecondary transformation to increase equity, diversity and inclusion, and help drive deeper cultural change within the research ecosystem.

In response to the Truth and Reconciliation Commission's Calls to Action, CRCC has also prioritized working with First Nations, Inuit and Métis communities to help mobilize Indigenous knowledge and strengthen Indigenous research capacity in Canada. Under the direction of four priority areas outlined in the three-year strategic plan entitled Strengthening Indigenous Research Capacity (SIRC), NSERC and the other granting agencies will build on ongoing work in this area, as well as identify new actions to be taken in collaboration with Indigenous communities to support research and training.

## Departmental Result: Canada's natural sciences and engineering research knowledge is used.

This result aims to mobilize knowledge generated through the transformation of Canada's NSE research into results for the benefit of all Canadians.

NSERC will support the Minister of Innovation, Science and Industry's mandate to help Canadian businesses innovate and grow so that they can create good quality jobs and wealth for Canadians. Through its research partnerships funding opportunities, NSERC will support innovation ecosystems across the country, particularly those based on partnerships between businesses and postsecondary institutions, to support job creation, technology adoption, investment and scale-up. NSERC-funded researchers, through Research Partnerships funding, work with over 3,700 partners every year from industry, non-profit, government and other organizations. These collaborations build on strong discovery research to mobilize knowledge that allows Canada to address complex challenges, generate economic benefits and support evidence-based decision making. In 2018–19, the Research Partnerships Program leveraged over \$269 million of cash and in-kind contributions from industry and non-profit sectors to enable researchers to advance scientific knowledge, address real world challenges, and connect people and skills.

In December 2018, the Government of Canada announced that funding from the Networks of Centres of Excellence<sup>xxiii</sup> (NCE) program will be gradually transferred to the New Frontiers in Research Fund<sup>xxiv</sup>. In 2020–21, NSERC will continue its work in supporting this transition, with a complete wind-down of the NCE suite of programs by 2023–24.

In Budget 2018, the Government of Canada also called for changes to streamline and modernize programs in support of research and innovation. As a result, the Government announced the consolidation of the Centres of Excellence for Commercialization and Research<sup>xxv</sup> (CECR) and the Business-led Networks of Centres of Excellence<sup>xxvi</sup> with the Strategic Innovation Fund

managed by Innovation, Science and Economic Development Canada (ISED). In 2020–21, NSERC will continue to work with ISED to implement these changes with minimal disruption to currently funded organizations.

Alliance grants<sup>xxvii</sup> were created in compliance with the 2018 Federal Budget directive to simplify, modernize and improve funding opportunities that are available to support research partnerships. It replaces six prior partnership programs resulting in a single point of entry to encourage and support university researchers to collaborate with a broader range of partner organizations. These grants support research projects led by strong, complementary, collaborative teams that will generate new knowledge and accelerate the application of research results to create benefits for Canada. In 2020–21, NSERC will fully implement the Alliance grants, a commitment of over \$60 million in new awards in the program. The program will incentivize research carried out in collaboration with small- and medium-sized enterprises, industrial value chains, and multi-sectoral partnerships, and will also recognize the necessity of supporting high-risk, early-stage research carried out in collaboration with simplified program will offer Canadian researchers and their non-academic partners a single point of entry to develop and grow research collaborations which benefit Canada.

NSERC will support projects that involve all the partners required to achieve not only research outputs, but also to successfully mobilize research results for economic and/or socio-economic impact. The Program will place emphasis on the synergistic added value of the collaboration between university researchers and their non-academic partners, and will place emphasis on the research outcomes of NSERC's research investments. Proposals will need to demonstrate the value-added aspect of the partnership: how the contributions of the partners are essential to the execution of the research project and how knowledge mobilization and utilization will be accelerated. This will include strategies for achieving the stated outcomes, for example, novel partnership approaches that accelerate research towards new knowledge and/or incorporating all relevant partners whose mission or mandate is to use the research results. The criteria have been designed to favor projects with a strong likelihood that the research results will be used and lead to impact for the partners and for Canada.

Applicants will also be asked to consider sex, gender and diversity in the project's research design as well as among the group of co-applicants, collaborators and trainees. Project plans will be encouraged to promote and support a variety of forms of mentoring to ensure trainees' equitable participation and growth.

In 2020–21, NSERC will continue to invest the new funds allocated in Budget 2018 (\$140 million over five years) to increase support for collaborative innovation projects involving businesses, colleges and polytechnics through the College and Community Innovation<sup>xxviii</sup> Program, a tri-agency program managed by NSERC, and will continue to engage with

stakeholders to identify changes needed to simplify, streamline and address the changing dynamics of applied research in communities and colleges in Canada.

#### Gender-based analysis plus (GBA+)

Through the coordinated work of the three agencies (NSERC, SSHRC and CIHR), key initiatives outlined in the Tri-agency EDI Action Plan will continue to be implemented, including the mandatory GBA+ training for program and policy staff, with 52% of the targeted workforce having completed the training as of March 2019. In 2018–19, 33% of all NSERC award holders were women. In competition year 2019, both the Discovery Grants and Scholarships and Fellowships core program literature were updated, requiring applicants to indicate how sex, gender and diversity considerations are taken into account in their proposed research design.

#### **Key Risks**

#### **Resource management**

There is a risk that resources (i.e., human, technological, and financial) will be insufficient or inappropriately allocated to support program design and delivery. To mitigate this risk, NSERC will develop and implement a Resource Management Plan, including a workforce management plan and skills matrix to ensure effective implementation of the key activities highlighted above.

#### **Change management**

There is a risk that NSERC's change management processes will not allow the agency to effectively plan for, implement, and sustain transformations to the organization, employees, and research community. To mitigate this risk, NSERC will continue to implement corporate initiatives including:

- People Strategy Action Plan
- Mental Health and Wellness Strategy
- Employment Equity Plan
- Ongoing engagement with staff and management
- Dedicated change management resources to major corporate initiatives

Risks related to challenges for inter-agency coordination in delivering complex EDI and other initiatives on tight timelines have also been identified. NSERC will mitigate these risks by devoting additional effort and resources towards inter-agency coordination, governance, and ongoing communication and coordination among systems, processes and data collection and reporting.

Planned	Results	for F	unding	Natural	Sciences	and	Engineering	Research	and
Training									

Departmental result	Departmental result indicator	Target	Date to achieve target	2016–17 actual result	2017–18 actual result	2018–19 actual result
Canada's natural sciences and engineering research is internationally competitive	Canada's rank among OECD nations on the citation score of natural sciences and engineering research publications	15	March 31, 2021	22	15*	N/A
	Percentage of funded research involving international collaboration	47	March 31, 2021	56	47**	N/A
Canada has a pool of highly skilled people in the natural	Proportion of award holders who are underrepresented individuals	30	March 31, 2021	28.4	28.5	33
engineering	Number of research trainees supported	33,000	March 31, 2021	33,400	34,400	37,700
	Percentage of research trainees supported gaining industrial experience	30	March 31, 2021	31.4	28.5	36.3
	Percentage of previously funded research trainees that go on to work in a research position	67	March 31, 2021	66	N/A	80
Canada's natural sciences and engineering research knowledge is	Partner funding for research projects	\$225M	March 31, 2021	\$220M	\$248M	\$269M
	Number of partners on research projects	3,700	March 31, 2021	3,610	3,710	3,760
usea	Percentage of funded projects reporting socioeconomic outcomes for Canadians	55	March 31, 2021	47	51	52

**Notes**: \* Methodology to calculate the result updated to include more journals with publications acknowledging NSERC as funder. This methodological change had a marginal impact on the rating.

\*\* Methodology to calculate the result updated to include NSERC-acknowledged papers only, rather than all papers in the Natural Science and Engineering fields of study.

Financial, human resources and performance information for NSERC's Program Inventory is available in the GC InfoBase.<sup>xxix</sup>

Planned budgetary financial resources for Funding Natural Sciences and Engineering Research and Training

2020–21 budgetary spending (as indicated in Main Estimates)	2020–21 planned spending	2021–22 planned spending	2022–23 planned spending
\$1,341,810,544	\$1,341,810,544	\$1,355,799,029	\$1,300,487,653

Financial, human resources and performance information for NSERC's Program Inventory is available in the GC InfoBase.<sup>xxx</sup>

Planned human resources for Funding Natural Sciences and Engineering Research and Training

2020–21	2021–22	2022–23
planned full-time equivalents	planned full-time equivalents	planned full-time equivalents
299	297	295

Financial, human resources and performance information for NSERC's Program Inventory is available in the GC InfoBase.<sup>xxxi</sup>

## Internal Services: planned results

#### Description

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

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

#### **Planning highlights**

**Compliance and Alignment** – NSERC will continue to ensure alignment and compliance with Government of Canada priorities, policy requirements, and transformation initiatives. This includes updating our internal policies and practices to reflect changes to the Treasury Board Policy Suite, as well as preparing for our upcoming transitions to new GC HR and financial management systems.

**Workplace Renewal** – GCworkplace is a Government of Canada workplace transformation initiative aiming at retooling work environments to encourage collaboration, using technology in smarter ways, and fostering a culture of health and well-being. In 2020–21, NSERC will prepare to move to a new location and align with the current Government of Canada fit-up standard. We will use this transition as an opportunity to modernize our work tools and information management practices, as well as position employees to maximize effectiveness/efficiency.

**Enabling our Workforce** – Recognizing that achieving results depends on the organization's skilled and dedicated staff, NSERC will integrate and update the existing suite of people management strategies and action plans. The focus will be on developing a safe and equitable workplace in which employees are supported to reach their full potential.

**Tri-Agency Grants Management Solution (TGMS)** – The three agencies' existing grants management systems are limited in their capacity to adapt to the changing needs of the research community and the agencies' evolving business needs. By developing one user-centric grants management platform, there is an opportunity to modernize grants management and meet the

standards of excellence that the Canadian research community and Tri-agency staff expect in terms of efficiency, interoperability, accessibility, and usability. In 2020–21, TGMS will begin the third year of its Discovery Phase, which is expected to culminate with the selection of an industry partner, and the necessary Treasury Board project, expenditure, and contract authorities to proceed to the implementation phase.

Planned budgetary financial resources for Internal Services

2020–21 budgetary spending (as indicated in Main Estimates)	2020–21 planned spending	2021–22 planned spending	2022–23 planned spending
\$23,505,390	\$23,505,390	\$23,163,807	\$22,114,427

#### Planned human resources for Internal Services

2020–21	2021–22	2022–23
planned full-time equivalents	planned full-time equivalents	planned full-time equivalents
156	156	155

## Spending and human resources

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

## Planned spending

Departmental spending 2017-18 to 2022-23

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



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

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

Core responsibilities and Internal Services	2017–18 expenditures	2018–19 expenditures	2019–20 forecast spending	2020–21 budgetary spending (as indicated in Main Estimates)	2020–21 planned spending	2021–22 planned spending	2022–23 planned spending
Funding Natural Sciences and Engineering Research and Training	\$1,198,380,206	\$1,306,959,366	\$1,334,553,719	\$1,341,810,544	\$1,341,810,544	\$1,355,799,029	\$1,300,487,653
Subtotal	\$1,198,380,206	\$1,306,959,366	\$1,334,553,719	\$1,341,810,544	\$1,341,810,544	1,355,799,029	\$1,300,487,653
Internal Services	\$20,761,682	\$23,015,594	\$24,139,551	\$23,505,390	\$23,505,390	\$23,163,807	\$22,114,427
Total	\$1,219,141,888	\$1,329,974,960	\$1,358,693,270	\$1,365,315,934	\$1,365,315,934	\$1,378,962,836	\$1,322,602,080

The decrease in 2020–21 and following years is mainly due to gradually transferring the Centres of Excellence for Commercialization and Research program and Business-Led Networks of Centres of Excellence program to ISED under the Strategic Innovation Fund.

### Planned human resources

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

Core responsibilities and Internal Services	2017–18 actual full-time equivalents	2018–19 actual full-time equivalents	2019–20 forecast full-time equivalents	2020–21 planned full-time equivalents	2021–22 planned full-time equivalents	2022–23 planned full-time equivalents
Funding Natural Sciences and Engineering Research and Training	284	284	300	299	297	295
Subtotal	284	284	300	299	297	295
Internal Services	138	147	156	156	156	155
Total	422	431	456	455	453	450

Human resources planning summary for core responsibilities and Internal Services

The decrease in FTEs starting 2020–21 is mainly due to gradually transferring the Centres of Excellence for Commercialization and Research program and Business-Led Networks of Centres of Excellence program to ISED under the Strategic Innovation Fund.

## Estimates by vote

Information on NSERC's organizational appropriations is available in the 2020–21 Main Estimates.<sup>xxxii</sup>

### Condensed future-oriented statement of operations

The condensed future-oriented statement of operations provides an overview of NSERC's operations for 2019–20 to 2020–21.

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

A more detailed future-oriented statement of operations and associated notes, including a reconciliation of the net cost of operations to the requested authorities, are available on NSERC's website<sup>xxxiii</sup>.

Condensed future-oriented statement of operations for the year ending March 31, 2021 (dollars)

Financial information	2019–20 forecast results	2020–21 planned results	Difference (2020–21 planned results minus 2019–20 forecast results)
Total expenses	1,372,752,358	1,373,464,130	711,772
Total revenues	178,779	178,779	-
Net cost of operations before government funding and transfers	1,372,573,579	1,373,285,351	711,772

Total expenses are expected to increase by 0.05% (\$0.7 million).

Revenues are expected to remain steady in the next fiscal year.

## Corporate information

### Organizational profile

Appropriate minister:	Minister of Innovation, Science and Industry		
	The Honourable Navdeep Bains, P.C., M.P.		
Institutional head:	Dr. Alejandro Adem (President)		
Ministerial portfolio:	Innovation, Science and Economic Development		
Enabling instrument(s):	Natural Sciences and Engineering Research Council Act <sup>xxxiv</sup>		
Year of incorporation / co	mmencement: May 1, 1978		

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

"Raison d'être, mandate and role: who we are and what we do" is available on NSERC's website.

For more information on the department's organizational mandate letter commitments, see the "Minister's mandate letter".

#### Operating context

Information on the operating context is available on NSERC's website.

## Reporting framework

NSERC's approved Departmental Results Framework and Program Inventory for 2020–21 are as follows.

	Core Res Funding Natural Scien	<b>ponsibility:</b> ces and Engineering Research and	
Departmental Results Framework	<b>Departmental Result:</b> Canada's natural sciences and engineering research is	<b>Indicator:</b> Canada's rank among OECD nations on the citation score of natural sciences and engineering research publications	al Services
	internationally competitive	<b>Indicator:</b> Percentage of funded research involving international collaborations	Intern
	<b>Departmental Result:</b> Canada has a pool of highly skilled people in the natural sciences and engineering	<b>Indicator:</b> Proportion of award holders who are underrepresented	
		<b>Indicator:</b> Number of research trainees supported	
		<b>Indicator:</b> Percentage of research trainees supported gaining industrial experience	
		<b>Indicator:</b> Percentage of previously funded research trainees that go on to work in a research position	
	Departmental Result:	<b>Indicator:</b> Partner funding for research projects	
	Canada's natural sciences and engineering research knowledge is used	<b>Indicator:</b> Number of partners on research projects	
		<b>Indicator:</b> Percentage of funded projects reporting socioeconomic outcomes for Canadians	



## Supporting information on the program inventory

Supporting information on planned expenditures, human resources, and results related to NSERC's Program Inventory is available in the GC InfoBase.<sup>xxxv</sup>

## Supplementary information tables

The following supplementary information tables are available on NSERC's website:

- Departmental Sustainable Development Strategy
- Details on transfer payment programs
- Gender-based analysis plus

## Federal tax expenditures

NSERC's Departmental Plan does not include information on tax expenditures that relate to its planned results for 2020–21.

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

## Organizational contact information

#### **Mailing address**

#### NSERC

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Email: sorin.seruna@nserc-crsng.gc.ca

Website: https://www.nserc-crsng.gc.ca/index\_eng.asp

## Appendix: definitions

#### appropriation (crédit)

Any authority of Parliament to pay money out of the Consolidated Revenue Fund.

#### budgetary expenditures (dépenses budgétaires)

Operating and capital expenditures; transfer payments to other levels of government, organizations or individuals; and payments to Crown corporations.

#### core responsibility (responsabilité essentielle)

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

#### Departmental Plan (plan ministériel)

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

#### departmental priority (priorité ministérielle)

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

#### departmental result (résultat ministériel)

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

#### departmental result indicator (indicateur de résultat ministériel)

A factor or variable that provides a valid and reliable means to measure or describe progress on a departmental result.

#### departmental results framework (cadre ministériel des résultats)

A framework that consists of the department's core responsibilities, departmental results and departmental result indicators.

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

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

#### experimentation (expérimentation)

The conducting of activities that seek to first explore, then test and compare, the effects and impacts of policies and interventions in order to inform evidence-based decision making, and

improve outcomes for Canadians, by learning what works and what doesn't. Experimentation is related to, but distinct form innovation (the trying of new things), because it involves a rigorous comparison of results. For example, using a new website to communicate with Canadians can be an innovation; systematically testing the new website against existing outreach tools or an old website to see which one leads to more engagement, is experimentation.

#### full-time equivalent (équivalent temps plein)

A measure of the extent to which an employee represents a full person-year charge against a departmental budget. Full-time equivalents are calculated as a ratio of assigned hours of work to scheduled hours of work. Scheduled hours of work are set out in collective agreements.

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

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

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

For the purpose of the 2020–21 Departmental Plan, government-wide priorities refers to those high-level themes outlining the government's agenda in the 2015 Speech from the Throne, namely: Growth for the Middle Class; Open and Transparent Government; A Clean Environment and a Strong Economy; Diversity is Canada's Strength; and Security and Opportunity.

#### horizontal initiative (initiative horizontale)

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

#### non-budgetary expenditures (dépenses non budgétaires)

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

#### performance (rendement)

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

#### performance indicator (indicateur de rendement)

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

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

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

#### plan (plan)

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

#### planned spending (dépenses prévues)

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

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

#### program (programme)

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

#### program inventory (répertoire des programmes)

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

#### result (résultat)

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

#### statutory expenditures (dépenses législatives)

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

#### strategic outcome (résultat stratégique)

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

#### target (cible)

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

#### voted expenditures (dépenses votées)

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

## Endnotes

- i. Discovery Launch Supplements, https://www.nserc-crsng.gc.ca/Professors-Professeurs/Grants-Subs/Dis-Sup\_eng.asp
- ii. Tri-agency Equity, Diversity and Inclusion (EDI) Action Plan, https://www.nserc-crsng.gc.ca/NSERC-CRSNG/EDI-EDI/Action-Plan\_Plan-dAction\_eng.asp
- iii. Discovery Development Grants, https://www.nserc-crsng.gc.ca/Professors-Professeurs/Grants-Subs/DiscoveryPilot-DecouvertePilote\_eng.asp
- iv. Discovery Grants program, https://www.nserc-crsng.gc.ca/Professors-Professeurs/Grants-Subs/DGIGP-PSIGP\_eng.asp
- v. Belmont Forum, http://www.belmontforum.org/
- vi. Collaborative Research Actions, https://www.belmontforum.org/cras/
- vii. Resilience in Rapidly Changing Arctic Systems, https://formas.se/en/start-page/archive/calls/2019-02-21-arctic-research---resilience-in-rapidly-changing-arctic-systems.html
- viii. Artificial Intelligence, Health and Society, https://www.sshrc-crsh.gc.ca/news\_roomsalle\_de\_presse/latest\_news-nouvelles\_recentes/2018/ai\_health\_society-ia\_sante\_societe-eng.aspx
- ix. Whales Science for Tomorrow, https://www.nserc-crsng.gc.ca/Professors-Professeurs/RPP-PP/Whale-Baleines\_eng.asp
- x. Advancing Climate Change Science in Canada, https://www.nserc-crsng.gc.ca/Professors-Professeurs/RPP-PP/ACCSC-SARCCC\_eng.asp
- xi. Canada Foundation for Innovation, https://www.innovation.ca/
- xii. Science Odyssey, http://www.sciod.ca/
- xiii. Science Literacy Week, http://www.scienceliteracy.ca/
- xiv. PromoScience grants, https://www.nserc-crsng.gc.ca/Promoter-Promotion/PromoScience-PromoScience/About-Apropos\_eng.asp
- xv. Student Ambassadors program, https://www.nserc-crsng.gc.ca/Students-Etudiants/UG-PC/Ambassadors-Ambassadeurs\_eng.asp
- xvi. NSERC Young Innovators program, https://www.nserc-crsng.gc.ca/Promoter-Promotion/YI-JI\_eng.asp
- xvii. Ingenium-NSERC STEAM Horizon Awards, https://www.nserc-crsng.gc.ca/Students-Etudiants/UG-PC/STEAM-STIAM\_eng.asp
- xviii. Collaborative Research and Training Experience, https://www.nserc-crsng.gc.ca/Professors-Professeurs/Grants-Subs/CREATE-FONCER\_eng.asp
- xix. German Research Foundation DFG, https://www.dfg.de/en/
- xx. Healthy Cities Research Training Platform, https://www.sshrc-crsh.gc.ca/news\_roomsalle\_de\_presse/latest\_news-nouvelles\_recentes/2019/healthy\_cities-villes\_en\_sante-eng.aspx
- xxi. Canada Graduate Scholarship Program, https://www.nserc-crsng.gc.ca/Students-Etudiants/PG-CS/CGSD-BESCD\_eng.asp
- xxii. Dimensions pilot program, https://www.nserc-crsng.gc.ca/NSERC-CRSNG/EDI-EDI/Dimensions-Program\_Programme-Dimensions\_eng.asp
- xxiii. Networks of Centres of Excellence, http://www.nce-rce.gc.ca/Index\_eng.asp
- xxiv. New Frontiers in Research Fund, https://www.sshrc-crsh.gc.ca/funding-financement/nfrf-fnfr/indexeng.aspx
- xxv. Centres of Excellence for Commercialization and Research, http://www.nce-rce.gc.ca/programsprogrammes/cecr-cecr/index\_eng.asp
- xxvi. Business-led Networks of Centres of Excellence, http://www.nce-rce.gc.ca/Programs-Programmes/BLNCE-RCEE/Index\_eng.asp
- xxvii. Alliance grants, http://www.nserc-crsng.gc.ca/Innovate-Innover/alliance-alliance/index\_eng.asp
- xxviii. College and Community Innovation, https://www.nserc-crsng.gc.ca/Professors-Professeurs/RPP-PP/Info-Info\_eng.asp
- xxix. GC InfoBase, https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html#start
- xxx. GC InfoBase, https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html#start
- xxxi. GC InfoBase, https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html#start
- xxxii. 2018–19 Main Estimates, https://www.canada.ca/en/treasury-board-secretariat/services/planned-government-spending/government-expenditure-plan-main-estimates.html
- xxxiii. NSERC's website, https://www.nserc-crsng.gc.ca/NSERC-CRSNG/Reports-Rapports/plans-plans\_eng.asp

- xxxiv. Natural Sciences and Engineering Research Council Act, http://laws.justice.gc.ca/eng/acts/N-21/
- $xxxv. \quad GC\ InfoBase,\ https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html \# start$
- xxxvi. Report on Federal Tax Expenditures, http://www.fin.gc.ca/purl/taxexp-eng.asp