

Investing in people, research and innovation for a greener Canada

Universities Canada's Budget 2020
submission to the House of Commons
Standing Committee on Finance



Recommendation 1:

Expand investments in international research collaboration to ensure Canada can fully participate in world-leading, interdisciplinary, international research to address climate change and other pressing global issues.

Recommendation 2:

Reinvest in state-of-the-art, green postsecondary infrastructure to reduce campus carbon footprint, support world-class research and provide spaces that prepare students for the jobs of the future.

Recommendation 3:

Invest in a new knowledge mobilization fund to increase the impact of university research in driving Canada's economic, climate and social priorities.

Recommendation 4:

Invest in university cybersecurity to ensure that, as we share research expertise and discoveries with the world, our data and intellectual property are adequately secured.

Recommendation 5:

Enhance Indigenous student access and success at university through:

- increased direct student financial support for First Nations, Inuit and Métis learners – including urban Indigenous learners;
- increased funding for Indigenous research; and
- funding for wrap-around programs and supports.

Introduction

Canada's universities are centres of ground-breaking research and innovation that transforms lives, strengthens communities and provides solutions to climate change and the most pressing global challenges. They also develop highly qualified researchers and leaders who will ensure Canada thrives in a knowledge-based economy increasingly disrupted by technology and global competition. At the same time, they are adopting new technologies, building and refurbishing research infrastructure, and reducing their carbon footprint.

Canada's universities welcome the Standing Committee on Finance's pre-budget consultations and look forward to working with all Parliamentarians to address global climate change and transition to a low carbon economy.

To galvanize rapid progress against climate change, Universities Canada recommends investment in five pivotal areas:

- International research collaboration
- Greening research infrastructure
- Knowledge transfer
- University cybersecurity
- Indigenous student access and success

“Universities should step up to [climate change] challenges ... We should be foreseeing changes, developing solutions and strategies to shape and cope with them and equipping students with the tools to succeed and thrive in an uncertain world.”

Philip Steenkamp, president,
Royal Roads University

1. Investing in international research collaboration

International research collaboration catalyzes solutions to global challenges: knowledge and ideas are exchanged, access to state-of-the-art research infrastructure is expanded and international networks grow. If Canada is serious about mitigating and adapting to global climate change, we cannot afford to be on the sidelines of large-scale international research collaboration.

For decades, Canada's world-class university researchers have studied our changing climate and developed solutions to pressing economic and social challenges. With increased research collaboration, Canada can elevate the global impact of these Canadian solutions.

However, funding for international research collaboration is woefully inadequate, diffuse and complex, leaving Canadian universities poorly positioned for participation in global initiatives. In a 2014 survey on internationalization by Universities Canada, 83 percent of universities cited the lack of research funding as the most significant barrier to international collaboration.

Budget 2018 invested in the New Frontiers in Research Fund, a welcome first step toward increased international research engagement. However, Canada will need to invest at levels that support participation in opportunities like Horizon Europe to bring Canadian research talent to the world. Enhanced international research collaboration can also reinforce and strengthen new trade relationships like CUSMA, post-Brexit U.K., the Association of Southeast Asian Nations and the Pacific Alliance.

We recommend:

- expanded investments in international research collaboration to ensure that Canada can fully participate in the world-leading, interdisciplinary, international research being conducted to develop solutions to climate change and other pressing global issues.

Global research solutions

L'Université de Sherbrooke recently opened Canada's largest solar energy park dedicated to research. The institution's northern solar expertise led Morocco's *Institut de recherche en énergie solaire et énergies nouvelles* to seek out partnership. Together, the two institutions will collaborate on renewable energy research.

2. Investing in green postsecondary research infrastructure

To meet our climate goals, Canada needs to continue to invest in green infrastructure that supports our innovators: technology-enhanced environments for lifelong learning, sustainable campuses and modern research facilities that nurture curiosity and discovery.

State-of-the-art research facilities enhance university researchers' abilities to develop new green technologies and ideas. They provide spaces for collaborative innovation with local communities, Canadian businesses big and small and international collaborators. They give students of all ages research-centered, hands-on learning experiences – a core part of equipping all learners with the skills needed to participate in and drive Canada's knowledge economy.

Past federal programs to green postsecondary infrastructure have effectively helped universities reduce their carbon footprint. For example, 2009 federal investments in postsecondary research infrastructure reduced energy consumption by over 1.3 million gigajoules and reduced greenhouse gas emissions by over 175,000 tonnes, saving institutions \$23 million in annual operating costs.

But we can't stop now: there is still an acute need for retrofitting, addressing deferred maintenance and constructing new research facilities. A 2018 sample survey of Canadian universities showed that there are \$3.8 billion worth of shovel-ready infrastructure projects on campuses currently awaiting investment. More than half of these projects focus on improving energy efficiency and green infrastructure, while 62 percent involve upgrading heating and electrical systems.

We recommend:

- reinvesting in state-of-the-art green postsecondary infrastructure to reduce campus carbon footprint, conduct world-class research and provide spaces that prepare students for the jobs of the future.

Green infrastructure, innovative campuses

With 2009 federal university infrastructure investments, the University of Northern British Columbia constructed a biomass gasification system that reduces the university's carbon footprint and provides hands-on learning opportunities for students.

Using 2016 federal investments, Acadia University renovated their science complex to increase energy efficiency and expand space for research commercialization activities. This federal investment attracted additional funds to open the Huestis Innovation Pavilion aimed at improving technology transfer.

3. Investing in transferring research knowledge

Every day, universities collaborate with industry, health care institutions and community-based organizations to bring research solutions to Canadians. In the face of climate change – an issue that touches every facet of Canadian society – we must invest strategically to ensure new research and knowledge is leveraged to speed our transition to a low carbon economy.

Other countries are investing wisely and significantly in knowledge mobilization. The U.K. provides \$350M CAD through its Higher Education Innovation Fund and the U.S.' Small Business Technology Transfer Program spends \$420M CAD annually to expand public-private sector partnerships between small businesses and nonprofit US research institutions. Switzerland and Sweden also have generous joint education-business innovation funds.

By contrast, Canada has moved away from supporting PSE knowledge transfer by, for example, ending the Intellectual Property Mobilization program and reallocating funding for Centres of Excellence for Commercialization and Research. These shifts have had consequences on commercialization activities: a survey of 19 universities between 2008 and 2017 shows a 20 percent reduction in the number of staff dedicated to licensing and patents and a decrease of 68 percent in the number of new patents submitted.

Solutions for multiple dimensions of climate change are being generated by researchers across disciplines at Canada's universities – but in order for Canadians to benefit, we need to support collaboration with businesses and social innovators.

We recommend investments in a new knowledge mobilization fund to support:

- innovation hubs that bring university researchers together with industry and community representatives to identify and develop research initiatives that have high commercial potential and social benefit;
- accessible, shared university facilities and resources to support industrial R&D;
- lab-to-market programming that gives faculty and graduate student researchers the knowledge and tools to turn research discoveries into commercially viable and socially beneficial innovations;
- business incubators and accelerators that leverage universities' research and programming strengths and their national and international relationships to support scalable business development;
- programs to fund patenting and prototyping of innovations with high commercial and social value; and
- multi-faceted institutional research and innovation partnerships with long-term commercial and social potential.

Social science helps mitigate climate change risk

Researchers in economics, geography, public policy and other disciplines are designing ways to help Canada mitigate climate change risks at the Institute for Catastrophic Loss Reduction (ICLR) – a Western University and insurance industry partnership. Research findings are translated into resources for homeowners, municipalities, insurers and small businesses.

4. Investing in securing innovation and collaboration

As the world addresses climate change, Canada can generate economic opportunities with new approaches and technologies – though safeguarding such innovations amidst shifting geo-political realities, rapid economic disruption and unprecedented and increasingly complex cyber threats is critical. To ensure Canadian businesses, researchers and social innovators capitalize on innovations that address climate change and support the transition to a low carbon economy, we must better secure Canadian-generated IP and data.

This will require a sector-wide, coordinated approach to protect Canada's universities against cyber attacks as well as direct supports to build institutional capacity to strengthen the safety of digital infrastructure and secure intellectual property and data.

We recommend:

- increased investment to harden university cybersecurity infrastructure, fund the retention and continued development of highly qualified cybersecurity professionals in Canadian universities, and cultivate a culture of cybersecurity on campus;
- a sector wide, national approach to support university cybersecurity, that will address the constantly evolving threat landscape, provide a set of common and shared cybersecurity services, and encourage collaboration and information sharing across and beyond the sector; and
- increased investments in federal programs that aim to build and strengthen cybersecurity capacity at universities and help protect Canadian research integrity.

5. Investing in Indigenous student access and success

Canada needs the meaningful economic and social participation of every citizen to tackle the challenges presented by climate change. To do this, Canada needs to ensure that Indigenous learners have access to postsecondary education and that we invest in Indigenous research and the sharing of Indigenous knowledge throughout Canadian society.

Indigenous learners increasingly access postsecondary with 49 percent of those aged 25-64 now having some form of postsecondary education. However, a significant gap remains compared with the non-Indigenous population. When it comes to university education, 10.9 percent of Indigenous people aged 25-64 have a university degree, compared to 29.3 percent of the non-Indigenous population.

Canada's universities are pleased to see ongoing investments in Indigenous postsecondary education. Our members support the Government of Canada's distinctions-based approach to Indigenous postsecondary education and its ongoing negotiations with the Assembly of First Nations, Inuit Tapiriit Kanatami and the Métis National Council.

We encourage the government to invest more in direct postsecondary funding for First Nations, Inuit and Métis learners and to ensure that urban Indigenous students not connected to a community covered under the existing agreements have direct funding supports.

To set these learners up for success, Canada's universities also call on the government to better fund wrap-around supports and programs such as housing, daycare, mentorship, cultural supports and employment services provided through partnerships between universities and Indigenous communities.

We recommend:

Supporting Indigenous student access and success at university to equip Indigenous students with the skills to succeed in the jobs of tomorrow, through:

- increased direct student financial support for First Nations, Inuit and Métis learners – including urban Indigenous learners;
- increased funding for Indigenous research; and
- funding for wrap-around programs and supports.

Conclusion

As the need for urgent action on the environment tops the list of Canadians' priorities, the federal government needs to make strategic investments in university research and talent to generate solutions across society.

Building relationships through learning opportunities

MacEwan University's campus Indigenous centre, kihêw waciston, provides cultural supports to keep Indigenous students connected to their communities while studying. Recently, the centre brought 30 students to Maskêkosihk (Enoch Cree Nation) for four days to engage firsthand with Indigenous knowledge and culture on the land during the nation's spring cultural camp.

“The greatest challenges facing society today cannot be solved without strong partnerships across industry and academia that bring together our world-renowned researchers with leading technology and expertise.”

Feridun Hamdullahpur,
president, University of
Waterloo.

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