



Executive Summary November 2010

Innovation Catalysts and Accelerators The Impact of Ontario Colleges' Applied Research

At a Glance

- ◆ Through applied research collaborations, Ontario colleges are emerging as innovation catalysts and accelerators, helping Ontario businesses overcome barriers to research and innovation.
- ◆ Ontario college–business applied research collaborations stimulate new research and innovation activities that would otherwise not occur.
- ◆ Ontario colleges' applied research services contribute to product, process, and service improvements; reduce time to market; and increase business R&D spending and activity.
- ◆ Strategies and resources to better support and expand college applied research are needed.

With only modest resources, and within a short time, Ontario colleges have demonstrated that their applied research services can stimulate and accelerate the innovation activities of Ontario-based firms—especially small and medium-sized enterprises (SMEs). Moreover, by offering students and employees opportunities to improve their innovation skills, and by stimulating entrepreneurial ambition, college–business applied research collaborations are helping to develop a highly skilled, innovation-ready workforce.

However, the potential for Ontario colleges' applied research to become an innovation lever on a grander scale is limited by a number of factors. These include:

- ◆ low awareness and understanding of colleges' applied research services among potential clients;
- ◆ uncertainty in government about how to measure and assess the outputs and outcomes of the research; and

- ♦ colleges' lack of resources to fund faculty research time and improve industry liaison and project management capacity.

Strategies and resources required to address ongoing challenges will need to be identified and pursued if college applied research is to further improve innovation performance, education and training, and economic and social development.

INNOVATION: HOW CANADA PERFORMS

Canada's current and future prosperity and quality of life depend on how well the country innovates. When we talk about innovation, we are talking about the ability to extract economic and social value from knowledge using the generation, development, and implementation of ideas to produce new or improved products, services, and processes. Unfortunately, Canada's innovation record is weak. In the Conference Board's 2010 report *How Canada Performs: A Report Card on Canada*, Canada received a "D" grade on innovation performance, ranking 14th out of 17 peer countries.¹ Moreover, Canada has been a consistent "D" performer in innovation since the 1980s.

We do outspend our Organisation for Economic Co-operation and Development (OECD) peers on R&D in higher education, and we perform well on rankings of the publication of scientific articles. Our performance in those areas, however, is not being matched by our spending and ranking on business R&D and other indicators of innovation performance.² In short, though there are many factors that affect the innovation performance of individual firms, sectors, and the country as a whole, Canada's weak productivity and innovation performance is "largely due to weak business innovation."³

To improve Canada's innovation and productivity performance, strategies and mechanisms that stimulate business

1 The Conference Board of Canada, *How Canada Performs: A Report Card on Canada* (Ottawa: CBoC, 2010).

2 The Conference Board of Canada, *How Canada Performs: A Report Card on Canada—Innovation* (Ottawa: CBoC, 2010).

3 Expert Panel on Business Innovation, *Innovation and Business Strategy: Why Canada Falls Short* (Ottawa: The Council of Canadian Academies, 2009), 4.

R&D activity are required. Until Canadian firms increase efforts to improve products, services, and processes and make greater investments in research to improve firm performance and competitiveness, innovation performance will stagnate—and along with it, economic growth and social well-being.

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INNOVATION CATALYSTS AND ACCELERATORS

Ontario colleges have institutional strengths and resources that can help businesses and other organizations overcome barriers to innovation. The Conference Board surveyed the leaders of 181 SMEs and found that the most frequently cited barriers to innovation are:

- ♦ lack of R&D funding/capital (53.6 per cent);
- ♦ lack of time (44.8 per cent);
- ♦ lack of in-house expertise (24.5 per cent); and
- ♦ insufficient government incentives (24.3 per cent).

In general, leaders of SMEs are likely to report that the high daily demands of operating their core business leave them without the resources and time they would need to pursue more innovation. And even in cases where SMEs can find the capital and time, they often lack in-house expertise to conduct research and innovation.

At the same time, interviews with 150 experts, stakeholders, and leaders (from business, government, universities, and colleges) revealed that Ontario colleges have strengths and resources that businesses and other organizations need, including:

- ♦ industry-relevant research expertise;
- ♦ strong industry connections;
- ♦ local accessibility and province-wide reach;
- ♦ research facilities and equipment; and
- ♦ a preference that intellectual property be held by the clients with whom they collaborate.

Ontario colleges are poised to help businesses and other organizations overcome barriers to innovation.

IMPACT OF ONTARIO COLLEGES' APPLIED RESEARCH

Funding for applied research is modest, the scale of activity is limited, and many Ontario colleges are new to applied research—but the results of completed projects are impressive. Ontario colleges' applied research activities are improving firm performance, stimulating new business R&D spending, contributing to local economic and social development, and providing students with industry-relevant education and training. In particular:

PRODUCT AND PROCESS BENEFITS

- ◆ Nearly every college–business collaboration the Conference Board studied has led, or will soon lead, to the development of a new or improved good, service, or process.
- ◆ Half the collaborations have led to a reduction in firms' time to market.

While the college applied research lever has produced excellent results to date, it is operating on a very small scale with limited resources.

SALES, MARKETS, AND CUSTOMER BENEFITS

- ◆ Eighty per cent of the collaborations have resulted in, or are expected to result in, increased sales and revenues for the firm.
- ◆ Firms also reported improved market position (79 per cent), new markets (58 per cent), new customers (76 per cent), and improved customer satisfaction (59 per cent).

RESEARCH AND INNOVATION CAPACITY

- ◆ Many firms reported improvements in their capacity and motivation to pursue research and innovation as a result of the collaborations.
- ◆ Approximately one-third of the projects led to firms increasing their spending on R&D, while another 10 per cent anticipated spending more in the future.

Firms also reported that their presentations at forums and conferences about the results of their work with the colleges have given them opportunities to expand their business networks. In some cases, this has led to new business opportunities that firms did not expect. Finally, almost all firms that worked with an Ontario college are involved in, or are planning, repeat collaborations. In 27 of 29 cases studied, the collaborating organization said that they are “likely to work with this or another Ontario college again on research projects.” Fourteen of the interviewees reported that they are *already* collaborating with an Ontario college on one or more new research projects.

ACTION FOR INNOVATION

Ontario's colleges are poised to play an important role in organization-level innovation—one that can help to improve the province's innovation performance and achieve productivity gains and economic growth. Yet, while the college applied research lever has produced excellent results to date, it is operating on a very small scale with limited resources. To make the most of Ontario colleges' applied research potential, strategies to increase support and funding should be adopted. (See box “Stimulating Business Innovation Through Ontario Colleges' Applied Research.”)

Stimulating Business Innovation Through Ontario Colleges' Applied Research

SUMMARY OF RECOMMENDATIONS

For Government

1. To increase (from its current 2 per cent) the proportion of Ontario firms conducting research and development that leads to innovation, federal and provincial agencies should continue to strengthen and build on college applied research funding programs—including additional and ongoing resources for infrastructure, capacity, and research projects with business.
2. To ensure that funding programs are geared toward improving business outcomes in general and the benefits of innovation in particular, funding agencies should revise the criteria used to evaluate applied research applications and outcomes to better reflect innovation performance and economic development aims.
3. To ensure SMEs have access to high-quality research experts who can work on business timelines, the federal and Ontario governments should create complementary College Applied Research Leaders program(s).
4. To ensure that as many SMEs as possible can pursue research and innovation with sufficient support and assistance, the Ontario government should provide base funding for colleges to redeploy employees to participate in industry-led applied research as required.
5. To ensure that an innovation-ready future workforce emerges from the colleges, government funding programs for colleges' applied research should ensure significant opportunities for college students.

For Colleges

1. Ensure that the development and expansion of applied research strengthens economic growth in the community and contributes to the development of highly skilled, innovation-ready graduates.
2. Take steps to further improve relationships with business clients and the partnership experience.
3. Improve and expand applied research capacity and activities gradually and learn from colleges further along the development path about the next steps to take.
4. Increase college-to-college mentoring, sharing, and learning in the planning and activities of the Colleges Ontario Network for Industry Innovation.
5. Take steps to create and/or improve applied research offices and officers.

For Business

1. To improve awareness and to extend the reach of Ontario colleges' applied research services, industry associations, chambers of commerce, and business advocacy groups should increase efforts to spread the message about and direct their clients to the Colleges Ontario Network for Industry Innovation.
2. Recognize that Ontario colleges' applied research services depend critically on the participation of students and may require more guidance than would normally be the case in collaborations with professional consultants and experts.

Source: The Conference Board of Canada.

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