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A Modernization Agenda for Defence Research and Defence-Relevant Research in Canada?

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Introduction

The rapid pace and scale of change in Canada's approach to the national defence portfolio is unprecedented in peacetime. An injection of tens of billions of dollars will increase Canada's defence spending to 2% of GDP in fiscal year 2025-2026,[1] and then to a total of 3.5% in core defence spending plus 1.5% in defence and security-related spending within a decade (Canada 2025). This expanded spending will be matched by greater ambition at the strategic and policy levels, with the launch of a new defence investment agency (Brewster 2025) and a defence industrial strategy (Duggan 2025), among other shifts. Also notable is the recognition of the transformative impact of so-called "dual-use" technologies, which have both civilian and military applications (Murphy et al 2025). To put it lightly, the fundamental assumptions that have guided defence policy over recent decades are radically changing before our eyes.

An overlooked part of this defence policy revolution is the role that defence research must play in enabling change and informing policy and strategic thinking in navigating a shifting global security environment. At present, the structure of federal research funding is not organized to incentivize research that supports a defence policy revolution. This brief presents a modernization agenda for incentive structures, defence accounting, and strategic investment in defence research capacity. This modernization agenda will ensure that federal research funding is well-positioned to contribute to the defence policy revolution, and that these efforts to support defence are captured as part of Canada's defence program.

Federal Research Funding in Canada

Although postsecondary education falls under the purview of provincial governments, the research grants received by universities—as well as the funding for graduate students and postdoctoral fellows—flow primarily from the federal government. Key institutions for administering these funds are the Canadian Institute for Health Research (CIHR), the Natural Sciences and Engineering Research Council of Canada (NSERC), and the Social Sciences and Humanities Research Council of Canada (SSHRC). Each of these organizations disburses over a billion dollars in research funds annually in grants, awards, and network funding. Research chair programs, such as the Canada Research Chairs or Canada

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Excellence Research Chairs, support highly-successful individual researchers in continuing their work. Although researchers may propose defence research or defence-relevant research projects to field-initiated competitions at these projects, there is no ongoing, explicit incentive for this focus in mainline funding streams.

"Associated supplement" funding provided through DND through research council competitions is one mechanism to promote defence research and defence-relevant research through the major funding bodies. For example, the Department of National Defence Research Initiative (DNDRI) at SSHRC offers a potential supplement of $10,000 to Insight Development Grants (on their own valued up to $100,000) and $20,000/year for up to three years for Insight Grants (on their own valued up to $500,000 over 2 to 5 years). Although this initiative does offer an incentive for researchers to consider defence research and defence-relevant research topics, its impact is limited by the size of associated supplements to grants, the number of associated supplements available, and the limits on which types of council programs are eligible for associated supplements.

When it comes to direct funding of defence research and defence-relevant research, targeted funding is available to researchers through the Department of National Defence's (IDEaS) and (MINDS) programs. IDEaS has a mission of translating Canadian innovation in science, engineering, and technology into defence capabilities, providing tens of millions of dollars in annual funding through a range of targeted competitions, networks and clusters, as well as providing sandboxes for field testing new capabilities. MINDS, on the other hand, has a primary mandate of arts, humanities, and social science research, although its collaborative network programs are interdisciplinary in scope. The table below offers a summary of applications and results from the latest publicly-released report for each program. These funding streams directly support the development of defence research and defence-relevant research capacity in Canada, in addition to in-house capacity at Defence Research and Development Canada or internally-funded research at professional military education institutions.

Project Stream[2]	Applications	Results
IDEaS Competitive Projects	198 proposals	64 projects signed (total $12.7 million)
IDEaS Test Drives	Not reported in 2022-23	Multiple projects ongoing, one contract awarded for $10.5 million
IDEaS Innovation Networks	50 applications for the quantum challenge	6 projects funded (total $18 million)
IDEaS Research Clusters	Not reported in 2022-23	8 agreements (total $12 million)
IDEaS Contests	Not reported in 2022-23	3 round three winners (total $4.5 million)
MINDS Expert Briefing Series	Not reported in 2023-24	15 briefings held

MINDS Targeted Engagement Grants	131 applications for $6.2 million[3]	55 grants for a total of $2.6 million
MINDS Collaborative Networks	15 in 2023-24	3 successful networks, each receiving $750,000 over three years
MINDS-SSHRC Joint Scholarship Initiative	57 applications	19 awards funded (total of $429,500

The insights to be drawn from the federal research funding landscape are mixed in their outlook. The scope and scale of direct support for defence research and defence-relevant research in Canada limit the incentive for researchers not already engaged in these research themes to explore potential defence applications of their scholarship. A positive signal—for the growth potential in defence research if not for current defence researchers themselves—is the robust rejection rates for granting programs within DND. The number of unfunded IDEaS and MINDS projects annually demonstrates that there is at least some degree of latent capacity for defence research and defence-relevant research in Canada that requires only increased funding to activate. Over the longer term, expansion of associated supplement programs (in number, in scope, and in kind) may further incentivize the development of new defence research and defence-relevant research capacity. This is not a scenario full of underutilized programs or failing efforts to draw researchers in; this is a story of consistent engagement despite limited options.

Defence Spending and the Role of Research

Within the NATO alliance, the practice of tracking defence spending as a percentage of a country's GDP is taken as a representation of how seriously a country is about contributing to the collective security of the alliance. This percentage-of-GDP focus has been especially prominent since the 2014 Wales Summit, where NATO leaders agreed that all allied nations would spend at least 2% of their national GDP on defence expenditures (NATO 2014). While this metric has been criticized for its lack of nuance into the actual burden-sharing in the alliance (e.g., Lunn & Williams 2017; Kimball 2023; 2024), the reinforcement of percentage-of-GDP as the primary measure of commitment to the alliance in the 2025 NATO declaration at The Hague (NATO 2025b) has effectively cemented its position as the key measure.

The question of "what counts" as defence spending may be surprising, especially in the context of research and following The Hague Declaration. NATO recognizes a wide range of expenditures as falling within the parameters of core defence requirements, including not only the obvious categories of armed forces personnel and materiel but also some expenses that may be less evident such as:

- "parts of other forces such as Ministry of Interior troops, national police forces, coast guards etc." (NATO 2025a)
- "Retirement pensions made directly by the government to retired military and civilian employees of military departments and for active personnel" (NATO 2025a)

- "Expenditure for peacekeeping and humanitarian operations, paid by the Ministry of Defence or other ministries, the destruction of weapons, equipment and ammunition, and the costs associated with inspection and control of equipment" (NATO 2025a)
- "Expenditure for the military component of mixed civilian-military activities is included, but only when the military component can be specifically accounted for or estimated. For example, these include airfields, meteorological services, aids to navigation, joint procurement services, research and development." (NATO 2025a).

Perhaps most important for the present policy brief are the comments about research:

- "Research and development (R&D) costs are included in defence expenditure. R&D costs also include expenditure for those projects that do not successfully lead to production of equipment." (NATO 2025a).
- "As part of the 2014 Wales Defence Investment Pledge, NATO Allies had also agreed that at least 20% of defence expenditures should be devoted to spending on major equipment, including the associated research and development. This metric is perceived as a crucial indicator for the scale and pace of modernisation. Where expenditures fail to meet the 20% guideline, there is an increasing risk of equipment becoming obsolete, growing capability and interoperability gaps among Allies, and a weakening of the defence industrial and technological base." (NATO 2025a)

Research and development, especially related to major equipment and technological modernization, are clearly recognized as critical components of defence spending. As argued elsewhere, the significance of research and development has expanded following the commitments of The Hague Declaration (Murphy et al 2025, 6). According to the guidance that NATO provides for defence spending, both defence research and research efforts that may reasonably show promise as being defence-relevant are to be considered core defence expenditures.[4]

NATO recognizes that defence research and defence-relevant research is critical to ensure the strength of the alliance and of the collective security it offers. NATO guidelines further recognize that expenditures may formally be processed by ministries of defence or Other Government Departments (OGD), meaning that the specific point of origin for research funding within a federal government does not determine whether or not that research funding counts as a defence expenditure. Therefore, OGD research funding supporting defence research or defence-relevant research should be counted as defence expenditures.

Research and the Defence Policy Revolution

The unprecedented defence policy revolution unfolding over the course of 2025 is a complex policy domain, and a fulsome review exceeds the scope of a single policy brief. However, there are four areas of particular importance where defence policy changes will require defence research and defence-relevant research to support the realization of key objectives as well as evidence-based guidance for decision-making at the political, strategic, and policy levels.

First and foremost, the changing impact of technology on defence and military affairs presents a clear need for expanded defence research and defence-relevant research.

Quantum technologies, artificial intelligence tools, autonomous weapons systems, and many other classes of technologies are actively reshaping the global security landscape, and these trends will only continue. These technologies present major research challenges in science and engineering for the development and deployment in military contexts. But the transformations that these technologies will imply for military tactics, ethics, and force organization demand wraparound research in the fields of social sciences and humanities. Of particular concern are the regulatory, legal, and political challenges posed by dual-use technologies.

Second, the promised introduction of an ambitious defence industrial strategy will create novel challenges related to the economic and political impacts of the reorientation of the Canadian economy towards defence industry. The status quo for innovation-oriented industrial policy in Canada is bleak, to the point that a recent expert panel argued that the nation's record of underperformance in science, technology, and innovation "has reached a point where maintaining the nation's standard of living may be at risk" (CCA 2025, xiv). To reverse this trend will require a new approach—and a more ambitious approach—to spurring industrial development, requiring support for the basic and applied research within innovation sectors as well as research to guide and evaluate industrial policy. Furthermore, the reallocation of federal funds from social services (or transfers) to defence procurement may risk societal backlash, particularly if economic benefits are seen to be leaving the country. An ambitious defence industrial strategy will require rigorous analysis and monitoring for its economic and political impacts on Canadian society.

Third, the changing nature of war, including the key technologies of warfighting, the organization of forces, and the hybridity of threats, are changing the relationships between domains of land, sea, air, cyber, and space. As the Canadian Armed Forces expands within each of these domains, a simultaneous reexamination of the collaboration between environments will be required. Although the practical impacts of this work will be experienced and navigated by those in uniform, further defence research is required to ensure that Canadian force organization is fit for purpose in such a rapidly-changing environment.

Finally, the scale of the increase to defence spending means that the capacity of Canada's defence research community will have to be expanded if there is to be any hope for the same degree and quality of scrutiny to be continued—if not improved—in this expansion phase. Unprecedented funding could lead to unprecedented risks of misuse of funds, rapid acceleration, and expansion beyond the scope of monitoring. To this end, expanded capacity for defence research and defence-relevant research can form part of the efforts to mitigate risks of rapid expansion.

Recommendations: Defence Research Modernization Agenda

Recognizing the increased need for defence research and defence-relevant research to support Canada's increased defence spending and defence policy revolution, this policy brief proposes a three-point defence research modernization agenda.

1. Canada must update its defence accounting practices to recognize defence research and defence-relevant research funded by other government departments (OGDs) within

Canada's defence spending. As argued elsewhere in the case of dual-use technology, this may result in entire strategies falling under the auspices of defence spending (Murphy et al 2025). All federal research funding bodies should flag if funded research grants support defence research or defence-relevant research at time of funding.

2. The Department of National Defence's key research streams—IDEaS and MINDS—constitute the primary mechanisms for targeted funding of defence research and defence-relevant research in Canada. As such, these programs should be expanded in scope and scale to ensure that the expanded mandate of the Defence Team is supported by a sufficiently robust foundation of defence research and defence-relevant research.
3. Finally, the DND associated supplement programs for defence research and defence-relevant research should be expanded across the three research councils in the number of supplements offered and their scale of support. Furthermore, associated supplements will be best poised for impact if all funding streams are eligible within each research council, ensuring that the associated supplements incentivize defence research and defence-relevant research across the research lifecycle and in the diverse ways in which research takes place.

Conclusion

The modernization agenda for defence research and defence-relevant research will ensure that the ambitious reforms of the current defence policy revolution are supported by a similarly robust enhancement of research capacity. This will involve updated accounting practices to recognize the defence research and defence-relevant research already taking place in the Canadian academy, expanding DND's research funding streams, and aligning the incentive structures of the research councils with the government's defence pivot through expansion of associated supplements. These recommendations are efficient in policy terms, leveraging existing machinery of government to deliver enhanced outcomes (requiring virtually no additional funds in the case of the first recommendation). The proposed increased allocations to defence research and defence-relevant research are strategic investments in a critical capacity that can help Canadian government, society, and military navigate the current defence policy revolution.

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Endnotes:

1 This statement assumes that all allocations will be spent.

2 Details from the most recent annual reports (Department of National Defence 2023; 2024).

3 This figure includes seven "young MINDS" applications, a student-centered program with a maximum request of $10,000 per grant.

4 NATO does not specify when a technology must deliver on this potential defence application (e.g., in terms of a specific technology readiness level).