National Research Council Canada

2019–20

Departmental Plan

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

The Honourable Kirsty Duncan, P.C., M.P.
Minister of Science and Sport

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Departmental Plan 2019-20
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Ministers' message

It is our pleasure to present the 2019–20 Departmental Plan for the National Research Council of Canada. We are working across the Innovation, Science and Economic Development Portfolio to support and develop the innovation ecosystem, strengthen science to support evidence-based decision making, champion the tourism sector, and help small businesses start up and scale up.

The "re-imagined" National Research Council of Canada has become the collaborative platform Canada needs to convene teams of the best innovators and researchers to deliver solutions to national challenges. Meanwhile, its expanded innovation programming continues to help high potential SMEs to scale-up and establish global brands more quickly.

By positioning itself at the intersection of science and business, the NRC has become an ideal training ground for tomorrow's innovators, providing 230 students, post-doctoral fellows and research associates with real-world training opportunities last year.

Ultimately, the Portfolio's work will create the right environment to generate ideas, commercialize those ideas, and give Canadians the skills to access the jobs and opportunities presented by today's economy.

Together with Canadians of all backgrounds, regions and generations, we are building a strong culture of innovation to position Canada as a leader in the global economy.

The Honourable Navdeep Bains
Minister of Innovation, Science and Economic Development
Mandate Letter[i]

The Honourable Kirsty Duncan
Minister of Science and Sport
Mandate Letter[ii]

President's message

In 2018-19, we introduced our vision for a "re-imagined NRC", in alignment with ministerial direction from my renewed mandate[iii] (September 2018) and the Innovation and Skills Plan. With support and funding from Budget 2018, this vision aspires to research excellence; greater and more meaningful collaborations; growing firms to scale; on-going renewal of our workforce; relationships and infrastructure; and bringing an impact in areas that matter to Canadians.

The following key areas for 2019-20 will enable us to advance our new vision:

- **Strengthen, celebrate and incent scientific excellence, including re-evaluating how we measure success.** Our newly appointed Departmental Science Advisor, Dr. Danial Wayner, will play an important role in advancing research excellence and collaboration. Our recently-launched competitive Ideation Fund will provide our researchers with resources and time to pursue self-directed research in collaboration with partners. New internal expert advisors and committees will increase the amount and quality of science and research advice and direction available to us, our collaborators and the Government of Canada.
- **Collaboratively deliver innovative solutions that address national challenges.** We will target collaborative research and development (R&D) initiatives that can solve some of Canada's most pressing socio-economic and health-related challenges while other initiatives will remain focused on supporting Canadian business-led Superclusters in priority areas. We will also deepen partnerships with some of Canada's most exciting research organizations through Collaboration Centres and set new directions for the NRC through our four challenge programs in Novel Materials for Clean and Sustainable Energy, High-throughput and Secure Networks, Health technologies in engineered cell and gene therapies, and Artificial Intelligence (AI) Assisted Design. New funding provided by Budget 2018 will enable the Industrial Research Assistance Program (IRAP) to expand its service offerings for helping innovative companies start up, thrive and grow in Canada and expand their international markets.
- **Focus on activities that have an impact in the areas of growing firms and business innovation, supporting government mandates, and advancing scientific knowledge.** We will work with partners in areas that matter to Canadians and will align with Government of Canada priorities. We will set a solid foundation for measuring, tracking and reporting on our results for clients and Canada.
- **Enhance our internal culture and physical workplace, striving to become an employer of choice.** We will develop and launch a Human Resources Strategy,

addressing equity, diversity, inclusion, and talent development. We will also continue to focus on providing more students and new graduates with the practical skills and training they need to launch their careers.

- **Strengthen foundational tools and systems that staff need to strive for excellence.** In addition to participating in the Federal Science and Technology Infrastructure Initiative (FSTII), we will renew our facilities informed by the three-year review of facilities and real property. We will also remain focused on increasing efficiency by reducing internal administrative burdens and investing to enhance IT infrastructure.

Mr. lain Stewart
President
National Research Council Canada
Mandate Letter from the Ministers[iii]

Plans at a glance and operating context

Canada's Innovation and Skills Plan[iv] is the government's new micro-economic framework to drive growth – one that aims to succeed by building a culture of innovation and a globally-recognized brand as one of the most innovative and competitive countries in the world. It features high profile initiatives including the Innovation Superclusters Initiative[v] (Digital Technology, Protein Industries, Advanced Manufacturing, Artificial Intelligence (AI)-Powered Supply Chains (SCALE.AI), and Ocean); Innovative Solutions Canada[vi] to help scale-up and grow Canadian small to medium enterprises (SMEs) through public procurement; and the Impact Canada Fund[vii] to help solve Canada's big challenges such as clean technologies to mitigate climate change. The Innovation and Skills Plan emphasizes partnerships that bring together stakeholders from across the innovation system. It embraces inclusivity and fosters the participation of traditionally underrepresented groups in the innovation economy.

In alignment with the Innovation and Skills Plan, the organization's new vision of a re-imagined NRC, which contributes to "a better Canada and world through excellence in research and innovation" was embraced by the Ministers in 2018. Budget 2018 gave the NRC support and new funding of $258M per year to make this vision a reality in the daily science, technology and innovation work of the NRC.

These initiatives provide the backdrop against which the NRC's President was mandated by the Ministers[iii] in September 2018 to continue implementing the NRC's Dialogue Action Plan[viii] to make the organization a valued collaborative partner and enable it to provide superior support for science and innovation excellence. It is in this context that the NRC reaffirmed the following priorities for 2019-20.

Enabling Canada's Innovation and Skills Plan

In support of the federal government's vision for Canada to be a global leader in innovation, anchored by Canada's Innovation and Skills Plan, the NRC will increase business innovation support and advice through its Industrial Research and Assistance Program (IRAP). This will be done through increased cooperation with other government innovation support programs and by augmenting or adding service offerings. Likewise, the scope and reach of the NRC's R&D activities will be enhanced through increased collaboration with partners to assist clients in achieving global stature and competitiveness. Collaboration and engagement are dominant themes throughout the NRC's plans for 2019-20. This will allow the NRC to support, integrate, leverage and focus the skills and capabilities of academic, public and private stakeholders and clients to achieve maximum benefit in solving challenges of national scale. By making this a priority, the NRC will increase access to its equipment and facilities, and strengthen innovation excellence and commercialization. The NRC will also increase its outreach and active support to the Superclusters identified in the Innovation Superclusters Initiative. This includes, for example,

working with the Advanced Manufacturing Supercluster[ix] to position Canada as a global leader in next-generation manufacturing capabilities and innovative technologies such as advanced robotics and 3D printing.

Science and Research Excellence

The NRC Dialogue Action Plan builds the foundation for fostering domestic and global excellence in everything that the NRC does. In implementing this Plan, the NRC will continue implementing a $6M annual Ideation Fund, funded through Budget 2018, to support creative exploratory research, and more importantly, to foster a work environment and collaborations where creativity and research excellence are valued and recognized. The NRC President will be advised on research excellence by the newly-formed President's Research Excellence Advisory Committee, supported by the newly-created President's Science Advisor, and the recently-appointed NRC Departmental Science Advisor.

Guided by its "Five Year Strategic Plan 2019-2024" to be released in 2019-20, the NRC will seek to maximize the impact of its diverse research expertise and resources by opening up its programs for greater collaboration, designing unique large-scale R&D initiatives and focusing on developing disruptive (i.e., game-changing) R&D technologies, in areas such as advanced manufacturing, digital and quantum science, and clean growth. The strategic plan will outline the broad areas in which the NRC will expand its research capabilities over the next five years to address future public policy challenges that touch on the health, safety and environment of Canadians. In addition, NRC activities will be strategically aligned to accelerate business growth through innovation, improved productivity and supporting the scale-up of high growth firms.

In support of Budget 2018 and its Strategic plan, the NRC will build upon work started in 2018-19 to address national challenges through the design and launch of four large-scale collaborative R&D initiatives: health (engineered cell and gene therapies); the environment (advanced materials for energy); high throughput and secure communications for rural and remote communities; and artificial intelligence (AI) in support of design applied to these other initiatives.

Managing Talent and Resources Effectively

The NRC will work to fulfill the potential of all employees through a focus on professional development and leadership that empowers staff, recognizes the value of diversity and applies a lens of inclusivity to all that the NRC does. For example, the NRC will implement its Equity, Diversity and Inclusion Strategy to increase diversity of the workforce and foster a more inclusive work environment. Targets will be established, as well as implementation of training and focused recruitment initiatives. To promote engagement, development and well-being of its workforce, the NRC will begin to implement the Corporate Wellness Strategy and Leadership Development Framework that it established in 2018-19.

In support of these strategies, the NRC will continue to implement initiatives launched in 2018-19, such as targeted outreach activities by leading female researchers, mentoring initiatives for high potential female hires, continued emphasis on student placements, and continuation of the NRC's post-doctoral fellowship initiative.

It will also continue to define a more rationalized delivery model and enabling strategies for internal services to effectively and efficiently support delivering its core responsibility of science and innovation. This includes continued efforts to provide enhanced IT capabilities by working with Shared Services Canada and promoting the benefits of cloud and high-performance computing for NRC employees; and continuing a review to optimize facility use as a platform for innovation within a safe and secure environment.

As part of its experimentation on new approaches in promoting collaboration and engagement, the NRC will further develop and launch a select few Collaboration Centres with partner universities and other research facilities in targeted areas. By leveraging resources and expertise, these Centres will contribute discoveries and scientific advancement in fundamental research areas and translate science and technology excellence into industrial and other beneficial applications for Canadian companies, while contributing to the training of highly qualified personnel.

For more information on the NRC’s plans, priorities and the planned results, see the “Planned results” section of this report.

Planned results: what we want to achieve this year and beyond

Core Responsibility

Science and Innovation

Description

Grow and enhance the prosperity of Canada through: undertaking, assisting and promoting innovation-driven research and development (R&D); advancing fundamental science and Canada's global research excellence; providing government, business and research communities with access to scientific and technological infrastructure, services and information; and supporting Canada's skilled workforce and capabilities in science and innovation.

Planning highlights

Highlights of selected initiatives are provided in alignment with the four key elements of the NRC's Core Responsibility, as well as action plans to manage corporate risks, such as working closely with Shared Services Canada (SSC) to ensure well-timed and effective IT solutions; collaborating as part of the Federal Science and Technology Infrastructure Initiative (FSTII) on renewing science infrastructure; and developing and implementing a Workplace Renewal Strategy and Human Resources Strategy.

The NRC is committed to promote equity, diversity and inclusiveness and incorporate Gender Based Analysis Plus (GBA+) in its Core Responsibility. For example, in 2019-20 the NRC will:

- Assemble a working group that will analyze the state of IRAP activities and identify barriers that might exist for certain gender and minority groups. This work group will assess options and develop solutions to reduce barriers for implementation starting in 2019-20. New indicators and analytics tools will be used to help maximize inclusion and reach of the program, ensuring access and impact for underrepresented groups.
- Organize, in collaboration with other stakeholders, a symposium on enhancing research excellence through equity, diversity and inclusion in scientific research. It will address issues at the intersection of gender, ethno-cultural background, and other factors of diversity with respect to barriers to participation, the importance of diversity in scientific research, and possible solutions for promoting diversity in research settings.
- Leverage its Digital Technologies Program's world-class expertise and past successes in designing state-of-the-art language translation software to develop a technology platform that will convert Indigenous speech to text. This will be done in collaboration with Indigenous stakeholders to help promote and preserve Indigenous languages. The NRC's Energy, Mining, and Environment Program will pilot the application of this information technology platform in training and operational documentation materials for its

Combined Heat and Power Testing and Training facility[x] when applied to Indigenous communities.

Innovation-driven R&D

The NRC will contribute to research excellence and enhance innovation through its collaborative R&D initiatives and by providing increased support through its Industrial Research Assistance Program (IRAP).

Departmental result: Innovative businesses grow

The NRC will support:

- Increased firm growth and competitiveness by helping them bring innovative products, services and processes to market;
- Greater firm investments in R&D through enhanced access to NRC R&D services and S&T infrastructure; and
- Increased skilled science and technology (S&T) jobs in Canada through innovative firm growth.

IRAP supported over 15,000 high-quality SME jobs between 2015-16 and 2017-18. While 2018-19 statistics are not yet available, these SMEs reported average revenue growth of 23% in 2017-18. In 2019-20, the NRC will build on these successes as Budget 2018 increased funding of $150M annually to support SMEs to scale-up and grow.

Through procurement of innovative solutions from Canadian SMEs, the NRC will expand its collaborations with government programs, including Innovative Solutions Canada, a procurement and grant program led by Innovation, Science and Economic Development (ISED) that supports Canadian companies in developing innovative products and services with investments by 20 departments and agencies. To help Canadian SMEs scale-up, IRAP will also increase its contribution limit to $10M for high growth SMEs and it will create an Investment Review Committee to monitor and approve the increased contributions and to provide additional oversight on all contributions. IRAP's established Due Diligence Process will continue to be used to complete assessments of companies by expert advisors, followed by detailed reviews by senior management for all contributions. For larger value contributions projects exceeding $1M, an additional framework for business processes and performance monitoring will be implemented and used for the duration of the contribution agreement. Together with the Business Development Bank of Canada and the National Bank of Canada, IRAP will formalize a process and approval criteria for delivering capital loans to high potential, innovative clients who are at a critical stage of commercialization.

Experimenting with New Approaches: In addition, the NRC and IRAP will build on its experimental Certificate pilot initiative, which helps SMEs access the NRC's R&D facilities and expertise. In 2019-20, IRAP will experiment with a continuous submission process to allow SMEs to take advantage of the NRC's research capabilities at any point in a fiscal year. To expand its reach, IRAP will explore alternative funding sources for the Certificate initiative in addition to existing IRAP operational funding.

Enabled by Budget 2018 funding, the NRC also reduced its fees charged to SMEs, universities and colleges to access its facilities, services and expertise. This initiative aims to enhance collaborations and help diffuse new innovations to high growth firms.

The NRC's R&D activities will be more collaborative and supportive of all five of Canada's new Superclusters and other federal priorities.

- The NRC will support the Protein Industries Supercluster[xi] to help position Canada as a global leader in the sustainable production of high-quality plant-based protein and other products. The NRC's contributions in 2019-20 will include identifying research opportunities for improving crop varieties, particularly canola and pulses, and developing next-generation ingredients and advanced processing technologies to enhance quality, traceability and brand identity.
- In alignment with the SCALE.AI Supercluster[xii] and Digital Technology Supercluster,[xiii] collaborations will be established in priority areas including extreme photonics[1], Blockchain, Internet of Things, applied mathematics, and AI. For the rapidly developing frontier of artificial intelligence, the NRC will continue to be attuned to the principle of responsible AI.
- Over the next three years, the NRC will seek to develop a digital representation of ice in harsh marine environments. Toward this goal, the NRC will build a computing infrastructure to analyze its ice engineering research and to allow the development of a world-leading model that informs engineering solutions for harsh marine environments. Computing infrastructure should be in place by the end of 2019-20 and existing ice data and preliminary analysis by 2020-21. This endeavour is expected to align with Canada's Ocean Supercluster.[xiv]
- The NRC will support the Advanced Manufacturing Supercluster[ix] by developing digitalization capabilities and translating them into solutions that will improve productivity and strengthen the global competitiveness of Canadian industries, beginning with the surface transportation sector.
- To support the Canadian biopharmaceutical sector in alignment with the federal priority of Health and Bio-sciences, the NRC will assist companies in advancing novel medicines, such as biologics, from discovery to commercialization. The NRC will play a lead role as an innovation hub for industry, government and academia to work together to catalyze new vaccine development against emerging infections in Canada.

[1] Photonics is the science of light; it is the technology of generating and harnessing forms of radiant energy whose quantum unit is the photon. Extreme photonics focuses on cutting-edge research in photonics and its applications, including interactions of ultrashort laser pulses with matter, and utilizing and controlling the properties of photons for new applications.

- Building on four years of technology development for small unmanned aerial systems, the NRC will increase its efforts towards establishing a sustainable autonomous air mobility industry in Canada.

As part of its international strategy, the NRC will enhance relationships and tools to enable deeper science, research, and innovation collaboration with key innovation actors in Germany, the United Kingdom and Japan. Consistent with this vision, the NRC will further promote, build and facilitate growing collaborations with German research institutions, industry, and government science and innovation programs through an on-the-ground presence in Germany, beginning with the presence of an NRC representative in the consulate in Munich. Working closely with Global Affairs Canada, NRC expertise will significantly accelerate collaborations in Germany for the benefit of the NRC's research programs and Canadian SMEs (via IRAP collaboration programs, such as EUREKA[xv] and the Canadian International Innovation Program[xvi], which will help firms become part of global value chains).

Fundamental sciences and global research excellence

Departmental result: Scientific and technological knowledge advances

The NRC will advance scientific and technical knowledge and support global research excellence through:

- Publishing scholarly papers; and
- Creating intellectual assets.

The newly appointed Departmental Science Advisor (DSA) provides advice to the President and senior management on matters related to sustaining science and research excellence and ensures that programs, policies and plans are informed by evidence-based research, and a high standard for excellence. Together, the President's Research Excellence Advisory Committee (PREAC) and Secretary of PREAC, who also fulfills the role of the President's Science Advisor (PSA), act as the voice of NRC researchers to the President, provide advice on best practices to conduct research and scientific assessments, and participate in research outreach activities.

The NRC will advance the frontiers of scientific and technical knowledge by continuing to focus on the disruptive (game-changing) technology platforms of the future, and science-based solutions that address problems of national importance. Outcomes will include advancement of scientific knowledge and long-term capability development in such areas as advanced semiconductor materials, quantum, nanotechnology, digitalization, cybersecurity, sensors for the Internet of Things, and AI - areas that are expected to significantly impact industries in the future.

With the support of $30M funding announced in Budget 2018, the NRC will launch four new collaboration initiatives to bring together the best minds available to advance knowledge, fundamental science and technology development that contribute to Canadian research excellence. They are as follows:

- Novel Materials for Clean and Sustainable Energy[xvii] – to develop new materials for clean and sustainable sources of energy
- High-throughput and Secure Networks[xviii] – to develop high performance, affordable and secure communication for rural and remote communities
- Health Technologies in Engineered Cell and Gene Therapies[xix] –to develop technologies that support safe, accessible and affordable therapies in order to significantly improve health outcomes
- Artificial Intelligence for Design[xx] – a foundation of AI tools, technologies and capabilities to support the above three mission areas

Through the Health collaboration initiative, the NRC will mobilize its vast network of expertise in-house and at universities, hospitals, industry, and other organizations to further develop technologies that will lead to advanced cell and gene therapies capable of modifying disease and correcting genetic defects in patients safely and precisely.

The NRC will support advanced research in sub-atomic physics through program stewardship as well as contribution payments of $55M to TRIUMF,[xxi] Canada's particle accelerator centre. Expected results include an inherently-safe non-nuclear facility that will create critical isotopes for nuclear medicine.

The NRC will also continue to support its university partners in the Canadian Hydrogen Intensity Mapping Experiment (CHIME)[xxii] project located at the NRC's Dominion Radio Astrophysical Observatory (DRAO) in British Columbia. The DRAO site provides a radio-quiet zone, one of the best environments available for studying the expansion history of the universe and for discovering fast radio bursts.

The NRC will further its collaboration with the University of Alberta through the joint Nanotechnology Initiative.[xxiii] The next generation of collaborative nanotechnology research projects, to begin in 2021, will leverage complementary research expertise, equipment and funding in the fields of physics, chemistry, biology and engineering. The NRC will also build on early success of the Quantum Security Technology Access Centre (QSTAC) that enables access to critical technology foresight and engages with the best minds in quantum technologies[2] that are poised to have significant impact for industries.

With support from the European Space Agency, the NRC will advance next-generation remote sensing technologies for global monitoring of the atmosphere and environment. The results will inform plans for international space missions. Building on its recognized reputation for excellence in astronomy, the NRC will co-deliver, along with its Australian counterpart,

[2] Quantum technologies refers to the practical use of the science of quantum mechanics. This science reveals how matter and energy behave at extreme scales of atomic and subatomic particles. Quantum science usually falls into three main areas of technology applications: sensing and imaging, computing, and communications.

leading-edge technologies that will enhance the detection and imaging capabilities of the Gemini telescope.[xxiv]

In fulfilling commitments towards research excellence as outlined in the NRC Dialogue Action Plan, the NRC will continue to implement a competitive annual Ideation Fund for creative research projects, ranging from one to three years, with the potential to advance science, research, and innovation. This includes a New Beginnings Fund for self-directed bottom-up research projects from individual researchers, and a Small Teams Fund for larger novel, exploratory research ideas.

Experimenting with New Approaches: Currently, the NRC provides time dissemination services, such as network time protocol (NTP) and a remote time system, to industry clients and research facilities to enhance their access to reliable time signal and frequency information. The NRC will continue to explore means of performing higher precision time comparisons in pace with the increasing needs of scientific communities. These efforts will complement successful on-going experimentation in disseminating time more accurately. The NRC anticipates investing approximately $265K in 2019-20 for this experimentation.

Providing government departments and other communities access to S&T infrastructure, services and information

The NRC has the people, expertise, services, licensing opportunities, national facilities and global networks for creating scientific knowledge and for supporting Canadian businesses in bringing their technologies to market. Its unique infrastructure includes 14 Research Centres that operate 26 focused R&D initiatives across Canada and 88 research facilities that include aerospace engineering and manufacturing, astronomy, high-throughput DNA sequencing, photonics, biotechnology, nanotechnology and more. The NRC will provide R&D communities (from industry, other government departments and universities) increased access to this infrastructure as required by an advanced knowledge-based economy.

Departmental Result: Evidence-based solutions inform decisions in Government priority areas

The NRC will invest in collaborative work with other federal government departments to advance priority areas and publish relevant work to:

- Help address national challenges;
- Increase Canadian competitiveness; and
- Inform evidence-based policy decisions.

The NRC will support harmonized building codes across Canada so that building requirements in provinces and territories will align with each other. This will help increase industry competitiveness, support increased labour mobility, eliminate non-tariff trade barriers, and provide a single national foundation for export development. As announced in the 2018 Fall Economic Statement, the Government of Canada will invest $67.5M over five years and $13.5M per year ongoing to make electronic access to the National Building Codes free, and to provide sufficient resources to address code development priorities of provincial, territorial, and other

stakeholders. This will help ensure that all municipalities across Canada can deploy the latest codes as they become available.

The NRC will support the Pan Canadian Framework on Clean Growth through its on-going partnership with Infrastructure Canada on the NRC's $42.5M Climate Change Resilient Buildings and Core Public Infrastructure[xxv] initiative. In this role, the NRC will study the durability of materials and systems in a changing climate, and will develop innovative technologies to improve climate resiliency. By 2020-21, guidelines will be developed on community design to reduce impacts of wildfires and floods.

The NRC recognizes the challenge of maintaining Canada's vast electrical distribution infrastructure that is critical to quality of life and to competitiveness. At present, electrical utilities lack effective tools for detecting powerline problems, especially underground. Often, deficiencies become known only upon failure and at considerable expense and disruption. To help solve this problem, the NRC's Metrology Program will partner with an electrical utility company to refine proven technologies for detecting degradation in power lines. This initiative aligns with a recommendation in the 2018-19 Evaluation of the NRC's Energy, Mining and Environment Program, which identified opportunities to partner with electrical utility companies in solving critical challenges to electrical infrastructure.

The NRC will advance the normative and technology infrastructure for *Cannabis* processing and testing to support government policy and the quality and safety of *Cannabis* supply. For example, to enhance standardization, the NRC will create new Certified Reference Materials[xxvi] in partnership with other government stakeholders.

To help the Canadian Space Agency facilitate longer human presence in space, the NRC will advance in developing novel technologies to extract and purify proteins and nucleic acids from body fluids for diagnostic, and potentially therapeutic, purposes.

The NRC will also assist Transport Canada's Remotely Piloted Aircraft Systems Task Force in developing new regulations for safe operation of unmanned aircraft systems in Canada. The NRC will collaborate with a major international manufacturer on the Working and Travelling on Aircraft (WTA)[xxvii] initiative. Using the new NRC Centre for Air Travel Research (CATR)[xxviii], the world's first and only facility to examine air travel from start to finish, they will examine and enhance the flight experience for passengers.

The NRC's new Manufacturing and Automotive Innovation Hub in London, Ontario, partnered with the Automotive Parts Manufacturing Association (APMA), will support Canadian manufacturers with research and technology needs by offering a collaborative workspace, expertise and world leading technology to engage in emerging technologies.

Experimenting with New Approaches: IRAP and the Aerospace Program will join forces to increase collaboration between the NRC and SMEs toward advancing technologies for autonomous flight. IRAP will provide leadership in challenging SMEs to provide research

proposals. The Aerospace Program will provide technical and advisory expertise, as well as equal-part financial contributions with IRAP. Success will be measured by the delivery of defined technology solutions and by the growth of innovation capacity and technology commercialization by the SMEs.

Supporting the skilled workforce of the future

Departmental Result: Scientific and technological knowledge advances

The NRC will advance scientific and technical knowledge and support global research excellence through:

- Creating opportunities for attracting and retaining a talented and diverse pool of STEM leaders for tomorrow.

The NRC will contribute to building a skilled Canadian workforce that is strong, sustainable, inclusive and diverse. To continue building a strong talent pipeline, the NRC will expand its post-doctoral fellowship program with the hiring of at least 12 talented individuals in 2019-20. The NRC will continue to build university relationships to enhance student recruitment and diversity. The NRC will also improve job creation in Canadian SMEs by supporting the placement of over 150 graduates in SMEs through Employment and Social Development Canada's Youth Employment Strategy.

Experimenting with New Approaches: As part of its experimentation on new collaborative approaches, the NRC began establishing a small number of Collaboration Centres with select research partners in 2018-19. These Centres will leverage assets and capabilities to develop internationally-recognized expertise in priority areas of mutual interest and support the development of the next generation of Canadian entrepreneurs, highly qualified personnel and technology platforms.

In 2018-19, the NRC announced centres with the University of Toronto (U of T), University of New Brunswick (UNB) and Memorial University of Newfoundland (MUN). For instance, the Centre for Research and Applications in Fluidic Technologies (CRAFT), with the University of Toronto, specializes in microfluidics[3], a field in which applications in drug delivery and diagnostics are expected to contribute to market growth from US$2.9B today to as much as US$11B by the end of 2026. The Memorial University Collaboration Space, with the Memorial University of Newfoundland, will conduct leading-edge research on ocean technologies, naval architectural engineering and ocean environments, in support of Canada's Ocean Supercluster. The NRC also aims to establish new Collaboration Centres, including the Cyber Collaboration Consortium, with the University of New Brunswick. This Centre will conduct world-class research and integrate cybersecurity into products and services that will help grow Canadian companies in digital technologies. This UNB initiative addresses a recommendation arising from

[3] Microfluidics is the technology of manufacturing high throughput, automated, microminiaturized devices that can automate and carry out highly complex analyses in a simple-to-use device, commonly referred to as a "laboratory on a chip".

the 2018-19 Evaluation of the Digital Technologies Research Centre, which identified the need to extend reach to key partners such as universities.

Planned results

Departmental Result Indicators	Target	Date to achieve target	2015–16 Actual results	2016-17 Actual results	2017-18 Actual results
Departmental Result 1: Scientific and technological knowledge advances					
Citation score of NRC-generated publications relative to the world average	1.50	March 31, 2020	1.41[4]	1.53[4]	1.36[4]
Number of unique intellectual assets (e.g., patents, disclosures, publications) generated by NRC research leaders[5]	1,142	March 31, 2020	1,135[4]	1,189[4]	1,082[4]
Ratio of the NRC's workforce made up of underrepresented groups relative to Canadian average labour market availability in Science, Technology, Engineering, and Mathematics (STEM)[6]	1.0	March 31, 2020	0.97	0.99	0.98
Departmental Result 2: Innovative businesses grow					
Percentage of R&D clients who report positive benefits (e.g., increase in jobs, sales, R&D expenditures or other) of working with the NRC	86%	March 31, 2020	86%	81%	86%
Percentage revenue growth of firms engaged with the NRC (IRAP-engaged firms)[7]	20%[8]	March 31, 2020	18%	26%	25%
Percentage growth in Canada's S&T related jobs through NRC supported firms (IRAP-engaged firms)[7]	10%[8]	March 31, 2020	14%	11%	13%
Client financial investment in technology development support by NRC research and development services and scientific and technological infrastructure	$92.5M	March 31, 2020	$77.0M	$82.5M	$87.0M
Departmental Result 3: Evidence-based solutions inform decisions in Government priority areas					
NRC investment in collaborative work with other federal government departments in Government priority areas	$54.9M[9]	March 31, 2020	$51.4M	$74.9M	$82.4M
Number of scientific and other publications (e.g., technical papers, committee proceedings, reports) generated by NRC research leaders in Government priority areas, tracked by calendar year[10]	1,318	March 31, 2020	1,397[4]	1,376[4]	1,195[4]

[4] Based on NRC peer reviewed publications indexed in Scopus as of June 2018. As indexation does not always occur within the publication year, previous year results can shift from previously reported values.
[5] Sum of disclosures, patents, publications and trade secrets generated by NRC activities.
[6] The indicator is focused on the workforce representation of women through 2019-20. In 2017-18, the Canadian average labour market availability of women in NRC Science, Technology, Engineering, and Mathematics (STEM) jobs was 25.4%.
[7] Measured over a period of two calendar years and lagging by two years.
[8] Targets in 2019-20 have been adjusted in line with historical averages, previous years' operational plans and an expectation that the growth rate of Gross Domestic Product in Canada will reduce slightly in 2019.
[9] The 2019-20 target reflects realistic projections from contractual arrangements currently in place and the removal of access fees for National Building Codes.
[10] Scopus database allows tagging to multiple research areas, thus the number of publications by priority area could be larger than the total number of publications generated by the organization.

Budgetary financial resources (dollars)

2019–20 Main Estimates	2019–20 Planned spending	2020–21 Planned spending	2021–22 Planned spending
1,051,040,644	1,051,040,644	989,143,374	975,339,645

Human resources (full-time equivalents)

2019–20 Planned full-time equivalents	2020–21 Planned full-time equivalents	2021–22 Planned full-time equivalents
3,169.7	3,219.7	3,223.7

Financial, human resources and performance information for the NRC's Program Inventory is available in the GC InfoBase.[xxix] This includes additional details on the Departmental Result Indicators, their rationale, and their measurement protocol.

Internal Services

Description

Internal Services are those groups of related activities and resources that the federal government considers to be services in support of programs and/or required to meet corporate obligations of an organization. Internal Services refers to the activities and resources of the 10 distinct services that support Program delivery in the organization, regardless of the Internal Services delivery model in a department. These services are: Management and Oversight Services; Communications Services; Legal Services; Human Resources Management Services; Financial Management Services; Information Management Services; Information Technology Services; Real Property Services; Material Management Services; and Acquisition Management Services.

Planning highlights

The NRC's Dialogue Action Plan calls for a re-imagined NRC that requires development of a roadmap to make strategic choices and guide priorities and related investments over the next five years. In 2019-20, the NRC will release its "Five Year Strategic Plan 2019-2024" that will provide direction for maximizing the impact of its diverse research expertise and technological resources. With a focus on greater collaboration, the plan will also help identify Canada's evolving research strengths and support the design of large-scale R&D initiatives that address areas of science, technology and innovation that are strategically important to Canada's global competitiveness. These include contributions in areas such as: the frontier of science, productivity in next generation industries, health care and food solutions for the future, technologies to support a sustainable low-carbon economy, and support for SMEs to accelerate growth through innovation.

Following extensive employee consultations on the Public Service Employee Survey (PSES) 2017 results released in 2018-19, the NRC will continue to implement strategies to address priority areas of concern. Building on the NRC Strategic HR Plan developed in 2018-19, a comprehensive approach for managing NRC talent will be implemented, including career path development for key roles, leadership development strategy execution, and increased access to professional development opportunities. The NRC will also advance its organizational wellness strategy established in 2018-19 to address workplace wellness concerns.

As part of implementing the NRC Equity, Diversity and Inclusion (EDI) Strategy, the NRC will establish short and long-term representation targets; implement targeted recruitment efforts; expand its partnerships with post-secondary institutions and relevant associations to help build a diverse talent pipeline; enhance awareness and understanding of EDI through mandatory training, promotion of events, and deliberate conversations with targeted communities (i.e. HR Promotions Committee, NRC Hiring Team); establish a visible and engaging communications presence and approach to EDI; and embed employment equity commitments in executive performance agreements.

The NRC will review its internal services (including Acquisition Management Services and Human Resources Management Services) to identify potential efficiencies and opportunities for improving services, processes and practices. The expected outcome of the exercise will be time savings, higher quality service offerings, improved client experience, and more value-added activities to support programs and key priorities.

The NRC will extend its Environmental Management System organization-wide to enable proactive assessment and management of environmental issues and to meet compliance obligations. In accordance with the Treasury Board *Policy on Management of Real Property* and consistent with the Federal approach to contaminated sites as well as to ensure appropriate application of the precautionary principle, the NRC will continue to monitor, risk-manage and/or remediate its identified contaminated sites.

The NRC will progress in developing its strategy to revitalize its buildings and real estate, aligned with the New Vision for Science and Research in Canada and Budget 2017. In addition, the NRC will remain engaged with other government organizations, the private sector and academia in realizing the vision of the Federal Science and Technology Infrastructure Initiative announced in Budget 2018. This includes a leadership role in developing the science and research vision and active engagement with partners. This ongoing priority will complement internal rationalization and streamlining of facilities at the NRC.

The amendment of the *NRC Act* through Bill C-86, *A second Act to implement certain provisions of the Budget* in December 2018, will increase NRC's ability to better manage current and emerging intellectual property, providing greater certainty for clients and collaborators, and improve NRC's management of its real property portfolio.

Building on the progress from previous years, modernizing the NRC's IT infrastructure remains a priority and will continue to be a focus for 2019-20. It is essential for a well-performing research organization to have supporting IT that enables effective digital information management, access to data, business relations, and both corporate and research operations. The NRC will continue to work closely with Shared Services Canada to develop well-timed and effective solutions for employees across the organization. These efforts will focus on cloud and high-performance computing and specialized research environments to ensure that the NRC remains at the leading edge and effectively delivers on NRC research commitments to the Government of Canada.

Budgetary financial resources (dollars)

2019–20 Main Estimates	2019–20 Planned spending	2020–21 Planned spending	2021–22 Planned spending
135,834,451	135,834,451	134,299,236	134,298,191

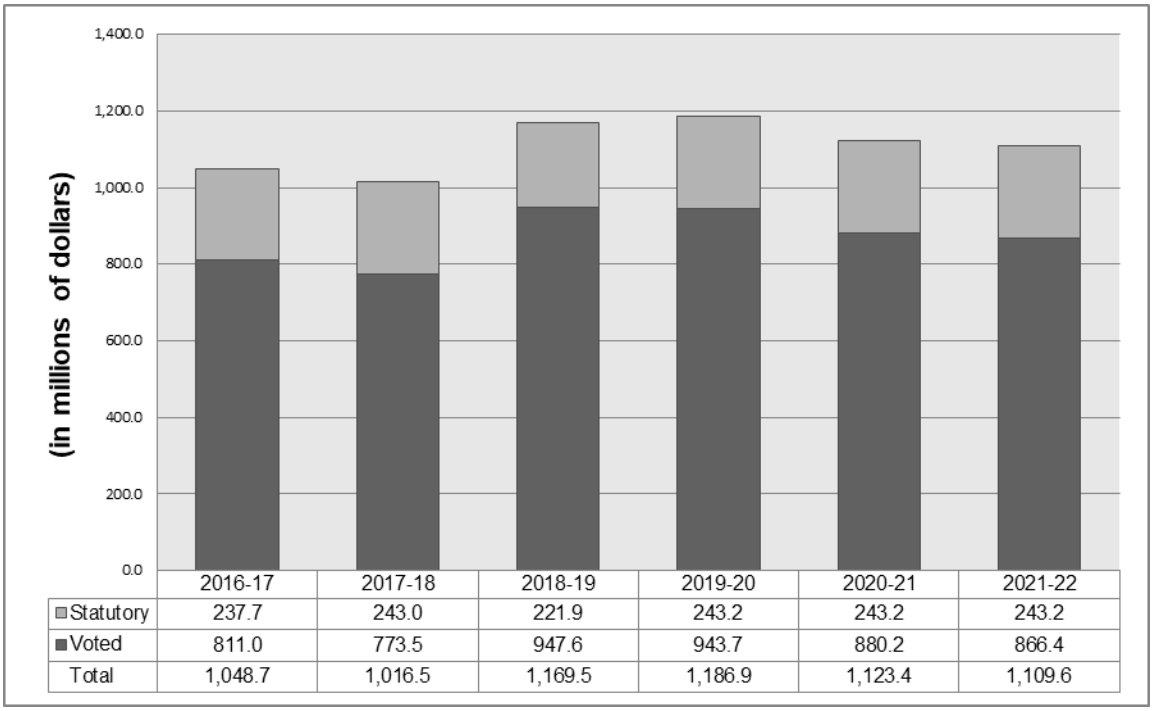
Human resources (full-time equivalents)

2019–20 Planned full-time equivalents	2020–21 Planned full-time equivalents	2021–22 Planned full-time equivalents
866.2	872.2	877.2

Spending and human resources

Planned spending

Departmental spending trend graph



	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22
Statutory	237.7	243.0	221.9	243.2	243.2	243.2
Voted	811.0	773.5	947.6	943.7	880.2	866.4
Total	1,048.7	1,016.5	1,169.5	1,186.9	1,123.4	1,109.6

The increase of $153.0M of the 2018-19 forecast spending ($1,169.5M) in comparison to authorities used in 2017-18 ($1,016.5M) is attributable mainly to Budget 2018 items, including $100.0M for the Industrial Research Assistance Program to support business research and development for projects and $36.0M for Collaborative Research Excellence to establish collaborative research and development initiatives ($30M) and create an Ideation Fund ($6M - New Beginnings Fund and Small Teams Fund) to target breakthrough research ideas through a competitive peer-reviewed process. The remaining variance is mostly associated with cost increases related with collective bargaining ratified in the fiscal year.

NRC’s total planned spending of $1,186.9M in 2019-20, $1,123.4M in 2020-21 and $1,109.6M in 2021-22 varies as a result of sunsetting projects, initiatives or funding decisions. The decrease of planned spending in future years results entirely from temporary funding. NRC’s permanent funding envelope, in comparison to the current fiscal year, is increasing in future years mainly as a result of Budget 2018.

The following table summarizes the permanent and temporary year-over year funding variances between total planned spending for each fiscal year.

(in millions of dollars)			
Items[11]	**2019-20**	**2020-21**	**2021-22**
Total Planned Spending	**1,186.9**	**1,123.4**	**1,109.6**
Variance over prior year	17.4[12]	(63.5)	(13.8)
Permanent Funding Variance			
Budget 2018 – Industrial Research Assistance Program	43.0	-	-
Free Access to electronic copies of National Building Codes	13.5	-	-
Total Permanent Funding Variance	**56.5**	**-**	**-**
Temporary Funding Variance			
Sunsetting of the 2014 and 2016 Federal Infrastructure Initiatives	(25.8)	(17.3)	(7.5)
TRIUMF – Sunsetting of Budget 2014 and Budget 2015 funding	-	(35.9)	-
Sunsetting of Canada Accelerator and Incubator Program	(17.0)	-	-
2017-18 Operating Budget Carry Forward	(17.0)	-	-
Sunsetting of Budget 2017 Youth Employment Strategy funding	(10.0)	-	-
Project funding variances for Canada's participation in the Thirty Meter Telescope	32.4	(8.5)	(6.3)
Total Temporary Funding Variance	**(37.4)**	**(61.7)**	**(13.8)**

[11] Zero indicates there is no variance to report

[12] 2018-19 Total forecast spending is $1,169.5M

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

Core Responsibilities and Internal Services	2016–17 Expenditures	2017–18 Expenditures	2018–19 Forecast spending	2019–20 Main Estimates	2019–20 Planned spending	2020–21 Planned spending	2021–22 Planned spending
Science and Innovation	808,753,764	787,453,668	1,025,250,016	1,051,040,644	1,051,040,644	989,143,374	975,339,645
Internal Services	239,986,701	229,069,769	144,220,482	135,834,451	135,834,451	134,299,236	134,298,191
Total	**1,048,740,465**	**1,016,523,437**	**1,169,470,498**	**1,186,875,095**	**1,186,875,095**	**1,123,442,610**	**1,109,637,836**

Expenses and FTEs related to National Science Library, Research Information Technology Platforms and Special Purpose Real Property were not reallocated to the Science and Innovation Core Responsibility for 2016-17 and 2017-18 because the reporting structure was not in place to allow the NRC to report on the Departmental Results Framework and Program Inventory of record for 2019-20.

Planned human resources

Human resources planning summary for Core Responsibilities and Internal Services (full-time equivalents)

Core Responsibilities and Internal Services	2016–17 Actual full-time equivalents	2017–18 Actual full-time equivalents	2018–19 Forecast full-time equivalents	2019–20 Planned full-time equivalents	2020–21 Planned full-time equivalents	2021–22 Planned full-time equivalents
Science and Innovation	2,924.7	2,997.3	3,090.7	3,169.7	3,219.7	3,223.7
Internal Services	945.7	981.9	859.2	866.2	872.2	877.2
Total	**3,870.4**	**3,979.2**	**3,949.9**	**4,035.9**	**4,091.9**	**4,100.9**

NRC’s total planned FTEs of 4,035.9 in 2019-20, 4,091.9 in 2020-21 and 4,100.9 in 2021-22 varies mainly as a result of permanent funding increases announced in Budget 2018 to deliver additional IRAP contributions and advice to SMEs, and launch new NRC Collaborative Research Excellence programs.

Estimates by vote

Information on the NRC's organizational appropriations is available in the 2019–20 Main Estimates.[xxx]

Consolidated Future-Oriented Condensed Statement of Operations

The Consolidated Future-Oriented Condensed Statement of Operations provides a general overview of the NRC's operations. The forecast of financial information on expenses and revenues is prepared on an accrual accounting basis to strengthen accountability and to improve transparency and financial management. The forecast and planned spending amounts presented in other sections of the Departmental Plan are prepared on an expenditure basis; as a result, amounts may differ.

A more detailed Consolidated Future-Oriented Statement of Operations and associated notes, including a reconciliation of the net cost of operations to the requested authorities, are available on the NRC's website.[xxxi]

Consolidated Future-Oriented Condensed Statement of Operations for the year ending March 31, 2020 (dollars)

Financial information	2018–19 Forecast results	2019–20 Planned results	Difference (2019–20 Planned results minus 2018–19 Forecast results)
Total expenses	1,189,230,000	1,213,841,000	24,611,000
Total revenues	197,884,000	193,428,000	(4,456,000)
Net cost of operations before government funding and transfers	991,346,000	1,020,413,000	29,067,000

NRC's 2019-20 planned expenses and revenues are based on the Annual Reference Level Update (ARLU). They include NRC's portion of the expenses accounts of the Canada-France-Hawaii Telescope Corporation (CFHT) ($2.4M) and TMT International Observatory LLC (TIO) ($6.1M). Revenues are composed of research services ($64.7M), technical services ($95M), intellectual property, royalties and fees ($5.6M), sale of goods and information products ($5.2M), rentals ($9.3M) and other ($2.2M). Also included is $11.4M of accrued adjustments mainly from the consolidation of the revenue accounts of CFHT ($1.7M) and TIO ($7.0M) with NRC operations.

Additional information

Corporate information

Organizational profile

Appropriate ministers:

The Honourable Navdeep Bains, P.C., M.P., Minister of Innovation, Science and Economic Development; and

The Honourable Kirsty Duncan, P.C., M.P., Minister of Science and Sport

Institutional head: Mr. Iain Stewart, President

Ministerial portfolio: Innovation, Science and Economic Development

Enabling instrument: National Research Council Act,[xxxii] R.S.C. 1985, c. N-15

Year of incorporation / commencement: 1916

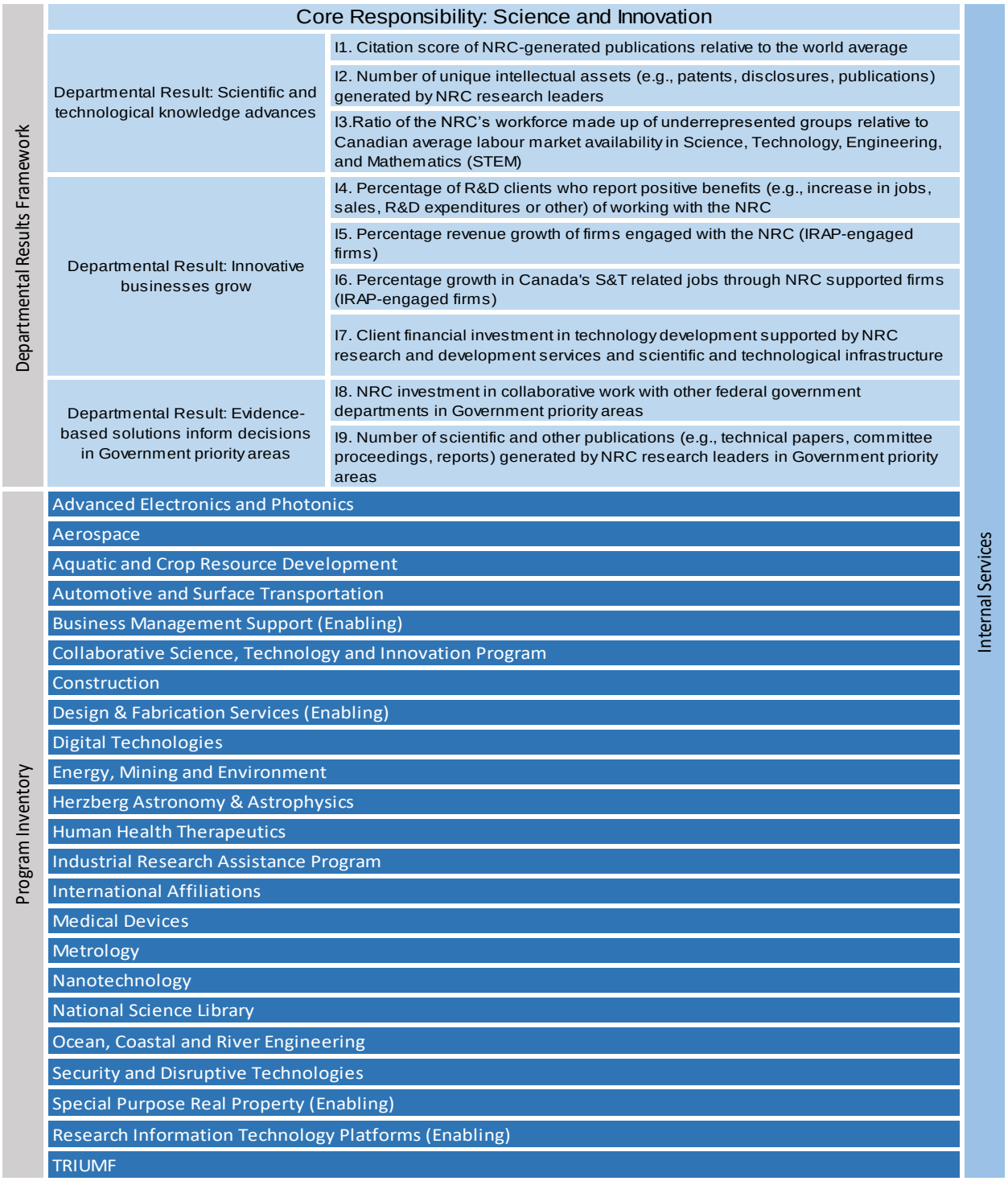
Other: The NRC is a departmental corporation of the Government of Canada, reporting to Parliament through the Minister of Innovation, Science and Economic Development in collaboration with the Minister of Science and Sport. The NRC works in partnership with members of the Innovation, Science and Economic Development Portfolio to leverage complementary resources to promote science and research and integrated innovation, to exploit synergies in key areas of science and technology, to promote the growth of small and medium-sized enterprises and to contribute to Canadian economic growth. The NRC's Council provides independent strategic advice to the NRC President and it reviews organizational performance. The President provides leadership and strategic management and is responsible for the achievement of the NRC's long-range goals and plans in alignment with government priorities as reflected in his mandate letter. Each of the NRC's Vice Presidents is responsible for a number of areas composed of programs and research initiatives, centres, the Industrial Research Assistance Program, and/or a corporate branch. Vice Presidents and NRC managers are responsible for executing plans and priorities to ensure successful achievement of objectives.

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 the NRC's website.[xxxi]

Reporting framework

The NRC's Departmental Results Framework and Program Inventory of record for 2019–20 are shown below.[13]



[13] See GC InfoBase[xxix] for the full names and descriptions of the Departmental Results Indicators in the NRC's Departmental Results Framework.

Changes to the approved reporting framework since 2018-19

Structure	2019-20	2018-19	Change	Rationale for change
CORE RESPONSIBILITY	Science and Innovation	Science and Innovation	No change	
PROGRAM	Advanced Electronics and Photonics	Not applicable	New program	Note 1
PROGRAM	Aerospace	Aerospace	No change	
PROGRAM	Aquatic and Crop Resource Development	Aquatic and Crop Resource Development	No change	
PROGRAM	Automotive and Surface Transportation	Automotive and Surface Transportation	No change	
PROGRAM	Business Management Support (Enabling)	Business Management Support (Enabling)	No change	
PROGRAM	Collaborative Science, Technology and Innovation Program	Not applicable	New program	Note 2
PROGRAM	Construction	Construction	No change	
PROGRAM	Design & Fabrication Services (Enabling)	Design & Fabrication Services (Enabling)	No change	
PROGRAM	Digital Technologies	Not applicable	New program	Note 3
PROGRAM	Energy, Mining and Environment	Energy, Mining and Environment	No change	
PROGRAM	Herzberg Astronomy & Astrophysics	Herzberg Astronomy & Astrophysics	No change	
PROGRAM	Human Health Therapeutics	Human Health Therapeutics	No change	
PROGRAM	Industrial Research Assistance Program	Industrial Research Assistance Program	No change	
PROGRAM	Not applicable	Information and Communication Technologies	Program ended	Note 4
PROGRAM	International Affiliations	International Affiliations	No change	
PROGRAM	Metrology	Measurement Science and Standards	Title change	Note 5
PROGRAM	Medical Devices	Medical Devices	No change	
PROGRAM	Nanotechnology	National Institute for Nanotechnology	Title change	Note 6
PROGRAM	National Science Library	National Science Library	No change	
PROGRAM	Ocean, Coastal and River Engineering	Ocean, Coastal and River Engineering	No change	
PROGRAM	Security and Disruptive Technologies	Security and Disruptive Technologies	No change	

	PROGRAM	Special Purpose Real Property (Enabling)	Special Purpose Real Property (Enabling)	No change	
	PROGRAM	Research Information Technology Platforms (Enabling)	Research Information Technology Platforms (Enabling)	No change	
	PROGRAM	TRIUMF	TRIUMF	No change	

Note 1	The activities of the Information and Communications Technologies program were split into the "Advanced Electronics and Photonics" and "Digital Technologies" programs. The two programs focus on separate areas of R&D. Advanced Electronics and Photonics focuses on semiconductor photonics and electronics devices.
Note 2	This program is identified as new because it was approved after the 2018-19 DP was tabled. It began its operations in 2018-19 and will be included in the NRC's 2018-19 DRR.
Note 3	The activities of the Information and Communications Technologies program were split into the "Advanced Electronics and Photonics" and "Digital Technologies" programs. The two programs focus on separate areas of R&D. Digital Technologies focuses on advanced analytics, computer vision, natural language processing and artificial intelligence.
Note 4	The activities of the Information and Communications Technologies program were split into the "Advanced Electronics and Photonics" and "Digital Technologies" programs. The two programs focus on separate areas of R&D.
Note 5	Program name simplified.
Note 6	Program name simplified.

Supporting information on the Program Inventory

Supporting information on planned expenditures, human resources, and results related to the NRC's Program Inventory is available in the GC InfoBase.[xxix]

Supplementary information tables

The following supplementary information tables are available on the NRC's website:[xxxi]

- Departmental Sustainable Development Strategy
- Details on transfer payment programs of $5 million or more
- Disclosure of transfer payment programs under $5 million
- Gender-based analysis plus
- Genomics R&D Initiative (GRDI)

Federal tax expenditures

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

Organizational contact information

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1200 Montreal Road, Bldg. M-58
Ottawa, Ontario, Canada K1A 0R6
Phone: 613-993-9101 or toll-free 1-877-NRC-CNRC (1-877-672-2672)
Fax: 613-991-9096
TTY number: 613-949-3042
E-mail: info@nrc-cnrc.gc.ca
Web address: https://nrc.canada.ca/en/

Appendix: definitions

appropriation (crédit)

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

budgetary expenditures (dépenses budgétaires)

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

Core Responsibility (responsabilité essentielle)

An enduring function or role performed by a department. The intentions of the department with respect to a Core Responsibility are reflected in one or more related Departmental Results that the department seeks to contribute to or influence.

Departmental Plan (plan ministériel)

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

Departmental Result (résultat ministériel)

Any change that the department seeks to influence. 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)

The department's Core Responsibilities, Departmental Results and Departmental Result Indicators.

Departmental Results Report (rapport sur les résultats ministériels)

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

evaluation (évaluation)

In the Government of Canada, the systematic and neutral collection and analysis of evidence to judge merit, worth or value. Evaluation informs decision making, improvements, innovation and accountability. Evaluations typically focus on programs, policies and priorities and examine questions related to relevance, effectiveness and efficiency. Depending on user needs, however, evaluations can also examine other units, themes and issues, including alternatives to existing interventions. Evaluations generally employ social science research methods.

experimentation (expérimentation)

Activities that seek to explore, test and compare the effects and impacts of policies, interventions and approaches, to inform evidence-based decision-making, by learning what works and what does not.

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 help identify the potential impacts of policies, Programs and services on diverse groups of women, men and gender-diverse people. The “plus” acknowledges that GBA goes beyond sex and gender differences. We all have multiple identity factors that intersect to make us who we are; GBA+ considers many other identity factors, such as race, ethnicity, religion, age, and mental or physical disability.

government-wide priorities (priorités pangouvernementales)

For the purpose of the 2019–20 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 where two or more departments 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 Information Profile (profil de l'information sur le rendement)

The document that identifies the performance information for each Program from the Program Inventory.

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.

priority (priorité)

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

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.

sunset program (programme temporisé)

A time-limited program that does not have an ongoing funding and policy authority. When the program is set to expire, a decision must be made whether to continue the program. In the case of a renewal, the decision specifies the scope, funding level and duration.

target (cible)

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

voted expenditures (dépenses votées)

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

Endnotes

i Minister of Innovation, Science and Economic Development Mandate Letter, http://pm.gc.ca/eng/minister-innovation-science-and-economic-development-mandate-letter
ii Minister of Science and Sport Mandate Letter, http://pm.gc.ca/eng/minister-science-mandate-letter
iii NRC President's Mandate Letter, https://nrc.canada.ca/en/corporate/mandate/mandate-letter-mr-iain-stewart-september-6-2018
iv Innovation and Skills Plan, http://www.ic.gc.ca/eic/site/062.nsf/eng/home
v Innovation Superclusters Initiative, https://www.ic.gc.ca/eic/site/093.nsf/eng/home
vi Innovative Solutions Canada, http://www.ic.gc.ca/eic/site/101.nsf/eng/home
vii Impact Canada Fund, https://www.canada.ca/en/innovation-hub/topics/impact-canada-initiative.html
viii NRC's Dialogue Action Plan, https://nrc.canada.ca/en/corporate/overview-nrc-dialogue
ix Advanced Manufacturing Supercluster, https://www.ic.gc.ca/eic/site/093.nsf/eng/00010.html
x Combined Heat and Power Testing and Training Facility, https://nrc.canada.ca/en/corporate/nrc-capabilities-clean-energy-resources-0
xi Protein Industries Supercluster, https://www.ic.gc.ca/eic/site/093.nsf/eng/00012.html
xii SCALE.AI Supercluster, https://www.ic.gc.ca/eic/site/093.nsf/eng/00009.html
xiii Digital Technology Supercluster, https://www.ic.gc.ca/eic/site/093.nsf/eng/00011.html
xiv Ocean Supercluster, https://www.ic.gc.ca/eic/site/093.nsf/eng/00013.html
xv EUREKA, https://nrc.canada.ca/en/support-technology-innovation/eureka
xvi Canadian International Innovation Program, https://www.tradecommissioner.gc.ca/funding-financement/ciip-pcii/index.aspx?lang=eng
xvii Novel Materials for Clean and Sustainable Energy Challenge Program, https://nrc.canada.ca/en/research-development/research-collaboration/programs/novel-materials-clean-sustainable-energy-challenge-program
xviii High-throughput and Secure Networks Challenge Program, https://nrc.canada.ca/en/research-development/research-collaboration/programs/high-throughput-secure-networks-challenge-program
xix Health Challenge Program, https://nrc.canada.ca/en/research-development/research-collaboration/programs/health-challenge-program
xx Artificial Intelligence for Design Challenge Program, https://nrc.canada.ca/en/research-development/research-collaboration/programs/artificial-intelligence-design-challenge-program
xxi TRIUMF, https://www.triumf.ca/
xxii Canadian Hydrogen Intensity Mapping Experiment (CHIME), https://www.canada.ca/en/national-research-council/news/2017/09/canadian_hydrogenintensitymappingexperimentchime.html
xxiii Nanotechnology Initiative, https://nrc.canada.ca/en/research-development/research-collaboration/research-centres/nanotechnology-research-centre
xxiv Gemini Telescope, https://nrc.canada.ca/en/research-development/facilities/gemini-observatory-research-facility
xxv Climate Change Resilient Buildings and Core Public Infrastructure, https://nrc.canada.ca/en/stories/national-research-council-canada-infrastructure-canada-take-lead-preparing-canadas-buildings
xxvi Certified Reference Materials, https://nrc.canada.ca/en/certifications-evaluations-standards/certified-reference-materials/certified-reference-materials
xxvii Working and Travelling on Aircraft, https://nrc.canada.ca/en/research-development/research-collaboration/programs/working-travelling-aircraft-program
xxviii Centre for Air Travel Research, https://nrc.canada.ca/en/research-development/research-collaboration/centre-air-travel-research
xxix GC InfoBase, https://www.tbs-sct.gc.ca/ems-sgd/edb-bdd/index-eng.html#start
xxx 2019–20 Main Estimates, https://www.canada.ca/en/treasury-board-secretariat/services/planned-government-spending/government-expenditure-plan-main-estimates.html
xxxi National Research Council Reports, https://nrc.canada.ca/en/corporate/planning-reporting/financial-performance-reporting
xxxii National Research Council Act, https://laws-lois.justice.gc.ca/eng/acts/N-15/
xxxiii Report on Federal Tax Expenditures, http://www.fin.gc.ca/purl/taxexp-eng.asp