



Mr. Lloyd Longfield, M.P.  
Chair  
Standing Committee on Science and Research  
House of Commons  
Ottawa, Ontario K1A 0G6

Dear Lloyd Longfield:

Pursuant to Standing Order 109 of the House of Commons, I am pleased to submit on behalf of the Government of Canada (the Government) the response to the fourth report by the Standing Committee on Science and Research (the Committee) entitled *Pursuing a Canadian Moonshot Program* (the Report), which was presented to the House of Commons in June 2023.

Evoking the United States' pursuit of space flight and lunar exploration in the 1960s, the Report challenges Canada to think deeply and creatively about science and research 'moonshots,' defined as "risky, resource-intensive, large-scale, long-term and collaborative research programs with ambitious goals." The Government expresses its gratitude to the Committee and its staff for undertaking this timely and important study on pursuing a Canadian moonshot program, as well as the many witnesses who shared their knowledge and passion through expert testimony and written briefs. The Report provides helpful advice to the Government that builds on and complements the Committee's three previous studies on challenges and opportunities for Canadian science, top talent, and small modular nuclear reactors.

The Government supports the Report's broader conclusions and the underlying intent of the recommendations. As seen throughout this response, the Government provides a diverse and flexible suite of programs and policies that enable Canadian innovators to nurture and grow the next wave of science and research moonshots. After closely studying the Committee's recommendations, the Government's response is presented in four interconnected themes:

...2

- (1) Strengthening the full science, research, and innovation continuum;
- (2) Aligning programs, strategies, and policies with a long-term focus;
- (3) Fueling innovation by investing in talent and skills; and
- (4) Enhancing collaboration with domestic and global players. Innovation, Science, and Economic Development (ISED) engaged Employment and Social Development Canada (ESDC) and Immigration, Refugees and Citizenship Canada (IRCC) on aspects of the response.

**(1) Strengthening the full science, research, and innovation continuum**  
(Report Recommendations 1, 2, 3, 5, 8, 15)

The Report's first recommendation states that "realizing moonshot goals will require supporting the "full breadth of the innovation continuum," linking fundamental science and research with commercialization. Subsequent recommendations then expand on different segments of the science, research, and innovation continuum. The Government supports this comprehensive approach and works to strengthen the full continuum from fundamental research and infrastructure (Recommendations 2, 8) to industry partnerships and capital investment (Recommendations 5) to commercialization and business innovation tied to cross-cutting goals (Recommendations 3, 15).

*Investing in fundamental research and infrastructure*

Beginning at the upstream segment of the continuum, the Government recognizes the importance of investing in fundamental science and research to drive discoveries and innovative breakthroughs that generate social, health, and economic benefits for Canada and the world (Recommendation 2). The Government supports Canada's world-class research enterprise through the three federal research granting agencies—the Canadian Institutes of Health Research (CIHR), the Natural Sciences and Engineering Research Council (NSERC), and the Social Sciences and Humanities Research Council (SSHRC)—and the Canada Foundation for Innovation (CFI). The roughly \$4 billion in annual federal funding provided by these organizations feeds the pipeline of novel discoveries and highly qualified talent that underpin and drive innovation. This funding is complemented by several other research funding mechanisms and initiatives, including support for third party science and research organizations (TPOs), which are non-profit entities, such as the Canadian Council of Academies or the Canadian Institute for Advanced Research, that enhance and extend governmental programs. Announced in August 2021, the Strategic Science Fund is a new approach to support TPOs through a transparent, competitive, peer-reviewed funding process.

Launched in 2016, the Fundamental Science Review (FSR) undertook a comprehensive assessment of the steps required to preserve Canada's world-class standing and ensure that federal support for research is coherent, strategic, effective, and agile to keep pace with the dynamic nature of contemporary science. The FSR panel's 2017 report (the Naylor report) recommended unprecedented levels of support for fundamental research, building on Budget 2016, which provided the largest investment in the base budgets of the federal granting agencies in more than a decade (\$95 million per year ongoing).

In response to the Naylor report, Budget 2018 provided more than \$1.7 billion over five years through the granting agencies to support the next generation of Canadian researchers and research institutes. This included the single largest investment in fundamental research in Canadian history: \$925 million over five years, and \$235 million per year ongoing. It also increased funding for established tri-agency programs such as the Canada Research Chairs (CRC) program and the College and Community Innovation Program (CCIP), and for the creation of the new tri-agency New Frontiers in Research Fund (NFRF) to support international, interdisciplinary, fast-breaking, and high-risk research.

To realize the full potential of the Government's support, the federal research support system must continue to be responsive to evolving needs and priorities. This is why the Prime Minister mandated the Minister of Innovation, Science and Industry, in collaboration with the Minister of Health, to develop a plan to modernize the federal research support system to maximize the impact of support for both research excellence and downstream innovation, with a particular focus on the relationships among the granting agencies and the CFI. Supporting the development of this plan, the Government established the Advisory Panel on the Federal Research Support System (the Advisory Panel) in October 2022 to provide independent, expert advice to Ministers. The Advisory Panel's public report recommends improvements to the structure, governance, and management of the federal research support system to better respond to government priorities and the needs of the modern research enterprise. The Government is carefully considering the panel's recommendations.

Research infrastructure development and maintenance funding is crucial to ensuring that Canada's researchers continue to have access to reliable facilities and equipment to advance science and innovation (Recommendation 8). The 2022 Fall Economic Statement provided the National Research Council of Canada (NRC) \$962.2 million over 8 years, and \$121.1 million in ongoing funding, to revitalize its research and development (R&D) facilities located across the country. This funding ensures the NRC continues to provide its partners and collaborators across the innovation continuum with access to facilities and equipment to address challenges and take ideas to market.

The CFI plays a pivotal role in this context by supporting the creation and enhancement of cutting-edge research facilities and resources across the country. By continuously maintaining and upgrading research infrastructure, the CFI ensures that Canada remains at the forefront of scientific advancements, drives economic growth, and addresses pressing societal challenges. The CFI's Major Science Initiatives Fund provides support for the ongoing operating and maintenance needs of research facilities of national importance, such as particle physics laboratories and genomics research centers. Additionally, the CFI's Infrastructure Operating Fund (IOF) helps cover a portion of the operating and maintenance costs of CFI-funded research infrastructure to ensure its optimal use.

The Government provided the CFI with permanent and ongoing funding of \$462 million per year by 2023–2024 in Budget 2018, which allows the organization to carry out long-term strategic planning and be more agile and responsive to the evolving and emerging needs of the research community it serves. Going forward, and as noted above, the Government is currently examining the recommendations of the Advisory Panel on better coordination of infrastructure, operating and research funding as well as further enhancements to support major research facilities over their life cycle.

Furthermore, Budget 2018 provided \$572.5 million to the Digital Research Infrastructure Strategy to ensure that Canadian researchers have the infrastructure they need to support scientific excellence. The Digital Research Infrastructure Program supports the computing capacity necessary to ensure Canadian researchers and enterprises are positioned to benefit from disruptive technologies like Artificial Intelligence (AI) and genomics that turn big data into the scientific breakthroughs that are critical to Canada's global competitiveness.

#### *Supporting industry partnerships and commercialization*

Moving along the continuum towards industry-oriented activities, the Government recognizes the importance of industry partnerships and capital investment, primarily by growing research capacity and capability. The CFI plays a crucial role in funding advanced research infrastructure across Canada by leveraging additional capital investment and partnerships across sectors. With almost \$10 billion awarded to 173 research institutions in 81 municipalities across Canada, the CFI typically covers 40 percent of eligible research infrastructure costs, while the remaining 60 percent is contributed by various funding partners, including the provinces, the public, private, and not-for-profit sectors. Since 1997, the Government's support has been leveraged into a substantial total investment of \$23.9 billion in research infrastructure, with around 25 percent sourced from the private sector annually. Additionally, the CFI's College Fund fosters applied research and technology development by promoting partnerships between

Canadian colleges and various sectors to generate innovative solutions for social, business, health, or environmental challenges. Between 2012 and 2021, approximately \$92 million was invested through the College Fund to support 54 colleges, driving cross-sector innovation.

Budget 2023 announced a proposal to introduce legislative amendments to the *National Research Council Act* to provide increased procurement flexibilities, which will ensure a modernized NRC can provide hands-on support to Canada's innovators through timely access to specialized facilities and expertise.

SSHRC [Partnership Grants](#) provide up to \$2.5 million for a period of up to seven years, supporting formal partnerships, including with industry, to advance research, research training and/or knowledge mobilization in the social sciences and humanities.

NSERC's longstanding practice of cost-sharing research projects with industry leverages private sector resources and benefits the research and development aims of companies. NSERC's flagship partnership grant program, Alliance, supports academic researchers working in collaboration with the private sector (as well as with the public and not-for-profit sectors). Alliance was developed to simplify program offerings to make them more attractive to industry.

CIHR facilitates the commercialization of health research in Canada. Many inventions and discoveries arising through academic research are at a stage beyond discovery-driven research, and yet are often of uncertain utility or insufficiently developed to be of interest to relevant receptor companies, organizations, and potential investors. These types of projects can currently be considered for funding as part of the commercialization peer review committee of the Project Grant Competition.

As part of the Biomanufacturing and Life Sciences Strategy, the Government has demonstrated its ability to effectively leverage capital investment and industry partnerships through research funding programs such as the Canada Biomedical Research Fund and Biosciences Research Infrastructure Fund. These programs, administered by SSHRC and the CFI, respectively, offer a combined total of \$750 million to foster a robust ecosystem of research hubs across the country. This funding, alongside the Biologics Manufacturing Centre constructed by the NRC, will help ensure Canada is prepared for future pandemics by increasing domestic capacity through funding and partnerships across the academic, public, private, and non-profit sectors to produce next-generation vaccines, therapeutics, and diagnostics, while supporting training and development to expand the pipeline of skilled talent.

The [NFRF's Transformation Stream](#) is designed to support large-scale, Canadian-led, interdisciplinary research projects that address a major challenge with the potential to realize real and lasting change. The challenge may be fundamental, leading to a scientific breakthrough, or applied, with a social, economic, environmental, or health impact. Projects are expected to be world-leading, drawing on global research expertise where relevant. Awarded projects receive between \$2 million to \$4 million per year for six years. The funding opportunity provides flexibility, supporting investigator-driven research. With a focus on transformational change, the projects must involve relevant stakeholders from all sectors who will help enable the change. Collaborators on awarded projects can be from any organization, including from the private sector.

Moving further along the continuum, the Government recognizes that R&D is critical in turning new ideas and inventions into globally competitive products, processes, and services (Recommendations 3, 15). While Canada has all the building blocks required for an innovation-driven economy, Canadian businesses do not invest in R&D at the same level as their global peers. Despite Canada's history of producing ground-breaking ideas and inventions, the lack of support for business R&D has resulted in a reduced capacity to turn innovative ideas into new products and services.

Through the Innovation and Skills Plan, the Government launched a series of initiatives to support business innovation at all stages along the innovation continuum. The new Canada Innovation Corporation (CIC), a Crown corporation, complements these initiatives, and will work towards maximizing business investment in R&D across the economy and in all regions of Canada to promote innovation-driven economic growth. It will operate with an initial budget of \$2.6 billion over four years, starting in 2023–2024. Work is ongoing to set up the CIC to begin operations.

The CIC's focused, outcome-driven mandate is purpose-built to help generate new and improved products and processes that will support the productivity and growth of Canadian firms. Drawing on lessons learned from international examples and past Canadian program successes, the CIC will deliver a national platform of funding and advisory programs that will promote business investment in R&D. The CIC will also work to promote the ownership and retention of intangible assets in Canada and act as a centre of expertise on national and international industrial and technological trends, as well as conduct ongoing program impact monitoring and evaluation while building collective awareness within the Canadian business community of emerging growth opportunities.

The CIC will look to help catalyze and commercialize novel ideas and inventions from Canada's academic ecosystem. The CIC joins the Government's existing supports for business innovation and growth, building upon and complementing

the regional development agencies, the Strategic Innovation Fund, and the Trade Commissioner Service. The Industrial Research Assistance Program, previously delivered by the National Research Council, will be shifted to the CIC.

Recognizing that researchers and students often do not have the awareness of the market potential of their research or the expertise and knowledge to commercialize and scale their ideas, Budget 2022 announced \$47.8 million over five years, starting in 2023–2024, and \$20.1 million ongoing to launch a new national lab-to-market platform to help graduate students and researchers take their work to market. The Government recently concluded its consultation process and is currently considering the advice it received, as well as its options.

Taken as a whole, the Government delivers a diverse and flexible suite of programs that serves the full breadth of the science, research, and innovation continuum, from fundamental research to commercialization and business innovation.

## **(2) Aligning programs, strategies, and policies with a long-term focus** (Report Recommendations 4, 6, 7)

The Report recognizes that realizing ambitious moonshot goals requires a long-term focus (Recommendation 4). The Government incorporates a long-term perspective into existing program delivery and funding models. To complement the undirected, fundamental research programs described above, the Government supports programming, such as the Canada First Research Excellence Fund (CFREF) and the Canada Excellence Research Chairs (CERC), directed towards governmental priorities and economic and societal goals. National strategies are an effective vehicle to coordinate long-term action in targeted sectors. Finally, the Government works to ensure the underlying policy environment and its long-term science and research objectives are mutually aligned (Recommendations 6-7).

### *Embedding a long-term focus into programs and strategies*

Realizing ambitious moonshot goals requires a long-term focus, which can be encouraged through program design and by aligning program delivery with strategies and policies. The Government recognizes that ambitious world-class research is critically dependent on stable and flexible funding, and that robust and competitive research funding models are essential for an agile research continuum to support long-term economic and social innovation. The Government also recognizes that the continuity of research funding must be balanced with fair and transparent award processes based on the criteria of excellence to ensure support for the highest-quality research, including in new and emerging areas. Funding continuity must also be balanced with evolution in the program suite to respond to the evolving priorities and needs of the research community.

The CFREF is a tri-agency program which provides large-scale and long-term funding. CFREF supports initiatives aligned with the Government's science, technology, and innovation priorities. These priorities, called challenge areas, are ambitious and provide a long-term focus comparable to moonshot goals. CFREF's challenge areas are Healthy Canadians, Innovative and Resilient Communities, Sustainable Food Systems, a Clean and Resource Rich Canada, and a Technologically Advanced Canada. The Fund aims to help Canadian postsecondary institutions develop global leadership in priority research areas that create long-term economic advantages for Canada. The program awards are up to seven years in duration, and there is no prescribed limit on the size of the awards. The 2022 funding competition [awarded a total of \\$1.4 billion to 11 research initiatives](#) across Canada, with the average grant size being \$127 million. Award examples from the 2022 competition include \$109 million to the University of Ottawa and its partners to position Canada as a global leader in integrated heart-brain research, \$154 million to Dalhousie University and its partners to explore the changing ocean-climate nexus, and \$98 million to Toronto Metropolitan University and its partners to strengthen migrant integration in Canada. The recent requirement of rigorous sustainability plans will help maintain the momentum of research programs beyond the CFREF grant.

The CERC is another tri-agency program that provides long-term funding. It supports awards with values of either \$8 million or \$4 million over eight years to support world-renowned researchers and their teams to establish ambitious research programs at Canadian universities. The program is designed to attract leading Canadian and international scientists and scholars who can positively contribute to Canada's global competitiveness and well-being, and to help Canadian institutions compete in the global market for research talent. CERC and CFREF share identical challenge areas, creating strong alignment between the two programs on science, technology, and innovation priorities. Chairs are expected to pursue significant partnerships and collaborations with Canadian and international entities (academic, public, private, not-for-profit, philanthropic) as well as with Indigenous Peoples and communities, where appropriate, and to facilitate the mobilization of their research results. Chairs established in the 2022 competition illustrate the diverse research supported by the program, including human-centred robotics, forest bioproducts, precision cancer drug design, and sustainable and resilient communities, among others.

The granting agencies also individually maintain a number of key programs that change minimally from year to year and provide predictable and sustained support for research excellence.

- CIHR's largest investigator-initiated funding opportunity, the Project Grant program, does not have a cap for the length of the project or its budget. The total amount available for the fall 2023 and spring 2024 Project Grant



Competitions is \$650 million. Of this, \$16.25 million is dedicated to large grants, defined as those within the top 2% largest total grant amount requested by all applicants within the competition, which varies with each competition.

- Within NSERC, the majority of research funding is focused on supporting long-term, curiosity-driven, and investigator-led research programs. For example, the Discovery programs support ongoing research programs with long-term goals rather than a single short-term project or collection of projects. Discovery grant recipients are not restricted to the specific activities described in their applications and may pursue new research interests, provided they are within NSERC's mandate.

SSHRC and NSERC have also launched mission-driven funding competitions that provide long-term funding.

- As announced in Budget 2022, the [NSERC-SSHRC Sustainable agriculture research initiative](#) supports research to realize a sustainable, resilient and profitable agriculture sector in a net-zero economy. The awards are valued at \$500,000 to \$2 million per year for four years.
- The [National Science Foundation Global Centres](#), a joint initiative with Australia, the U.S., and the U.K., supports research on climate change and clean energy. The Track 1 awards of the program provide up to \$750,000 of funding per year over four to five years.

The Government also continues to deliver on a number of challenge-oriented programs in collaboration with the private sector, academics, and other research organizations. These programs include:

- The NRC's outcome focused, mission-oriented challenges program advance transformative, high-risk, high-reward research that addresses current and emerging Canadian priorities. The challenges are multi-party in nature, bringing together small and medium enterprises, non-profit organizations, and academic institutions. New challenge programs are launched annually, with a seven-year timeline and dedicated funding to tackle pressing policy challenges.
- The Department of National Defence offers funding to Canadian innovators and access to world-class subject matter experts through the Innovation for Defence Excellence and Security (IDEaS) program to build and move technology forward to solve the toughest defence and security challenges.

- Innovative Solutions Canada's Challenge Stream takes a challenge-oriented approach to help Canadian innovators who want to start, grow, and get to market, by funding R&D and testing prototypes in real-life settings. This stream covers a wide spectrum of innovation, in a variety of industries, that either meet the Government's needs, or address a broader market gap.

The Government will continue to assess the existing program suite and further identify gaps, as well as areas for opportunity, to ensure Canadian researchers are well-supported in their pursuit of ambitious research projects. Input from the Advisory Panel may also be leveraged to inform future directions.

National strategies in specific sectors are another way to achieve defined long-term missions by integrating policies and programs, funding and results, and stakeholders and partners. AI is a prime example of an area where the continuity of federal funding has played an important role. Canada benefits from a robust foundation of AI talent and research, as evidenced by our ranking among leading nations on both the Stanford Global AI Vibrancy Index and Tortoise's Global AI Index. This strength in AI has emerged over several decades, primarily through sustained support for basic research at Canadian universities, supported by Canada's federal granting agencies.

Early efforts by the Canadian Institute for Advanced Research (CIFAR) also helped solidify Canada's AI strengths. Supported by almost \$300 million provided through ISED since 1987, CIFAR fosters long-term interdisciplinary collaboration, training, and knowledge sharing to inspire new directions of inquiry, accelerate discovery, and yield breakthroughs in key areas such as AI. Recognizing CIFAR's long-standing leadership in cultivating Canada's AI excellence, the Government partnered with CIFAR in 2017 to launch the first phase of the Pan-Canadian AI Strategy (PCAIS), investing \$125 million over five years to strengthen Canada's talent base and global competitiveness in AI research. In June 2022, the Government launched the second phase of PCAIS, with \$443.8 million provided in Budget 2021. This funding is implemented by partners across Canada leading in work spanning three pillars of activity: (1) commercialization, (2) standards, and (3) talent and research.

Through Budget 2021, the Government provided \$360 million over seven years to support the quantum sector and released a National Quantum Strategy (NQS) in January 2023. In addition, governmental support for a quantum-enabled future will leverage several current and anticipated broad-based, large-scale programs that are critical to fostering Canada's strength in quantum research, innovation and commercialization, and the growth and success of the Canadian quantum ecosystem. The NQS aims to support key areas of research to make Canada a world leader in the continued development, deployment, and use of quantum

computing hardware and software: to benefit Canadian industry, governments, and citizens; ensure the privacy and cyber-security of Canadians in a quantum-enabled world through a national secure quantum communications network and a post-quantum cryptography initiative; and enable the Government of Canada and key industries to be developers and early adopters of new quantum sensing technologies.

Another example of long-term strategic intent is genomics. The Government has invested more than \$2.1 billion in large-scale genomics research through Genome Canada since its inception in 2000. This funding leveraged provincial and partner funding and built tremendous capacity in Canada for innovation in various sectors of the economy, including healthcare, agriculture, natural resources, and the environment. The strength developed in this growing field proved extremely important during the pandemic, as genomics became central to tracking and monitoring the COVID-19 virus and its variants. Recognizing Canada's advantage in genomics, the Government announced \$399.7 million in Budget 2021 for the design and implementation of a Pan-Canadian Genomics Strategy to advance the translation and commercialization of genomics and related technologies, strengthen Canada's global leadership in genomics, and position Canada for long-term success in the global bioeconomy.

#### *Fostering a supportive policy environment*

The Report also recognizes a supportive policy environment is crucial to fostering the long-term focus necessary to realize moonshot goals, with specific reference to open science, intellectual property, and immigration policies (Recommendations 6-7).

Open Science is the practice of sharing data, information, tools, and research results, and eliminating barriers to collaboration. The Government is committed to making federally funded science open by helping to generate research ideas, making data and publications readily available, and making research understandable and useful. Released in February 2020, the Roadmap for Open Science articulates a vision, principles, and recommendations to make government science fully available to the public, while respecting privacy, security, ethical considerations, and appropriate intellectual property protection. As an integral part of the role's mandate, the Chief Science Advisor of Canada acts as a champion and advocate for the Government's commitment to make federal science more accessible to Canadians. For instance, in 2021, the Chief Science Advisor developed and published a guidance document to support scientists when releasing federal research outputs, while presenting criteria on how to manage privacy, security, ethical considerations and appropriate intellectual property protection.

Intellectual property policy also has an important role to play in achieving moonshot goals. Canada invests significant public resources to support research and development in order to position the country for success and encourage innovation that will deliver social and economic benefits to Canadians. With this objective in mind, the Strategic Intellectual Property Review, which was first announced in Budget 2021, is assessing how ISED's suite of innovation and science programs support, and are aligned with, a sound intellectual property approach that is conducive to IP value creation and maximization of benefits for Canada and Canadians.

As noted in Recommendation 7, immigration policies and programs also contribute to Canada's capacity to realize moonshot goals. The Government committed to attracting and retaining top academic talent so that Canada continues to be a leader in world class education, research, and innovation. There are a number of ways that foreign researchers and academics can come to Canada to advance research at Canadian institutions.

Academics and researchers can enter Canada on a temporary basis to work in the academic sector, either through the International Mobility Program (IMP) or the Temporary Foreign Worker Program (TFWP). Under the IMP, certain academics and researchers may enter the Canadian labour market without a Labour Market Impact Assessment (LMIA). Exemptions from the LMIA requirement are determined on the basis of providing a significant economic, social or cultural benefit, reciprocity, public policy, or competitiveness considerations.

In general, foreign academics and researchers are issued work permits under the IMP categories outlined below:

- Guest lecturers, visiting professors, and exchange elementary and secondary teachers are facilitated on the basis of reciprocity, with the assumption that opportunities exist for Canadians or permanent residents to take similar positions at foreign institutions abroad.
- Post-doctoral and research award recipients are facilitated based on competitiveness for Canada's academic institutions. These categories allow Ph.D. and award or scholarship recipients to take time-limited positions in Canada to undertake research or teach in their field.
- The Designated Research program category facilitates work related to federal research programs designated by the Minister. These programs are funded through Canada's granting councils and departments participating in Natural Resources Canada's program for distinguished scientists and scholars.

- Academics and researchers may also be facilitated pursuant to Canada's international agreements as well as under the significant benefit category, when there is sufficient evidence presented to support facilitation.

Researchers coming to do short-term research at a publicly funded, degree granting institution, or affiliated research institute may also be work permit exempt under the new short-term research exemption introduced under the Global Skills Strategy. Notably, university professors and lecturers have been consistently in the top five occupations for applications received for faster processing under the Global Skills Strategy.

Academics who do not benefit from facilitation under the IMP can enter Canada under the TFW Program with the support of a LMIA. The LMIA process is designed to measure employers' efforts to engage domestic sources of labour, while also ensuring that there is either a positive or neutral impact on the domestic labour market in hiring a foreign national.

Foreign nationals can come to Canada as international students, gaining exposure to new cultures and ideas, stimulating innovation, and developing important cross-cultural competencies. Graduate students drive research and innovation, and many coming to study choose to stay and work in Canada after graduation. One of the main avenues to pursue this option is through the Post-Graduation Work Permit (PGWP) Program, a temporary worker program that allows international students who have graduated from a recognized Canadian post-secondary institution to obtain a one-time open work permit. The PGWP provides these international graduates with Canadian work experience that may support a future application for permanent residency, should they wish to settle in Canada permanently.

There are also a number of permanent resident pathways that provide opportunities for researchers looking to live and work in Canada permanently. The Federal Skilled Worker program and Canadian Experience Class, managed through Canada's flagship economic immigration management system, Express Entry, selects individuals on the basis of their ability to economically establish in Canada.

IRCC has also launched new authorities to Express Entry through category-based selection. In category-based rounds of invitations, candidates are invited into the Express Entry pool who are eligible for a specific category established by the Minister to meet an identified economic goal. Categories selected for 2023 invitation rounds include candidates with work experience in Science, Technology, Engineering, and Math (STEM) occupations, such as data scientists, natural and applied science policy researchers, consultants, and program officers.

IRCC also continues to make great efforts to improve its processing times. Within the first three months of 2023, IRCC processed over 1.7 million applications across temporary residence, permanent residence, and citizenship lines of business; over 700,000 more applications as compared to the same period in the previous year. This high level of production was the result of additional staff and processing innovations.

Looking ahead, IRCC plans to add additional pathways which may benefit Canada's effort to attract and retain top academic talent, such as an open work permit stream for H-1B specialty occupation visa holders, an Innovation Stream under the IMP, and improvements to the Start-up Visa Program.

**(3) Fueling innovation by investing in talent and skills**  
(Report Recommendations 9, 10, 11)

The Government values the vital role of graduate students and trainees—Canada's future researchers—in producing the knowledge, discoveries, and innovations that help build a strong future for Canada and the world. Federal scholarships and fellowships play a critical role in the career progression of Canada's top talent, providing those who hold awards with increased financial security and independence, along with greater control over their research direction. Budget 2019 provided \$114 million over five years—with \$26.5 million per year ongoing—to the granting agencies to create 500 more master's-level scholarship awards annually, and 167 more three-year doctoral scholarship awards annually through the Canada Graduate Scholarship program. Budget 2019 also allocated \$37.4 million over five years—and \$8.6 million per year ongoing—to the federal granting agencies in order to expand parental leave coverage from six months to 12 months for students and postdoctoral fellows who receive granting council funding. The support has helped young researchers, especially women, better balance work obligations with family responsibilities, such as childcare.

Looking forward, the Government aims to deliver an equitable, accessible, and effective suite of scholarships and fellowships that help support and prepare a diverse population of students and post-doctoral fellows for careers in research across all sectors of society. Through the work of the Canada Research Coordinating Committee (CRCC), the Government is developing a Tri-agency Training Strategy across the federal granting agencies. The Strategy aims to be trainee-centric, evidence-based, and transparent, while communicating a shared vision among the tri-agencies, and upholding the principles of equity, diversity, and inclusion (EDI).

As Canada continues its work to promote EDI to tap into the country's full range of talent, Budget 2019 announced support for additional bursaries and scholarships for First Nations, Inuit, and Métis students through \$9 million for

Indspire, an Indigenous-led charitable organization that helps Indigenous students attend post-secondary institutions and find good jobs. In addition, in recognition that Black researchers are underrepresented in the awarding of grants, scholarships, and fellowships, Budget 2022 provided \$40.9 million over five years—and \$9.7 million ongoing—to the granting agencies to support targeted scholarships and fellowships for Black researchers.

Most recently, to support post-secondary students and make life more affordable, Budget 2023 increased Canada Student Grants by 40 percent, providing up to \$4,200 for full-time students. Budget 2023 further raised the interest-free Canada Student Loan limit from \$210 to \$300 per week of study, and waived the requirement for mature students, aged 22 years or older, to undergo credit screening in order to qualify for federal student grants and loans for the first time, allowing up to 1,000 additional students to benefit from federal aid in the coming year.

In addition, Budget 2023 also provided \$197.7 million in 2024–2025 to the Student Work Placement Program to continue creating quality, work-integrated learning opportunities for students through partnerships between employers and post-secondary institutions. This funding will support students in gaining the necessary skills, education, and real-life work experience to transition successfully into the workforce.

The Government has heard the calls from the research community to increase the value of scholarships and fellowships, and will continue to work with the granting agencies and the research community to explore ways to support the next generation of researchers and top talent.

Stable and rewarding academic positions are required to allow talented graduate students and post-doctoral fellows to build prosperous and dynamic careers in Canada following their studies. As described in more detail above, through the Canada Research Chairs, Canada First Research Excellence Fund, and Canada Excellence Research Chairs programs, the Government is also contributing to the creation of new positions in post-secondary institutions across Canada. The grants awarded to post-secondary institutions through these programs may be used to fund the salaries of researchers and Chairholders, which may support the creation of new tenured positions.

Talented individuals relocating to Canada from abroad must also be able to apply their valuable skills in their new home. Provinces and territories are responsible for credential recognition and licensure for most regulated occupations, such as nurses and engineers, and often delegate this authority through legislation to regulatory authorities. However, the Government recognizes the challenges

skilled newcomers face. The Foreign Credential Recognition Program supports the labour market integration of skilled newcomers by providing funding to provinces and territories, regulatory authorities, and other organizations for projects to improve foreign credential recognition processes, including by making the process faster and more efficient. In addition, the Program also supports projects that provide loans and employment support services to help skilled newcomers navigate foreign credential recognition processes, and provide Canadian work experience to skilled newcomers to support their labour market integration and improve worker retention.

Since 2015, the Program has invested nearly \$172 million in 99 projects to improve foreign credential recognition processes and support skilled newcomers. Budget 2022 provided an additional \$115 million over five years, with \$30 million ongoing, to expand the Program with an initial focus on the healthcare sector, given current health human resource pressures.

#### **(4) Enhancing collaboration with domestic and global players**

(Report Recommendations 12, 13, 14)

As the Report recognizes, moonshot goals cannot be achieved in isolation. Complex research initiatives often require greater collaboration involving numerous partners and stakeholders, including academic institutions, business and industry, Indigenous organizations and communities, and the not-for-profit and social enterprise sectors. International collaboration is also increasingly essential, particularly given the global scale of moonshot initiatives.

The Government continues to work collaboratively with partners, including provinces and territories, as well as with industry, academics, not-for-profit organizations, and Indigenous organizations, to advance R&D priorities across the Canadian economy. In particular, this includes collaborating with provinces and territories on funding projects through the Strategic Innovation Fund (SIF). These collaborative projects, co-funded under SIF's Net Zero Accelerator program, are accelerating Canada's transition to net zero, including a portfolio of projects that are revitalizing Canada's automotive sector.

Canada's research continuum includes strong collaborations between industry and researchers at post-secondary institutions. These collaborations mobilize talent and world-leading knowledge within Canada's universities and colleges to benefit society and the economy. They are especially important in Canada given that a large percentage of Canada's R&D is performed by the post-secondary sector; 39% of R&D was undertaken by the post-secondary sector in 2020, the fourth highest among OECD countries. Canada excels at forming these partnerships, and is fourth among OECD countries for the percentage of R&D performed at post-secondary institutions and financed by industry.



The Government supports several programs to encourage strategic collaborations between industry and post-secondary institutions, including direct support from Canada's granting agencies. For example, NSERC annually connects over 4,000 industry, government, and not-for-profit partners with Canadian university and college researchers who bring knowledge, specialized equipment, and young talent to R&D collaborative projects.

Through work-integrated learning programming, Mitacs has been another important partner in helping forge collaboration between the post-secondary sector and other sectors of the economy. Mitacs is a national not-for-profit research organization that works with Canadian academia, private industry, and the federal government to offer research and training programs in key industrial fields. In 2021–2022, Mitacs delivered 15,547 ISED-supported work-integrated learning opportunities, connecting students and researchers from 221 post-secondary institutes to 3,198 businesses, not-for-profits, and governments. Mitacs's Accelerate Fellowship provides a long-term funding and internship option for graduate students to solve businesses' research challenges with their academic expertise. Additionally, Mitacs's Globalink Research Internships offers international undergraduates the opportunity to participate in research partnerships in Canada, building a bridge between Canada and emerging international research talent.

Government programs can also act as connectors between industry and post-secondary institutions. Programs such as the SIF and the Global Innovation Clusters build networks that bring together post-secondary institutions and industry. As part of Budget 2022, \$750 million over five years was provided for Canada's Global Innovation Clusters. To date, the Government has co-invested nearly \$2 billion in the Global Innovation Clusters alongside industry to grow innovation ecosystems, promote investment in innovation and commercialization, expand their national and global presence, and continue to support the growth and upscaling of Canadian small and medium-sized enterprises (SMEs).

Canada's 135 public colleges and CEGEPs are playing an increasingly important role in supporting Canada's innovation continuum and SMEs. As mentioned above, the College and Community Innovation Program increases innovation at the regional level by helping colleges increase their ability to collaborate and support firms in their applied research projects, such as the commercialization of products and the adoption of new technology. Through Budget 2023, the Government announced \$108.6 million over three years, starting in 2023–2024, to expand the College and Community Innovation Program.

Budget 2022 provided \$10.6 million over five years—and \$2 million per year ongoing—for ISED to launch a survey of Canadian research institutes in collaboration with Statistics Canada. The survey, which is under development,

will explore how knowledge created at post-secondary institutions generates commercial outcomes and impacts the broader society and economy, including through industry–post-secondary collaborations.

The Government also recognizes the importance of international collaboration in addressing grand challenges and global priorities. International partnerships are a catalyst for research that leads to scientific and technological innovation, and Canada promotes collaboration with its international partners in multiple ways. Canada has signed Science, Technology, and Innovation (ST&I) agreements with more than a dozen economies. These agreements serve as a framework for collaboration between Canada and its international partners.

Canada engages bilaterally with some partners through Joint Science and Technology Cooperation Committees (JSTCC). These meetings provide opportunities to discuss shared areas of interest, and explore options for greater collaboration, including on joint research funding programs. So far in 2023, Canada has had several JSTCC meetings, such as with France, Germany, and the U.K. Canada also leverages strengths with key international partners through senior level engagements, and commitments to collaborate in shared priority areas. For example, through Joint Statements signed with Switzerland in 2023 and the U.S. in 2021, Canada demonstrates its intent to increase science, technology, and innovation research partnerships with these countries.

The Government also coordinates with its like-minded international partners and supports Canadian participation in international moonshot research collaborations, including through Horizon Europe, the Human Frontier Science program, and its horizontal work on the United Nations' Sustainable Development Goals (UN SDG).

Horizon Europe, the world's largest international science, technology, and innovation collaboration program, has five international-by-design moonshot missions which, by 2030, aim to develop regional climate resiliency, beat cancer, restore the oceans and waters, create 100 climate-neutral smart cities, and 100 living labs and lighthouses for soil health. Canadian researchers and innovators work with international partners in Europe and across the globe on research and innovation projects to tackle these pressing global challenges.

The Government also supports the Human Frontier Science Program, a collaboration between Canada and 14 like-minded and trusted partners which funds transformative, high-risk, inter-disciplinary, and international research to push the boundaries of life sciences. It is also working to advance the UN SDGs alongside international partners. The 2030 Agenda National Strategy is the Government's whole-of-society approach to realizing the SDGs and includes a funding program supporting research on advancing the SDGs, helping to put forward solutions to global and domestic SDG challenges.

## Conclusion

Canada and the world are facing significant opportunities and challenges, including climate change, geopolitical uncertainty, transformative technologies, aging populations, and many others. This environment demands ambitious and creative solutions comparable to the original moonshot of the 1960s. This is why the Government of Canada will continue to invest in science, research, and innovation to tackle pressing problems and contribute to a sustainable future.

As outlined in this response, the Government contributes to realizing moonshot goals by supporting the full breadth of the continuum from fundamental science and research to commercialization and business innovation: aligning programs, strategies, and policies with a long-term focus; investing in talent and skills to fuel innovation; and promoting meaningful collaboration with provinces and territories, as well as partners and stakeholders.

In closing, the Government thanks the Committee for releasing its *Pursuing a Canadian Moonshot Program* report, as well as its continued efforts to provide thoughtful policy advice and elevate the profile of Canadian science and research. The Government looks forward to continuing to engage with the Committee, the research community, and all Canadians on ways to leverage science and research to foster a prosperous and inclusive economy and society. While the path ahead may sometimes appear challenging, by moving forward with ambition, optimism, and confidence in the future, and by working together, we can ensure the moonshots of our time remain within Canada's reach.

Sincerely,

A handwritten signature in black ink, appearing to read 'F. Champagne', with a stylized flourish at the end.

The Honourable François-Philippe Champagne, P.C., M.P.