Submission to the House of Commons Standing Committee on Finance's Pre-Budget Consultations

Question: ***What federal actions would assist Canada's businesses – in all regions and sectors – meet their expansion, innovation and prosperity goals, and thereby contribute to economic growth in the country?***

Executive Summary

Tech-Access Canada is the national network of Canada's 30 Technology Access Centres (TACs). Canada's TACs are specialized applied research & development centres affiliated with publicly-funded colleges or cégeps. These demand-driven centres, from BC to PEI, help Canadian businesses – especially SMEs – get their products, processes and services market-ready. Each TAC serves a specific geographic area, with a focus on strengthening the industrial sector of significance to that region.

TACs are local, accessible, and affordable. The complementary capabilities of Canada's TACs significantly enhance those of universities, private laboratories, government institutes, and other colleges in their region. TACs are the innovation hub of a region, allowing industry partners to gain access to advanced technologies, equipment, services and expertise that they would not typically be able to access due to lack of internal resources.

Tech-Access Canada endorses Colleges and Institutes Canada's recommendation to "scale up support for colleges and institutes with proven capacity by creating more Technology Access Centres". Building on the strong network of existing TACs would increase the number of regions and industrial sectors able to benefit from the services offered by TACs, enabling companies in these regions to meet their growth, prosperity, and innovation goals.

Introduction

As countless reports have shown, many Canadian start-ups fail in their first five years, and less than 5% of Canadian companies exhibit the OECD definition for high-growth firms (more than 20% growth year-over-year for at least 3 years). Global competition is fierce, so ensuring the right mix of federal government support is critical for Canadian firms, for whom success has traditionally been the exception.

The adoption, adaption, and implementation of new technologies are essential elements of a small or medium-sized enterprise's (SME) success and survival. The true challenge for these companies is identifying and assessing how new knowledge and technology can help their firm.

Most Canadian SMEs are focused on keeping their existing production line profitable, and are busy trying to fill current orders, for their current products, from their current clients, while operating very lean with controlled costs. This creates challenges for making the innovation-related investments required for developing new products. On the other hand, many firms have great products, but struggle in their efforts to expand their markets, particularly beyond provincial borders, often due to lack of access to marketing, sales and distribution support.

Fortunately for the federal government, the tools needed to overcome these obstacles already exist. Canadian firms are capable of making better use of these tools, but they need to know they are not in it alone, that there is a strong network of innovation intermediaries ready to assist: Canada's Technology Access Centres.

Canada's Technology Access Centres (TACs) and Tech-Access Canada

TACs are specialized applied R&D centres affiliated with publicly-funded colleges or cégeps. TACs help Canadian businesses – especially SMEs – advance their products, processes and services by:

- offering objective advice and specialized technical services;
- providing training related to new types of equipment and processes; and
- conducting applied research and development projects focused on company problems.

TACs also connect companies to additional sources of assistance, testing, expertise and funding. By always keeping up-to-speed on policies and programs that impact them, TACs excel at helping companies navigate the landscape of the more than 1,000 provincial and federal government R&D support programs.

One aspect that provides TACs with a unique spot in the innovation ecosystem is that they collaborate widely. They have the equipment and expertise that other service providers often do not have. The complementary capabilities of Canada's TACs significantly enhance those of universities, private laboratories, government institutes, and other colleges in their region.

Drawing on the significant applied research capacity built at Canada's colleges and cégeps, Technology Access Centres are based on the successful centres collégiaux de transfert de technologie (CCTT) model from Quebec, and are awarded by NSERC after a demanding and rigorous competition. TAC awards provide the centres with modest annual funding for their core operations, to meet the innovation needs of firms in a specific industrial sector in a region. The services offered by TACs are available on a fee-for-service basis to ensure that partners put their own skin in the game, creating meaningful collaborations.

Created in September 2015, Tech-Access Canada is the formal, national network of Canada's 30 NSERC-designated Technology Access Centres. Since each TAC serves a specific geographic area, with a focus on the industrial sector of significance to that region, Tech-Access Canada's mandate is to promote a cohesive identity for TACs that will foster greater external awareness of the centres' ability to serve industry, while enhancing individual TAC capacity to deliver effective applied research and innovation services for firms. One of the first initiatives Tech-Access Canada undertook was developing a common statement on intellectual property (IP) for the TACs.

Canada's Technology Access Centres are IP-friendly

TACs fully support the federal government's belief that commercial exploitation of IP contributes to economic growth and job creation, and that such exploitation is best achieved by the private sector. TACs stand ready to help firms develop and exploit their IP so they are better prepared to compete in the global marketplace. TACs are not interested in an ownership stake of intellectual property, not wanting to encumber a start-up, or small firm, trying to grow and succeed.

Their industry-friendly IP policies, in addition to their core mandate of providing local SMEs with access to specialized facilities, equipment, and expertise, are examples of why TACs are an extremely well-designed public policy instrument, and can be used effectively to combat some of the trends that are negatively impacting Canadian businesses.

Engaging with Innovative SMEs

Studies indicate that Canada has 1.1 million SMEs, 70,000 of whom innovate annually, yet only 25,000 claim SR&ED credits for R&D investments. Other reports state that SMEs conduct R&D episodically, undertaking an

R&D project, on average, once every seven years. Last year, TACs served more than 1,500 firms, providing them with access to the resources they need to succeed.

For innovative firms, there are three main ways to engage with a TAC, each of which can be custom-tailored to meet the needs of the client. The three engagements are: fee-for-service, leveraged, and capstone.

On fee-for-service projects, the engagement cost will be at, or above, the market rates of other service providers, but the TAC will assemble the correct team, bring in value-added expertise, and the project can start the minute the contract is signed. Most of these projects involve technical services or traditional R&D projects. The contract can be completed in the rapid timelines the partner needs, often days or weeks.

On leveraged projects, the TAC can stretch the partner's R&D dollar further by attempting to access provincial or federal R&D support programs designed to de-risk the innovation investment for the private partner. These leveraging programs are competitive, take a considerable amount of time from application to decision, and are not guaranteed to receive leveraging support. However, if successful, the TAC will assemble the correct team of experts and start immediately.

If the partner's innovation challenge is on a slower track, or the partner is of more modest means, capstone projects are an excellent option. For a very modest fee, the TAC will assemble an interdisciplinary team of college student researchers in the last year of their program, under the supervision of an instructor, to solve the industry partner's problem. The project will only take 4 or 8 months, but it must align with the start of the college semester, and is contingent on finding the right mix of willing students to field a team. Two other positive aspects of capstone projects are de-risking innovation for aspiringly-innovative firms, and letting the firm test drive potential future employees. Capstone projects allow college students to acquire valuable innovation skills before they graduate, and help create a competitive workforce in the region's key industrial sectors.

With a variety of engagement opportunities to suit all partners, TACs demonstrate their impact and outcomes in a variety of ways.

TACs are a facilitator of technology transfer and technological advancement.

TACs are linked to all of the players in a specific industry, making them well-positioned to propose collaborations involving several partners. They act as a launch platform for industry, resulting in more products and services entering the marketplace.

For instance, the team at the Innovative Vehicle Institute (IVI) in Sainte-Jérôme, QC, a TAC specializing in electric vehicles, supported the Lion Bus company in the design of the eLion electric school bus, the first fully electric heavy vehicle to be marketed in North America. IVI engineers designed a very large rechargeable energy storage system for the bus and adapted it to Québec's climate. Six fully electric prototype vehicles were designed in 2015, and Lion Bus is now at the manufacturing stage with 20 busses built and sold. The eLion bus has enormous advantages in reducing greenhouse gas (GHG) emissions. Approximately 8,000 diesel-powered school buses across Québec bring tens of thousands of students to school every day. GHG emissions could be reduced by 184,000 tonnes per year if all diesel school busses were replaced with electric models. Extrapolating these numbers from Quebec to across Canada, and even beyond Canada's borders, will have a significant positive impact on the environment, as well as the economy.

While TACs help Canadian SMEs gain exposure to business opportunities around the world, TACs also provide a soft-landing for international firms wishing to enter our market with their own new-to-Canada, or even new-to-world, innovation.

On Prince-Edward Island, Canada's Smartest Kitchen, a TAC concentrated on food technology development, collaborated with one of the world's foremost experts in germination technology to create pouch-packed heat & serve side dishes based on sprouted grains and seeds. CSK understands that sprouting technology is at the

leading edge of health-related food trends, and has developed products that provide highly bio-available nutrients in a convenient format for consumers. The engagement has provided value to both organizations, with a relationship that will soon result in the Hungarian company launching a facility on Prince Edward Island, creating a potential of 30 plus jobs and new business opportunities in the local community and abroad. This project has also attracted the interest of the largest privately held food investment fund in the world.

TACs are local, accessible, and affordable.

Finally, TACs are a source of pride in their communities and help build resilient regional economies. They are the innovation hub of a region, allowing industry partners to gain access to advanced technologies, equipment, services and expertise that they would not typically be able to access due to lack of internal resources.

In Victoria, Camosun's Technology Access Centre (CTAC), focused on advanced manufacturing technology, introduced the world-leading manufacturer of truck-mounted mobile air compressors to Cold Metal Transfer (CMT) welding as a potential means to improve productivity and weld quality on their aluminum vehicle-mounted air compressor tanks, which had been traditionally hand-welded. Nanaimo, B.C.-based VMAC had to weigh the option of investing in a 15-axis Robotic CMT Welding System, and integrating it into their operations, versus continuing with the status quo. Since adopting CMT welding, VMAC has improved their tank manufacturing productivity by a factor of 20, and has seen their defect rate drop to zero. They now have a number of other productivity improvement projects on the horizon, and see CTAC as a key partner in their implementation.

Collaborating with a TAC enables Canadian SMEs to reach the resources they need become high-growth firms, succeeding at home and abroad. These partnerships assist the firm with their technical R&D work, preparing them to enter new markets with new products.

Recommendation

Tech-Access Canada fully endorses Colleges and Institutes Canada's recommendation to "scale up support for colleges and institutes with proven capacity by creating more Technology Access Centres".

Building on the strong network of existing TACs would increase the number of regions and industrial sectors able to benefit from the services offered by TACs, enabling companies in these regions to meet their growth, prosperity, and innovation goals.