

The House of Commons Standing Committee on Finance Pre-Budget Consultations

Submission by:

The Social Sciences and Humanities Research Council (SSHRC), the Natural Sciences and Engineering Research Council (NSERC), the Canadian Institutes of Health Research (CIHR) and the Canada Foundation for Innovation (CFI)

SSHRC, NSERC, CIHR and the CFI are the federally funded agencies at the heart of Canada's vibrant research ecosystem. Together, they support Canada's top research talent and state-of-the art research infrastructure at universities, colleges and health research organizations across the country.



Canadian Institutes of
Health Research

Instituts de recherche en
santé du Canada

Natural Sciences and Engineering
Research Council of Canada

Conseil de recherches en sciences
naturelles et en génie du Canada

Social Sciences and Humanities
Research Council of Canada

Conseil de recherches en
sciences humaines du Canada

On the cusp of our nation’s 150th anniversary, Canadian research is being driven by momentum built on sustained investments in science, technology and innovation. Post-secondary research institutions across the country boast some of the world’s top talent and state-of-the-art infrastructure. The nation is poised to seize the opportunities of the rapidly changing and interconnected world of the 21st century. According to the Council of Canadian Academies, “the Canadian science and technology landscape is healthy and growing in both output and impact. With less than 0.5 per cent of the world’s population, Canada produces 4.1 per cent of the world’s scientific papers — seventh in the world — and nearly 5 per cent of the world’s most frequently cited papers — sixth in the world”¹.

“To be successful in the highly competitive global economy, Canada must continue to improve its approach for developing high-quality, talented people, performing world-leading research and generating new breakthrough ideas.”

*Government of Canada,
Budget Plan 2014*

This is a position hard won through a national commitment to excellence in research and innovation — one that was sustained even while the country fought to return to a balanced budget. Today, we have the people, the institutions and the fiscal capacity to reap the rewards of a world-class research environment that fuels entrepreneurship and innovation in all sectors of the Canadian economy and underpins the discoveries that solve our societal, environmental, economic and health challenges.

In a climate of fierce international competition, as other nations ramp up their investments in the development of research capacity and innovation skills, Canada has an opportunity to exploit the momentum we’ve built. Canada is forging new frontiers of knowledge, and in the same pioneering spirit upon which our nation was built, bold action is needed to maintain Canada’s place at the leading edge.

¹ Council of Canadian Academies, *The State of Science and Technology in Canada, 2012*

Recommendation

To continue to build on the momentum of Canadian research achievements, expand our research horizons and strengthen our capacity to innovate, the granting agencies and the Canada Foundation for Innovation recommend that the Government of Canada seize the opportunity to significantly increase its investments in research and technology development.

The 2015 federal budget provides the opportunity to maintain and build on the capacity created by previous investments in all areas of research and to cement Canada's status as a globally competitive science, technology and innovation nation. The payoff will support economic growth, a prosperous and vibrant society, and individual health and well-being across the country.

From the cutting-edge technologies used to rejuvenate our civic infrastructure to the health and social innovations that save lives and strengthen communities and the novel training opportunities that boost skills development, the research supported by the Government of Canada leads to innovations that directly support economic growth and help Canadian businesses compete and create jobs. Federal investment in science, scholarship, innovation and technology development is key to successfully tackling the social and economic challenges presented in the six themes set out for this year's pre-budget consultations.

Excellence is the foundation of competitiveness and success

A laser-like focus on excellence — across the full spectrum of research, innovation and technology development — is the surest way to maintain Canada's knowledge, people and entrepreneurial advantages. Every award issued by the federal granting agencies follows a rigorous, highly competitive merit review process, which ensures

that only high quality, promising, robust and impactful research is funded. This high calibre research provides top-notch training for the next generation of researchers, innovators and entrepreneurs, fosters collaboration between universities, colleges, businesses, governments and communities, and enables researchers to connect to and draw on an international pool of knowledge. Research excellence is the price of admission to the latest global knowledge networks and is sought after by all sectors as our companies strive to be globally competitive, and as our public and non-profit sectors strive to meet the multiple and interconnected social, environmental and health challenges facing society.

“... the global pressure around talent is now extraordinary. A university like UBC is competing for top professors and top students also looking at places like Stanford, Berkeley, Oxford and Harvard. We do well, but I think Canada has to be committed to ensuring we can compete for those top people.”

*Dr. Stephen Toope,
former President,
The University of British
Columbia*

Innovative people and ideas drive economic growth

As the Government of Canada has long recognized, economic growth is the best way to ensure balanced budgets and long-term fiscal sustainability while maintaining the critical public services that Canadians rely on in their daily lives.

Governments in all advanced economies have realized that supporting research, innovation and technology development is central to ensuring sustained economic growth: it stimulates a vibrant, expanding economy, provides businesses with tools and technologies to remain globally competitive, gives the next generation marketable skills training and hands-on workplace experience, and opens the door to the global circulation of new ideas, cultures, languages and people.

Sustained economic growth also requires an educated, highly trained and healthy workforce, a diverse job market where there is opportunity and where entrepreneurship is valued and rewarded, and smart taxation and regulatory

regimes capable of achieving public policy objectives without placing undue burden on businesses and individuals. Knowledge generated through world-class research excellence is crucial to achieving these outcomes. The competition, however, is fierce and growing. To ensure success, Canada must be ready to respond with the best people with the best ideas — ideas that can be translated into tangible benefits for Canadians.

Research helps Canadians adapt to a rapidly changing world

Research and innovation underpin many of the Government of Canada's major policy initiatives. This was evident in the Government of Canada's May 2014 announcement of \$3.5 billion to improve the health of mothers and children globally. Excellent research in everything from vaccines to nutrition to best practices for healthcare delivery in the developing world was central to informing this kind of far-reaching strategy.

The value of research in supporting forward-thinking policy is also clear in the Government of Canada's "Digital Canada 150" strategy, which sets out to ensure that the country can take full advantage of the opportunities of the digital economy. Researchers using data and digital technologies are now helping to design the next generation of aircraft, develop personalized cancer therapies using bioinformatics, search for patterns of criminal behaviour and improve services for consumers.

Across all fields of inquiry, data intensive research is flourishing, driven by the power of big data. Coupling large-scale data with advanced research computing and the skills required for data analytics and visualization pushes the frontiers of knowledge and supports innovation in every sector of the economy. Producing these positive social, health and economic impacts depends on consistent, stable and predictable investment in the people, infrastructure and institutions that are the drivers of the Government of Canada's Digital 150 strategy.

Understanding and protecting Canada's North is another area where researchers make essential contributions. As stated in the Government of Canada's Northern Strategy, science and technology provide the necessary knowledge for sound policy development and decision-making. Canada's changing Arctic opens up numerous possibilities for economic development, natural resource extraction, the effective exercise of Canadian sovereignty and celebrating and protecting the rich cultural heritage of northern communities. To seize these opportunities, there is a pressing need for extensive research-based knowledge in areas as diverse as human adaptation, geospatial modelling, human-environment interaction, transportation and energy.

The Government of Canada has made significant investments in modernizing Canadian research infrastructure in the North. Still, much remains to be done to ensure that Canadian researchers, and the communities with which they work, have the resources to continue to explore the economic, human health and social development potential of Canada's North. Significant financial support is required to carry out research in this vast and unforgiving region.

Through the Northern Strategy, and the research on which it relies, Canada is making inroads into building a baseline of knowledge on the Arctic environment and forming key international partnerships and research collaborations by working with organizations such as the United Nations and the International Maritime Organization and by chairing the Arctic Council. For example, under the auspices of the Arctic Council's Sustainable Development Working Group, CIHR is supporting two international research teams that will assess the outcomes of established and/or ongoing community-based interventions in circumpolar regions. This initiative will help identify and share best practices in promoting resilience and mental wellness in children and youth as a means of preventing suicide in later years.

Nurturing new generations of researchers, innovators and entrepreneurs

More than one million students are currently enrolled in Canadian post-secondary educational institutions. Many of them will go on to conduct research, in both the public and private sectors, which results in new technologies, new medical breakthroughs, new insights and new products and services that will translate into real, long-term economic growth, competitiveness and well-being. These people are a critical resource for Canada. Highly qualified people drive productivity and growth, and contribute to the country's resiliency during times of change or uncertainty. Their future success — indeed Canada's future — depends on developing their curiosity and creativity, along with providing them with the technical and professional skills they require to form the highly productive workforce we need to compete effectively in a rapidly changing, globally competitive world.

Ensuring we have this productive workforce starts with attracting and retaining the best minds through a world-class research environment where discerning and sophisticated individuals will have the best chance of realizing their post-graduate ambitions. In recent years, the Government of Canada, through the federal granting agencies, launched the Vanier Graduate Scholarship Program and the Banting Postdoctoral Fellowship Program to increase Canada's competitiveness in attracting and retaining highly skilled graduate students and postdoctoral fellows to Canada. These programs are now starting to pay off, but more still needs to be done to ensure Canada's long-term capacity for research and innovation. To achieve their full potential, these students also need opportunities to garner experience in public and private sectors, as well as the ability to work and study internationally. International connection and collaboration are increasingly important to both the domestic and global success of Canadians.

The federal government's lead agencies for the support of research and training in post-secondary institutions, SSHRC, NSERC, CIHR and CFI, are positioned to respond to the knowledge and talent development needs of Canadians. By focusing on and supporting excellence in research, innovation and the training of highly skilled individuals, these agencies ensure that researchers and the students they educate and train are at the cutting-edge of knowledge and can compete with the best in the world. Our businesses, our communities and our citizens deserve nothing less.

For examples of highly impactful federally funded research, see:

The University of Waterloo partners with Maplesoft Inc. and Toyota Motor Manufacturing Canada to improve vehicle safety and comfort while reducing fuel consumption and emissions. http://www.nserc-crsng.gc.ca/Prizes-Prix/Synergy-Synergie/Profiles-Profils/McPhee-McPhee_eng.aspp

The Centre for Applied Genomics (TCAG) in Toronto uses state-of-the-art digital infrastructure to improve the health of Canadians and increase competitiveness of Canadian businesses in the global economy. <http://www.cihr-irsc.gc.ca/e/48100.html>

A McGill economics professor collaborates with the Bank of Canada to more accurately measure how Canada's monetary policy influences inflation rate, financial markets and the economic climate.

http://www.sshrc-crsh.gc.ca/society-societe/stories-histoires/story-histoire-eng.aspx?story_id=162

How can we better care for our caregivers as baby boomers begin to age?

http://www.sshrc-crsh.gc.ca/society-societe/stories-histoires/story-histoire-eng.aspx?story_id=156

An extensive collection of how research is having an impact on the Canadian economy as a result of the use of CFI-funded research infrastructure:

<http://www.innovation.ca/Innovationnow>