

Building Resilience: Enabling Research and Fostering Talent in a Turbulent Time

Pre-Budget Submission to the House of
Commons Standing Committee on Finance

Recommendations:

To optimize the increased research investments announced in Budget 2024, U15 Canada recommends:

1. Match Budget 2024 investments with increased support for the full costs of research through the Research Support Fund and Incremental Project Grants;
2. Full support for enhancing Canada's digital research infrastructure as an enabler of world-class research initiatives;
3. Immediate action to maximize support for the development of research collaborations through Canada's participation in Horizon Europe.

Introduction

In an era defined by rapid technological change, heightened international competition, and mounting societal uncertainty, research performs a fundamental role in driving productive and sustainable economic growth, asserting national economic and technological sovereignty and enhancing social cohesion and resiliency. A thriving research and innovation ecosystem is globally recognized as a vital national asset, essential for maintaining competitiveness, driving economic productivity, and addressing complex societal challenges like pandemic preparedness, national defence and decarbonization. Supporting a successful research ecosystem is crucial to supporting Canadian success.

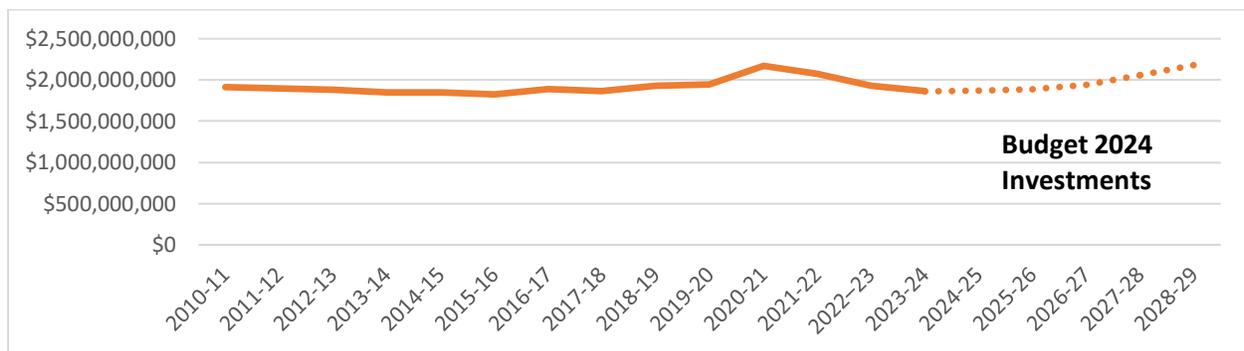
This recognition has long-standing support in countries including Canada, the United States, the United Kingdom, France, Australia, and Japan. Our peers have been building on this legacy by increasing investments in their research enterprises. In Canada, [federal funding for science and technology](#) in recent years had begun to drastically decline, reducing by over 15% in the space of just two years from 2020 to 2022 when accounting for inflation.

In [Budget 2024](#), the federal government responded with renewed research investments in highly qualified talent, both directly by allocating \$825 million over five years to update scholarship and fellowship awards to inflation-adjusted levels, and indirectly through an increase of \$1.8 billion over five years to the federal granting agencies. This was in addition to notable investments in key research infrastructure and AI compute capacity that will help build a strong foundation for future research.

The investments announced in Budget 2024 will help address a growing talent gap in Canada. Despite being one of the most educated countries, Canada ranks [28th in the OECD](#) for individuals with advanced degrees, needing an additional 681,000 to reach the OECD average. The research enterprise is crucial for addressing this talent gap by cultivating highly skilled individuals; in 2020-2021 alone, the three granting agencies supported the development of over [75,000 graduate students](#) (30% of total graduate enrollments).

U15 Canada welcomes the Budget 2024 investments. They will help drive innovation, foster the next generation of highly qualified talent, and generate greater foundational breakthroughs to the benefit of all Canadians. Securing these increases over the five-year funding cycle committed to in Budget 2024 will be crucial for positioning Canada to lead in addressing critical global challenges and seizing emerging opportunities.

Figure 1: Tri-Agency Core Grant Funding with Budget 2024 Investments (2010 Constant Prices)



After all, Canada cannot be complacent about the scale of competition for knowledge and talent. Despite political uncertainty, the United States has advanced significant investments through the CHIPS and Science Act. Likewise, Japan and the UK have announced substantial investments in their scientific and technological sectors, with Japan pledging \$87 billion and the UK’s 2023 [science and technology plan](#)

aiming to cement the country's place as a 'science and technology superpower' by 2030. Canada must keep pace, delivering on the vision for success outlined in Budget 2024.

Alongside significant investments, leading countries are updating their research support systems to facilitate new research approaches and to better integrate scientific and scholarly research and advice into government decision-making. France established a [Presidential Science Council in 2023](#), tasked with advising on science policy, emerging disciplines, and strategic approaches to current and future challenges.

In Canada, Budget 2024 announced plans to create a "capstone" governance mechanism to facilitate support for interdisciplinary, international and mission-driven research initiatives, as well as establish a Council on Science and Innovation with diverse representation to set out a unified national strategy that will help improve the linkages between science and government policy. U15 Canada welcomes efforts to facilitate coordination and set out a clear vision for success. We remain engaged partners as this process moves forward.

Building on recent developments and to maximize the success of Budget 2024, U15 Canada recommends additional targeted support to address specific capacity constraints in the Canadian research ecosystem. This includes support for indirect research costs through the Research Support Fund (RSF), the renewal of Canada's digital research infrastructure, and optimizing international engagement through Horizon Europe.

Moving Towards Funding the Full Costs of Research

Canada's universities face significant financial pressures from declining provincial funding, tuition freezes, and caps on international student visas. Supporting the research enterprise requires substantial resources to maintain systems and provide necessary support to researchers. Indirect costs represent over 40% of research grant amounts, yet Canada drastically underfunds these costs compared to peer countries. The funding formula also disadvantages larger, research-intensive universities by providing higher percentages of support to smaller institutions. For example, the University of Toronto receives around 18% in indirect cost support, while small institutions receive upwards of 80%. This leaves Canada's globally competitive institutions at a significant disadvantage domestically and internationally.

One important component of these indirect costs is associated with additional measures to secure research from threats. The federal government introduced the Research Security Fund in [Budget 2022](#), providing \$125 million over five years to support research security activities and reflect the costs of applying the National Security Guidelines for Research Partnerships. While this funding has been vital in expanding the capacity of research universities to develop robust policies and practices, additional federal measures, including the Policy on Sensitive Technology Research and Affiliations of Concern, mean this funding is insufficient and problematically not available to every institution. In lieu of limited resources, research-intensive institutions have acted as critical hubs, sharing information and expertise with smaller institutions to enhance overall research security capabilities. U15 Canada recommends building on this approach so that every institution can benefit from administrative support for implementing research security policies.

Secondly, the investments in Budget 2024 did not explicitly announce complementary investments in the Research Support Fund and Incremental Program Grants. These have characteristically been added at a rate of 25% on new investments made in the granting agencies. We cannot afford to undermine the competitiveness of our institutions further by inadvertently eroding this crucial source of funding for Canada's research universities.

Building Canada’s Digital Research Infrastructure

Urgent and complex research demands robust data management, specialized software, and advanced computing, which are increasingly fundamental to modern research and innovation activities. Budget 2024 took major steps forward to support two key components of the required digital research infrastructure. [Budget 2024’s](#) \$2 billion investment to initiate the new AI Compute Access Fund and AI Sovereign Compute Strategy represents significant progress in developing Canadian-owned and -located AI infrastructure. Additionally, new investments into CANARIE will ensure researchers and innovators remain connected through Canada’s ultra high-speed networks.

The third essential component of Canada’s digital research infrastructure was funded through to 2025 in Budget 2018. That investment established the [Digital Research Alliance of Canada](#) (DRAC) which serves as the central hub for advanced computing resources, data management, and research software tools essential for high-performance computing (HPC) and data-intensive research across diverse scientific and scholarly disciplines. These resources enable researchers to solve complex, data-intensive problems with precision and speed.

The Digital Research Alliance of Canada has become an important component of Canada’s national digital research infrastructure. The alliance facilitates access to crucial digital tools and services for research and international collaboration. As an enabler of research, DRAC’s role in advancing the national Digital Research Infrastructure (DRI) strategy is indispensable for ensuring that Canadian researchers remain at the forefront of global science and technology.

Despite significant investments in critical fields, Canada’s computational capabilities are limited. Only 5-15% of the country’s [67,000 academic researchers](#) have access to national host sites. This computational deficit is growing; even when adjusted for population and economic differences, Canada lags behind other [G7 countries](#) (see Figure 2). Currently, Canada’s computing capabilities represent only 0.7% of global compute performance and just 4% of the capacity of a single exascale system in Europe or the US. This significant gap drastically limits the country’s research and innovation capabilities.

Figure 2: Canadian Compute Performance Compared to G7 Countries

Country	Unadjusted Compute Performance Capacity	Per Capita Performance	GDP Adjusted Performance	Core Performance (PFLOPS)	Population Ratio	GDP Ratio
USA	90.4	10.6	7.6	3725.85	8.56	11.9
Japan	16.3	7.6	8.5	669.83	2.15	1.91
Italy	8.5	5.6	8.9	351.76	1.51	0.96
Germany	6.2	1.9	3.1	256.27	3.21	1.98
France	4.2	2.4	3.2	173.23	1.75	1.3
UK	2	1.2	1.4	81.71	1.72	1.44
Canada	1	1	1	41.21	1	1

Canada has made significant investments in strategic research areas such as Artificial Intelligence, quantum technologies and advanced research computing. To truly capitalize on these investments, it is critical that Budget 2025 invests in strong, compute and data capabilities for the pan-Canadian digital ecosystem. Without renewed investment, Canada risks losses in data sovereignty, intellectual property, and the capacity to address critical domestic challenges effectively while ensuring that Canada is a competitive location for research and innovation.

For this reason, U15 recommends that Budget 2025 invest in:

- **National Critical Infrastructure:** Recognizing DRI as essential infrastructure to ensure secure and sovereign compute and data resources.
- **Holistic Integration:** Maximizing the benefits of national investments for society and the economy by equipping researchers in Canada with robust digital research infrastructure.

Specifically, Canada requires three areas of investment over five years to secure its digital research infrastructure and competitive global position:

- **Capital Investment** to enhance Canada's compute and data capabilities.
- **Planning and Strategy Funding** to support planning for exascale compute capabilities and a comprehensive data strategy.
- **Operational Funding** annually from 2025 to 2030 to maintain and support essential resources and personnel.

These investments in Canada's digital research infrastructure for 2025-2030 would enable long-term planning, attract and retain skilled staff, and position Canada as a key actor in global research and innovation initiatives.

Realizing the Horizon Europe Opportunity

Horizon Europe, the European Union's major funding program for research and innovation, represents a significant opportunity for advancing scientific collaboration with likeminded peers. With a sizeable funding allocation of over [€95 billion for the period 2021-2027](#), the program will help tackle some of the most pressing challenges facing Canada and Europe today.

The associated country status with Horizon Europe Pillar Two provides Canadian researchers with unparalleled access to leading-edge collaborations and technologies, amplifying their impact on critical global issues such as health, climate change, and digital transformation. Given the significant opportunities presented by involvement in Horizon Europe and the complexity of navigating the program, it is essential that we ensure the initiative is well-supported and resourced through operational and implementation processes. Adequate support for a secretariat will be crucial in establishing capacity to facilitate Canadian researchers' access to Horizon, enabling them to fully realize the potential of this international collaboration. As such, U15 Canada recommends:

- **Resource Allocation:** Allocate adequate resources to ensure the program secretariat is well-positioned to support Canadian success. This funding will empower the secretariat to assist Canadian researchers and innovators in accessing and maximizing opportunities within Horizon Europe. The support will facilitate smoother navigation through the program's frameworks and enhance collaboration opportunities.
- **Strategic Presence in Brussels:** Establish a strategically positioned presence in Brussels through the program secretariat. This would serve as an early information node on project calls and a platform to influence upcoming funding decisions.

About U15 Canada

U15 Canada is an association of fifteen leading research universities across Canada. U15 Canada works to optimize research and innovation policies and programs that advance knowledge, develop highly qualified leaders for all sectors, and mobilize knowledge for the benefit of all Canadians. In this way, U15 Canada seeks to help Canadian universities and partners make a prosperous, sustainable and just future for all.