

Polytechnics Canada Response to the CFI 2009 Consultations

Polytechnics Canada and its Board of Directors recommend that the Canada Foundation for Innovation (CFI) dedicate a small percentage of its new funding envelope towards adding a new function-based fund to CFI's suite of programs. Targeted specifically for polytechnics and colleges (as with the successful College Research Development Fund) this new funding would capitalize on polytechnics' and colleges' unique applied research collaboration capabilities and would foster regional industry innovation.

This response to the current CFI consultation process makes the following assumptions:

1. Canada's innovation ranking/performance is lower than it should be¹.
2. Any national innovation system that does not directly support technology and product development through industry-academic collaboration (i.e. through technology assessment and market analysis, technology bundling, technical problem-solving, collaborative applied research, proof of concept and prototyping) will be mediocre, at best.
3. Canada's past and current investments in government funded research (including CFI) are synonymous with university-based research. Any analysis of public expenditures on research in Canada renders this assumption irrefutable.
4. Canada's 150 polytechnics and colleges can fill a critical gap in the innovation spectrum/system by providing commercialization-focused "last mile" services that industry needs in order to test market practicality assumptions.

Polytechnics Canada has had a number of meetings with CFI's senior management and Board members since 2006 at which we have explained that the polytechnic and college applied research system is well-positioned to play a lead role in strengthening national and regional innovation. Polytechnic and college applied research centres offer complementary capacity for R&D that enables industry to make more effective use of publicly-funded research facilities. To generate world-class applied research, the polytechnics rely on the expertise and dedication of our own faculty/staff members (often part time industry based experts), the participation of our students, and the support of the business community, particularly small- and medium-sized enterprises that we consider our clients and partners.

Broadening the potential output for R&D in a given area by supporting applied research will foster increased productivity, realign R&D expenditures in balance and correct Canada's long-standing mediocre record in innovation. In the continuum of research, applied research is essential to implement and sustain discovery-oriented basic research.

For the purpose of CFI's current consultation, we are presenting a single idea that we believe CFI's Board should consider if CFI recognizes the fundamental validity of the polytechnic and college applied research model.

It is critical to our recommendation that all stakeholders (federal and provincial governments, granting agencies, CFI, polytechnics, colleges, universities, and industry) acknowledge that Canada's polytechnics and colleges, as currently funded, cannot compete effectively with university research

¹ Continued concern raised by: 2009 Science, Technology and Innovation Council report, Conference Board of Canada's "How Canada Performs: A Report Card on Canada" (2008), and federal government's 2007 Science and Technology Strategy "Mobilizing Science and Technology to Canada's Advantage".

entities within existing federal research programs. Our core funding formulas, for the most part, do not avail funds for our faculty to engage in research; we have fewer PhDs; and we do not offer masters level degrees. Thus, the research funding enterprise in Canada is NOT a level playing field between universities and non-university post-secondary institutions. This implies a cultural shift (new mindset), that simply stated, requires funding programs exclusively designed for Canada's polytechnics and colleges. The rationale behind the decision that led to the termination of CFI's College Research Development Fund (1999 - 2000), is not available to us. The 2003 overall evaluation findings on the CRDF however, were extremely positive. Smaller institutes gained visibility, credibility, world class facilities and entered into collaborative, multidisciplinary relationships on cutting edge research areas. Yet, the evaluation warned that there was every indication that ongoing need for polytechnic and college research infrastructure investments remained high, and would likely increase.

We applaud the federal government's decision to implement the NSERC Community College Innovation Program (CCIP), which funds the applied research projects and commercialization activities. CCIP's unique design has enhanced our ability to respond to time-sensitive industry driven timelines by providing for accelerated applied research project schedules from conceptualization to commercialization. NSERC/CCIP pays for people doing research at colleges and allows for limited materiel support. It does not provide sustained funding for research infrastructure at colleges. The idea we are proposing for CFI could be seen as a support vehicle for CCIP and could have a multiplier/leveraging impact of the funds already committed to CCIP.

The demand for applied research services at polytechnics and colleges continues to grow, particularly from our industry partners. In the face of years of public underfunding of our research facilities and capacity, individual institutions have decided to collaborate with each other. Polytechnics Canada, and the Colleges Ontario Industry Innovation Network (CONII) are prime examples of this phenomenon of a distributed research cluster model, leveraging the whole for a more responsive innovation system.

Whether this solidarity is driven by a need to combine limited expertise/capacity, to unite in the service of common goals (to show that we can make a valuable contribution to Canada's innovation agenda), and/or to simply demonstrate that collaboration can create outcomes that are greater than those outcomes produced by the individual parts, Canada's polytechnics and colleges have shown that they can collaborate with compelling results; CONII exceeded its first cycle deliverables by a significant margin.

In a nutshell, our recommendation to CFI is to create a program that capitalizes on polytechnics' and colleges' unique capacities and proven desire and ability to collaborate. For example, one can imagine a CFI program that challenges polytechnics and colleges to:

1. identify three or four significant infrastructure entities (based on niche innovation spectrum capacities, or desired capacities) in line with the Science and Technology Strategy and STIC priorities;
2. ensure those infrastructure entities are located in three or four regions in Canada, and,
3. utilize a cluster model that will assure those entities will be accessible to multiple polytechnics and/or colleges.

We recommend allocating 4% of CFI's current funds (\$24M) to such a program, designated as a pilot program.

To make the most of our desire to be as responsive as possible to the government's identified areas of research priority, our preference would be that those proposed infrastructure entities be function-based, not industry-sector based. For example, one can imagine a technology assessment and market analysis centre (e.g., in the Maritimes), a proof of concept and prototyping centre (e.g., in BC or

Alberta), and a commercialization centre (e.g., in Ontario). Polytechnics and colleges have the right mindset to make a set of coordinated pan-Canadian infrastructure quite productive, e.g.:

1. we have demonstrated that we can collaborate effectively across institutions,
2. we have very talented faculty (who are very well equipped to solve real world problems),
3. we have significant and unique relationships to industry (especially, but not limited to SMEs), and,
4. we have an impressive track record producing highly-qualified research-ready graduates that are uniquely qualified to address changing labour market needs.

With the added ingredient of CFI funding (for the type of strategic, pan-Canadian infrastructure outlined above), we are confident our impact on Canada's innovation agenda would be significant.

Regionally-based infrastructure would require that CFI modify its typical program criteria and guidelines (RFPs) and review processes. A new CFI program would benefit significantly from the following features:

1. allowing "institutions" to apply, not individual researchers. Research-intensive polytechnics have Vice Presidents and Deans of Research who are prepared to fulfill that traditional Principal Investigator role on behalf of one or more applying institutions.
2. modification of the current 40/60 funding formula since polytechnics, colleges, and SMEs are less well positioned to procure the 60% non-CFI contribution – especially SMEs; and
3. funding for personnel to take advantage of our CFI infrastructure (above what is typically permitted by CFI). This would allow polytechnics and colleges to transfer our impressive training capabilities on to our evolving research and innovation agendas and allow for accelerated applied research project schedules from conceptualization to commercialization.

Polytechnics Canada believes that our recommendation meets the four objectives set out by the CFI consultation because a new polytechnic and college fund:

- o elevates the competitiveness of the Canadian SME sector;
- o sustains and builds on the existing investment in applied research infrastructure from provinces or other sources at colleges and polytechnics;
- o enhances the roles of colleges and polytechnics in commercialization; and
- o will be a long-term solution for improving Canada's middle-of-the pack ranking in science and technology innovation

We very much appreciate this opportunity to express these views as part of the CFI consultation process. We imagine that you will receive many documents and comments from "satisfied university customers", recommending CFI stay on its current path. Polytechnics and colleges understand, and in many cases, also collaborate with universities. In fact, applied research at our institutes actually assists commercialization of discoveries from university laboratories, as well as industrial labs. We also appreciate that what we are proposing herein will cause CFI to include risk-taking in its funding allocation. Ironically, we hope CFI will appreciate that "risk" is a key ingredient to innovation, and the time has arrived for CFI to increase its investment in Canada's polytechnics and colleges. We believe the return on investment for Canada will show that to be a risk well taken.

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