Submission to the Standing Committee on Science and Research:

Private Sector Investment in Research and Development

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Recommendations

- Expand Canada's focus beyond funding *research activity* to include funding *research outcomes*. As innovation intermediaries, polytechnics facilitate R&D activity among small- and mid-sized enterprises (SMEs) that do not otherwise have the space, equipment or personnel to address pragmatic business challenges. Enhance this capacity by investing $216 million per year in the College and Community Innovation Program, encouraging businesses to invest time and resources in collaborative R&D activity.
- Integrate polytechnic applied research into national R&D and commercialization frameworks such as BOREALIS. Doing so would accelerate prototype development and technology readiness while increasing private-sector investment in research that holds business promise.
- Embed intellectual property (IP) support into applied research investments to create a seamless pathway from early IP identification through to scale-up. Alignment with other government programming would ensure firms receive coordinated, end-to-end commercialization support, resulting in more protected, investable and globally competitive Canadian technologies.

Context

Canada's innovation ecosystem continues to face a structural imbalance between strong research performance and weak commercialization outcomes. The country ranks second among G7 nations in higher-education R&D (HERD) spending yet remains among the lowest in business expenditure on R&D (BERD), at roughly half the OECD average and showing little growth over the past decade. The persistent gap between discovery and deployment can be addressed by better catalyzing the applied research capacity of Canada's polytechnics.

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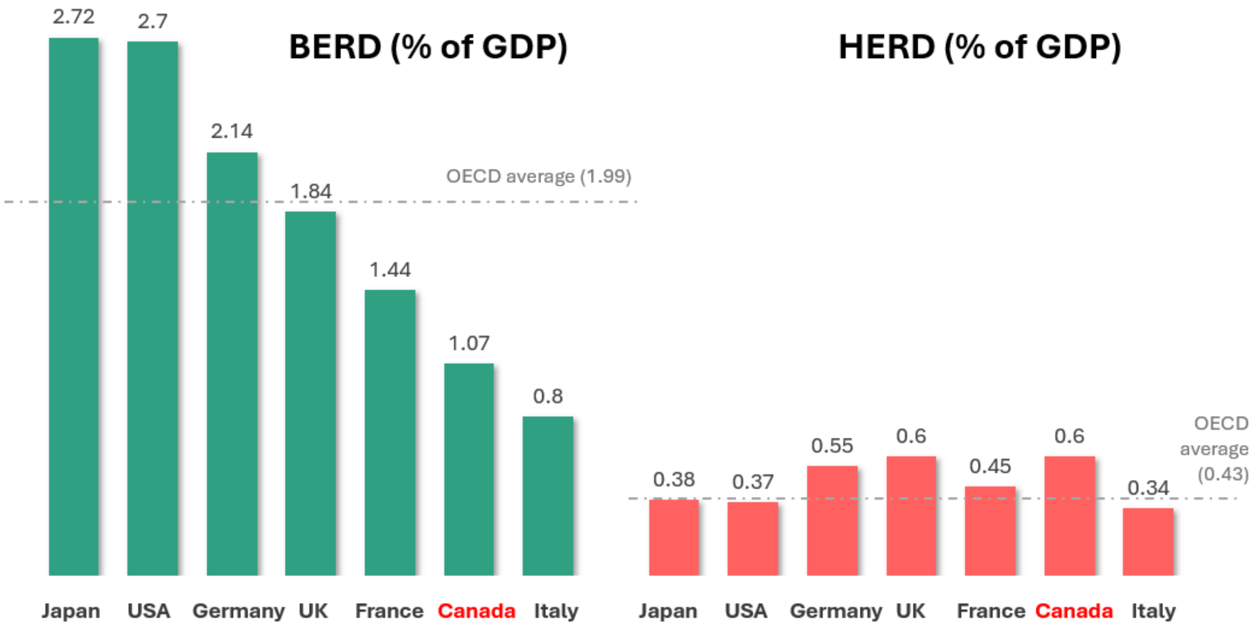
R&D Expenditures (Business vs. Higher Education) as a Share of GDP, G7 Countries



Source: OECD, "STI Scoreboard — Science, technology and innovation indicators (2014-2024)"[1]

For most SMEs, which make up 95 per cent of all businesses in Canada, there remain significant barriers to innovation. Few have the internal R&D capacity, expertise or capital to develop and test new technologies. Only about 28 per cent report introducing even one innovation[2] and the uptake of transformative technologies such as artificial intelligence, robotics or advanced manufacturing remains limited. As a result, the country's productivity and competitiveness are increasingly constrained, particularly in a global economy driven by digitization and rapid technological change.

Countries with successful innovation metrics empower firms to identify real-world problems, design and assemble solutions, and bring them efficiently to market. For Canada, research strength alone is not enough. A modern innovation policy must focus on the innovators themselves, helping businesses translate discovery into deployment and manage innovation as an ongoing iterative process.

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[1] Available online at https://data-explorer.oecd.org/vis?fs%5b0%5d=Topic%2C0%7CScience%252C%20technology%20and%20innovation%23INT%23&pg=0&fc=Topic&bp=true&snb=35&vw=tb&df%5bds%5d=dsDisseminateFinalDMZ&df%5bid%5d=DSD_MSTI%40DF_MSTI&df%5bag%5d=OECD.STI.STP&df%5bvs%5d=1.3&dq=.A.H%2BB.PT_B1GQ..&pd=2014%2C2024&to%5bTIME_PERIOD%5d=false&isAvailabilityDisabled=false

[2] Innovation, Science and Economic Development Canada, "SME Profile of Innovative Enterprises in Canada" (2024), online: https://ised-isde.canada.ca/site/sme-research-statistics/en/research-reports/sme-profile-innovative-enterprises-canada.

Polytechnic applied research

Polytechnics are ideally positioned to play this role in Canada's innovation structure, providing the applied research capacity that enables businesses to develop, test and implement new technologies. Their model offers modern spaces, cutting-edge technology, faculty and students to address a real-world business challenge with tangible results.

Rather than initiating discoveries then "pushing" them into the marketplace, polytechnics respond to market pull, supporting firms that are ready to innovate but may lack the internal R&D capacity to do so. Based on the business partner's needs, faculty and students identify options and derisk the innovation process with practical, measurable results. This approach ensures research is directly aligned with business needs, generating co-investment unmatched elsewhere in the academic research ecosystem.

In practice, polytechnic applied research complements discovery research by supporting adoption, ensuring that discoveries lead to productivity, competitiveness and growth. Evidence from industry partners reinforces the impact of this model:

- In 2024–25, the 13 members of Polytechnics Canada conducted 3,711 research projects for more than 2,000 business partners
- In the same year, they developed more than 2,600 prototypes across key sectors such as manufacturing (20 per cent), engineering and software (17 per cent), education (10 per cent) and health care (10 per cent)
- For every $100 in federal research funding, polytechnics attract $72 in private sector co-investment, compared to less than $4 by Canada's biggest research universities

Applied research at polytechnics delivers tangible business outcomes:

- 51 per cent of partners report strengthened R&D capabilities
- 48 per cent say it improved their competitiveness
- 26 per cent were able to access new markets, including international ones
- 21 per cent experienced increased productivity due to applied research
- 1 in 8 partners created new jobs as a direct result of collaboration

This is research with purpose, translating ideas into market-ready innovations and strengthening Canada's industrial productivity base.

Intellectual Property and Commercialization

Polytechnics operate on an industry-friendly IP model that allows businesses to retain full ownership of the IP generated. This approach removes licensing negotiations, royalty structures and revenue-sharing arrangements that often delay commercialization and increase risk for SMEs. When firms retain their IP outright, they face fewer administrative hurdles and can move technologies to market more quickly, improving both their competitiveness and the return on their innovation investments.

However, this favourable model cannot fully compensate for the broader structural weaknesses in Canada's IP and commercialization ecosystem. In the WIPO Global Innovation Index 2024,[3] Canada ranks 24th in Creative Outputs and 18th in Knowledge and Technology Outputs, both of which measure commercialization capacity and value creation. At the enterprise level, only a small share of Canadian firms hold formal IP rights or integrate IP strategy,[4] yet evidence shows that SMEs with registered IP rights are three times more likely to expand domestically and 4.3 times more likely to expand internationally[5] than SMEs without such rights. This gap reflects persistent uncertainty among SMEs about how to develop, protect and leverage IP. Many under-invest in IP or delay strategic decisions until late in the innovation process, reducing the commercial value of their R&D activities.

Polytechnics are helping address these challenges. For example, Conestoga's Centre for Commercialization (C4C) helps firms identify their IP, understand the competitive landscape, pinpoint high-potential market niches and coordinate early IP filings.[6] These services strengthen innovation readiness by embedding IP thinking into applied research and guiding companies toward clearer commercialization pathways.

To build on this foundation, firms also need support to carry them through later stages of growth. Integrating IP support directly into polytechnic-led applied research creates a natural hand-off to NRC IRAP's IP Assist program,[7] which can provide longer-horizon advisory services as businesses refine their commercialization strategies, seek investment and navigate scale-up. This alignment increases the likelihood that innovations supported by public investment can transition into protected, investable and globally competitive technologies that generate long-term economic value for Canada.

Budget 2025 and the Opportunity of BOREALIS

Budget 2025 commits $6.6 billion to strengthen Canada's defence industrial base, including $68.2 million over three years to establish the Bureau of Research, Engineering and Advanced Leadership in Innovation and Science (BOREALIS). This new initiative represents a strategic opportunity to

[3] WIPO, "Global Innovation Index — Canada (GII 2025)", online: https://www.wipo.int/gii-ranking/en/canada/
[4] Innovation, Science and Economic Development Canada – Canadian Intellectual Property Office, "IP Canada Report 2024", online: https://ised-isde.canada.ca/site/canadian-intellectual-property-office/en/ip-canada-report-2024
[5] Ontario – Intellectual Property and Small and Medium Enterprises
[6] C4C was established, in part, with support from Intellectual Property Ontario (IPON). Since 2023, C4C has supported 168 companies, funded 24 patent filings, collected 34 IP disclosures, delivered 25 workshops and funded 50 trademark filings.
[7] NRC IRAP's IP Assist provides expert advice, strategy development and funding to execute intellectual property actions.

embed applied research and commercialization capacity within Canada's broader innovation framework.

The creation of BOREALIS is not only a critical step for national security in an increasingly complex geopolitical landscape, but it also holds significant potential for long-term economic growth and industrial resilience. As Canada seeks to enhance its domestic innovation and manufacturing capacity, it will be essential to ensure that SMEs have consistent access to facilities, talent and technical expertise for prototyping, testing and scaling new technologies.

To maximize the program's impact, BOREALIS should include a dedicated Applied Research Stream that funds prototype development, testing and validation. This stream would complement NRC IRAP's technical support and the Business Development Bank of Canada's financial tools, creating a cohesive system that connects Canada's innovation, financing and commercialization infrastructure.

By embedding applied research within BOREALIS, the federal government can ensure that investments in defence and industrial innovation also yield broader economic dividends, accelerating technology adoption, strengthening domestic supply chains and fostering the next generation of Canadian innovators.

College and Community Innovation Program

Innovation is the foundation of a competitive economy, a source of stronger growth, better jobs and a sustainable tax base. Yet, Canada struggles with a persistent innovation and productivity gap, signalling that much more ambitious and targeted action is required.

In April 2026, the College and Community Innovation Program (CCIP) will return to 2021 funding levels, weakening one of the few federal mechanisms that supports industry-defined, academia-delivered research collaboration. This program accounts for less than 3 per cent of total federal investments in academic research, yet it bridges discovery and deployment.

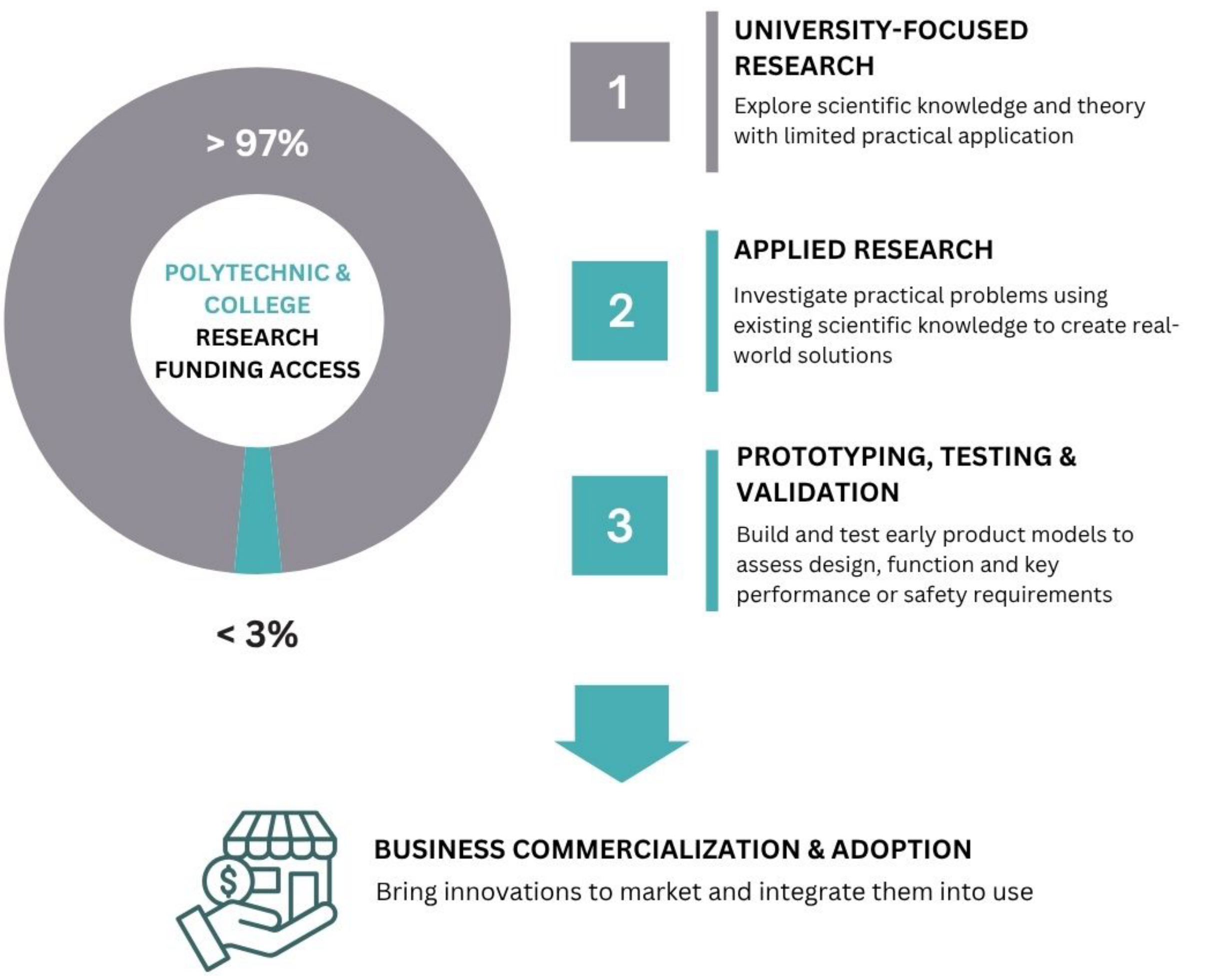
In fields like artificial intelligence, where Canada enjoys strong academic leadership but limited commercial adoption, the consequences of underinvestment are clear. Roughly 88 per cent of AI pilots fail to scale,[8] often due to unclear return on investment, talent shortages or poor data infrastructure. Polytechnics can address these barriers by embedding applied-AI experimentation and workforce training within SME partnerships, turning theory into competitive advantage.

[8] CIO, "88% of AI pilots fail to reach production — but that's not all on IT" (2025), online: https://www.cio.com/article/3850763/88-of-ai-pilots-fail-to-reach-production-but-thats-not-all-on-it.html

According to the C.D. Howe Institute,[9] Canada's lagging business R&D stems not from a lack of discovery, but from weak diffusion of innovation into production. Embedding innovation skills through practical, industry-integrated training is key to bridging this gap. Programs that combine applied research and experiential learning ensure graduates are ready to deploy solutions that raise firm-level productivity and national competitiveness.

If Canada wants to super-charge its innovation performance, the federal government should stabilize and expand the College and Community Innovation Program to $216 million annually, ensuring predictable, long-term funding designed to support SME-driven applied R&D.

How Federal Research Funding Is Allocated in Canada



[9] C.D. Howe Institute, "Unleashing Innovation — Barriers to Government Support Programs and What Works Best" (2025), online: https://cdhowe.org/publication/unleashing-innovation-barriers-government-support-programs-and-what-works-best/

Member Success Stories

British Columbia Institute of Technology: Search and Rescue Through AI and RPAS Technology

The British Columbia Institute of Technology (BCIT) is advancing artificial intelligence and Remotely Piloted Aircraft Systems (RPAS) to make search and rescue operations faster, safer and more cost-effective. In partnership with Spexi and InDro Robotics, BCIT researchers are improving real-time object detection using the "You Only Look Once" algorithm.

A new frame-skipping algorithm developed through this collaboration increases processing speed while maintaining accuracy, enabling human detection within one second. The RPAS transmits live video and GPS coordinates to rescuers, reducing search times and risks in challenging terrain and weather conditions.

Southern Alberta Institute of Technology: Hybrid Water Desalination for Clean Hydrogen Production

Southern Alberta Institute of Technology (SAIT) is helping make clean hydrogen fuel easier to produce by improving a Hybrid Water Desalination System (HWDS). The project is done in partnership with Arrowhead Abandonments, a First Nations–owned project management and downhole tool company.

Hydrogen production requires extremely pure water. SAIT upgraded an unused desalination unit to clean river, well and brackish water to the very high standard needed for hydrogen electrolyzers. The improved system uses ultrafiltration, reverse osmosis and nanofiltration to remove contaminants and bring dissolved solids to just 1–5 parts per million.

Because the HWDS is portable, it can be deployed in remote and Indigenous communities, as well as industrial sites where clean water is difficult to access. Its modular design makes it easy to transport and scale, helping support cleaner hydrogen production and expanding access to safe water treatment in areas that need it most.

Sheridan College: Clinic of the Future Through Augmented Reality

Sheridan College is helping build the Clinic of the Future by advancing augmented reality (AR) tools that enhance real-time patient monitoring. In partnership with Cloud DX, Sheridan's Centre for Applied AI is developing an AR application using Microsoft's HoloLens, integrating Cloud DX's Vitaliti wearable device to collect and display patient vitals as holograms.

A new Universal Windows Platform app connects Vitaliti to the HoloLens, allowing clinicians to access continuous, hands-free patient data at the bedside. This improves situational awareness, reduces manual steps in clinical workflows and supports faster, more informed decision-making. The project has gained national attention, including coverage on the Discovery Channel's Daily Planet.

About

Polytechnics Canada is the voice of leading research-intensive, publicly supported polytechnics and institutes of technology. We advocate for federal action in areas where polytechnics provide solutions for a more innovative, productive and globally competitive country. Polytechnics Canada members play a critical role in addressing some of the country's greatest challenges. Through their facilities and networks, our members provide meaningful solutions to industry problems and accelerate knowledge transfer.

Cover photo courtesy of Humber Polytechnic's Faculty of Applied Sciences and Technology