POLYTECHNICSCANADA

Polytechnics: Contributing Talent and Innovation for Canada

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

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510-350 Sparks St. · Ottawa, ON · K1R 7S8 · Phone: 613.688.0899 · Fax: 613.594.2917· nrobinson@polytechnicscanada.ca
www.polytechnicscanada.ca

EXECUTIVE SUMMARY

Polytechnics Canada urges a focus on ways to improve job growth and commercial success, especially for small- and medium-sized enterprises (SMEs), in the 2011 federal budget. We believe these goals can be best achieved at low or no cost through more incentives for the undervalued actors in the Canadian innovation system: polytechnic institutions and colleges, and SMEs.

The Canadian innovation landscape today comprises more than universities and big business. It now also includes colleges and SMEs as major players. Polytechnics and colleges provide highly-trained job-ready graduates as well as technology-gap services that meet industry's real needs delivered at business speed, not at the languorous pace of theoretical, academic discovery. While Ottawa boosted its applied research support to our members from $1.8 million to $10.4 million in the 2009/10 fiscal year, it continues to provide universities with nearly $3 *billion* for pure research. Our economic future depends on narrowing this gap, substantially.

The next budget should focus on small-scale, targeted funding to ensure that the Canadian innovation system as a whole is able to succeed by encouraging and incentivizing the smaller participants such as colleges and SMEs. Specifically, Polytechnics Canada recommends the following funding priorities, which include demonstration projects for business innovation:

1. Renew commitment to the post-secondary education portion of the Canada Social Transfer.
2. Double the annual funding for the Industrial Research Assistance Program.
3. Create a Commercialization Chair program for polytechnics and colleges.
4. Expand the Applied Research and Commercialization Initiative.
5. Include colleges, polytechnics and their students for eligibility in all existing federal research granting council programs that are relevant to our mandates.
6. Lead and launch an inclusive National Digital Skills Strategy ensuring best use of college contribution to the information communications technology (ICT) sector.
7. Pilot a Creativity Transfer Fund designed to strengthen the SMEs in the ICT sector.
8. Create a pilot program for foreign-trained researchers to gain experience at polytechnic institutions and colleges.

HOW POLYTECHNICS AND SMEs SPUR INNOVATION AND CREATE JOBS

The 2011 federal budget should target two key national priorities: creating and maintaining high-quality jobs, and improving the productivity and commercial success of Canadian industry, especially small- and medium-sized companies. Opportunities exist for the federal government to continue and sustain smart, targeted and modest funding mechanisms that will focus on those sectors most able to make the link between jobs and productivity, even as the major stimulus and infrastructure funds diminish. These sectors are industries driven by SMEs and Canadian polytechnics and colleges, both key contributors to improved productivity and growth in Canada.

Polytechnics[1] are innovation intermediaries, bridging the gap between curiosity research and business needs, particularly in emerging industry sectors. Polytechnics bridge the valley of death where neither economic nor scientific incentives operate because we are motivated by the learning experience of our students through hands-on applied research.

[1] The term "polytechnics" applies to degree-granting, research-intensive colleges and institutes that are either designated as polytechnic institutions by certain provinces or differentiate themselves from traditional community colleges that do not offer degrees or conduct applied research. All members of Polytechnics Canada offer undergraduate degrees and are leaders in industry innovation.

Polytechnics Canada's nine members across the country conduct three kinds of activity that contribute to economic growth by solving industry/SME problems relating to research commercialization:

- We provide lower cost, more efficient and targeted research and development (R&D) services for SMEs by mobilizing our faculty, students and research facilities to solve R&D issues at business speed.
- We convene networks of expertise in industry problem solving from across our faculty.
- We conduct innovation-gap activities such as prototype development, scale-up of laboratory processes and commercial testing – three activities traditionally ignored by university researchers and insufficiently commercial to attract the attention of big business.

In so doing, our members build innovation literacy among students, faculty and the SMEs we serve.

Polytechnics Canada has identified the following key indicators of positive change in the 2009/10 fiscal year:

- Federal support for applied research at our nine member institutes stands at $10.4 million, up from $1.8 million in 2008/2009.
- Federal support enabled us to leverage an additional $14.9 million in funding from both the provincial governments and private sector partners – proving that partnership is possible.
- The number of students engaged in industry innovation research projects has grown from 4,077 to 4,500 in just one year.
- Even with these modest investments, 124 prototypes were developed through our R&D services for our over 750 industry partners.
- Each of our members is reporting over 90% employability for its students within six months of graduation in their chosen field of study.
- Our nine member institutions now offer 79 undergraduate degrees that require students to be actively engaged in a research project with industry.

In 2010, the federal government made three key announcements demonstrating that it understands the positive role polytechnic institutions play in ensuring the economic health of the nation:

- Doubling to $30 million the College and Community Innovation Program administered by the Natural Sciences and Engineering Research Council of Canada;
- Introduction of a $15 million pilot program for an Applied Research and Commercialization Initiative through FedDev Ontario for southern Ontario; and
- Re-instatement of a $32.5 million program at the Canada Foundation for Innovation to enable the college and polytechnic sector to seek partnered funding for much-needed research equipment and infrastructure.

Polytechnics Canada recognizes and applauds Ottawa's leadership in making these funding commitments at a time of severe economic pressure and strong efforts by vested interests to support the status quo in favour of basic discovery research.

All these initiatives respond directly to the evidence-based case made by Polytechnics Canada for programs that facilitate commercialization, technology transfer, adaptation and adoption of new technologies, and the need for better research equipment, facilities and infrastructure for our broader sector.[2]

[2] These new announcements should be seen as signals of a change in approach to innovation and job creation, rather than a substantive investment or re-alignment of traditional funds under Canada's Science and Technology Policy or industrial policy. Fund flow, project activity and results under these new initiatives will take time as proposals are reviewed, accountability processes are implemented, and our new SME partners are confirmed.

Nevertheless, despite these recent forward movements, our job is far from complete. There remains a staggering imbalance between government funding for pure research and the applied research that Polytechnics Canada members conduct to solve industry problems and produce jobs. While Ottawa boosted its applied research support to our members from $1.8 million to $10.4 million in the 2009/10 fiscal year, it continues to provide universities with nearly $3 *billion* for pure research. Our economic future depends on narrowing this gap, substantially.

Heading into the fall of 2010, several challenges persist (or are looming) that have grave negative implications for growth and innovation, while also negatively affecting our students and graduates:

- As we anticipate the expiry of the current Canada Social Transfer (CST) levels and re-negotiation of the federal-provincial health accords, there is a risk that the rising demand for health spending will undervalue investments in the long-term economic viability of the Canadian labour force. Since 2007, the federal government has made a commitment to increasing the CST by three percent annually until 2013-2014. The clear earmarking of a section of the CST for post-secondary education was an important signal that the government realized the economic and social growth that comes from stable funding for higher education. The predictability of this funding is critically important as is the transparency of reporting to Canadians on how these funds are spent. The pressure to increase health care spending risks reductions to the operating grants for colleges, institutions that cannot rely on the extensive endowment funds or philanthropy that traditionally supplements university revenue.

- Despite the over $10.7 billion in public R&D funding, Canada lags far behind our OECD competitors in almost every measure of business innovation. Canada has dropped to 17th place (out of 31 countries) in private sector innovation.

- Canada now stands 15th out of 30 in OECD productivity indicators.

- In the post-recession context, we have entered a time of sustained, persistent unemployment while industry laments the lack of entrepreneurial and new skills in Canada's labour force. The title of a recent consultant's report for the Ontario government says it all: "People without jobs, jobs without people."

Behind these disconnects lie fundamentally flawed assumptions in serious need of re-evaluation. Innovation is often misconstrued for invention, which explains the preponderant and excessive funding of basic research. Furthermore, innovation is not an end in itself, but a means to improve weak productivity and commercial success. In fact, innovation is the introduction of a new, significantly improved product, process or method. Government policies in general (both federal and provincial) have incorrectly equated innovation and commercialization. Companies and industry do not commercialize science and technology; they do commercialize products and services.

Markets demand solutions, not pure research in science and technology. When focusing on science and technology innovation, governments have often not valued the full range of innovation activities in business, marketing and delivery of customer services. Commercializing innovation success now requires more than research funding. It requires fostering a culture of entrepreneurs and collaboration, enabling SMEs to access both venture capital and highly qualified talent in all aspects of commercial operation.

Polytechnic education with its multi-skilled, multi-disciplined, industry-designed and industry-responsive training provides all employers, including SMEs, with technically proficient, problem-solving and job-ready labour that will drive the new and emerging industry sectors in Canada.

Recommendations from Polytechnics Canada for the Federal Budget 2011

Polytechnics Canada, taking into account the constrained fiscal times, but building on a new momentum for change, recommends that the federal budget priorities should focus on these areas:

1. **Renew commitment to the Post-secondary Education portion of the Canada Social Transfer:** With the expiry of the 2007 budget legislation and the strong signals that provinces will want to re-negotiate and increase the Canada Social Transfer for health care spending, the time is now for the federal government to renew its commitment to the three percent escalator in the post-secondary portion of CST. At a time when stimulus funding for training will end, and the demand for PSE will continue to rise from all learners in Canada, the government can send a strong signal that it understands that our economic growth will come from sustained investment in education.

2. **Federal support for SME innovation:** Emerging from the federal R&D review, funding for the Industrial Research Assistance Program (IRAP) should be doubled to an annual operating base of $200 million. IRAP should be mandated to view polytechnic applied research services as a vital and viable component of the Canadian innovation system. Furthermore, IRAP should encourage its SME clients to work more closely with our members, as it currently does with universities. Targeted and increased IRAP funds would allow colleges to leverage existing SME connections into even more commercial successes.

3. **Commercialization Chair Program:** Polytechnics Canada recommends that the Government of Canada create a pilot program for a Commercialization Chairs program for leaders in polytechnic applied research with initial funding of $7 million. Based on a partnership model with provinces and industry investors, the institution-held chairs would be responsible for creating and working with emerging technologies, as well as applying existing technologies to new commercial purposes. Such activity would focus on pre-commercial stages for local and regional product and process development, which could lead to creating new areas of specialization for the recipient institution. The research conducted by the chair would integrate a training component for our students, helping to prepare a highly qualified workforce for this new technology. Such federal funding would likely stimulate matching support from other levels of government and/or industry.

4. **Expand the recent Applied Research Commercialization Initiative of FedDev Ontario to other regional economic development agencies:** Such expansion at other relevant agencies would enhance the productivity and the commercial success of many more SMEs and encourage new SME entrants to R&D and commercialization. This direct support would spur business innovation and create jobs, consistent with the objectives of the new FedDev program. (a total of $ 60 million for WED, ACOA, CEDQ and FedNor).

5. **Level the playing field for polytechnic applied research in the context of existing Tri-Council programs:** The recent federal Strategic Review of the research granting councils has produced realignment, new priorities and funds. Yet, more can be done to improve the delivery of existing granting council funding. The government should encourage all granting councils to incorporate colleges, applied research and college graduates into their suite of existing programs *where relevant*. Numerous programs designed to develop a world-class pool of research talent simply overlook, ignore and, at best, undervalue the role of college and polytechnic students in research and development. Currently, for example, college and polytechnic graduates cannot apply for Engage Grants or the CREATE program at NSERC. Excluding polytechnic graduates from the usual mix of support for highly qualified people does Canada a disservice and ignores the full impact that our graduates can have for the economy.

6. **National Skills Strategy for Information Communications Technology**: The federal government, as part of its upcoming Digital Economy Strategy, should commit to creating a National Skills Strategy for the information and communications technology sector that is inclusive, involving all key stakeholders including polytechnics and colleges. Our nine members alone graduate 11,000 workers annually for the ICT sector with degrees, diplomas and certificates from more than 370 programs.

7. **A pilot "Creativity Transfer Fund":** Such a fund would enable faculty and students from polytechnics to conduct small-scale, proof-of-commercial concept projects in partnership with SMEs from the information and communications technology sector, acting as an efficient pre-qualifier for the IRAP program. This pilot program would also benefit from the inclusion of innovation-literate polytechnic students and enable SMEs in Canada's information and communications technology sector to create and fill the well-paying, long-lasting and high-quality jobs of tomorrow.

8. **Research Mentorships for Internationally-Trained Professionals:** The federal government should create a pilot program that would enable foreign-trained researchers who are currently unemployed or underemployed to work in a college or polytechnic on research and commercialization activities in their sector of expertise with college/industry partners. Providing valuable work and entrepreneurial experience for these newcomers would contribute to the research capacity of Canada's colleges and polytechnics while also mentoring our students. A small pilot program for foreign trained researchers to create 18 three-year mentorship positions would cost $6 million, presenting an opportunity for joint effort by federal departments such as Industry Canada and HRSDC.

Polytechnic education is connected to the world of work, and Canada's productivity and innovation track record will grow when Canadian companies invest in new technology, new skills and new ways of doing business. Our recommendations are designed to meet the needs of industry and the changing Canadian labour market at the pace that is needed.

The Canadian innovation system will not grow from the academic system alone; the innovation system will grow only when funding barriers are removed, when open innovation is fostered and when people are empowered to be innovative, entrepreneurial and collaborative. Polytechnics and SMEs should be considered as integral actors in building communities of innovation in Canada.

Polytechnics Canada Members 2010:

The current members are located in the key economic regions of Canada:

- Lower Fraser Valley - British Columbia Institute of Technology (BCIT)
- Calgary/Oil Sands Corridor - SAIT Polytechnic, Olds College
- Kitchener/Guelph/Waterloo High-tech triangle - Conestoga
- Golden Horseshoe - George Brown, Humber, Seneca and Sheridan
- National Capital Region - Algonquin