

A Dual-Use Solution to a Dual Problem: Canada's Innovation and Defence Spending

Fabrice Blais-Savoie

Summary

Canada is currently under intense pressure to meet the NATO agreed 2% of GDP spent on defence and 20% of defence spending assigned to equipment. Simultaneously, Canada is facing a productivity decline. Looking at Canada's present defence spending, its current policy, and its R&D ecosystem, this paper proposes utilizing the increased defence spending to empower Canada's innovation policy to facilitate commercialization and to align it with defence needs. It does so by suggesting to 1) bolster of the IDEaS program's commercialization capability by taking inspiration from NATO DIANA, 2) redesign Canada's AI Strategy to emphasize military-civilian partnerships and 3) modernize the Ministry of Transportation's Drone Strategy to put an emphasis on dual-use drone technology.

Introduction

In 2014, NATO members agreed to commit [a minimum of 2% of their gross domestic product \(GDP\) to defence spending](#) within a decade. 10 years later, [23 of the 32 members](#) have reached this goal. Following up on that commitment, President Donald Trump has repeatedly criticized members of the alliance for not reaching this target, going as far as [asking for the bar to be raised to 5%](#) when the United States currently spends [3.38%](#) of its GDP on defence. In response, the Canadian defence minister promised to reach the [2% goal within two years](#). There has not been any clear plans on how he aims to do so, and no official government update, as [the most recent policy](#), endorsed by both major prime-ministerial candidates, aims to *not* reach it by 2032.

Despite this uncertainty, one area appears particularly opportune: equipment spending. A secondary promise to the 2% goal is to spend at least 20% of the defence spending on major equipment, including research and development (R&D). [Canada is currently spending 18.6%](#). At the same time, Canada is falling further behind on [innovation](#) and [productivity](#) despite having leading expertise in contemporary industries such as artificial intelligence and aerospace, and a highly educated population. A refocused policy on dual use technologies such as artificial intelligence (AI) and drones is an opportunity to *kill two birds with one stone*: solve the R&D commercialization problem and reach both NATO commitments.

The Current Spending Plan

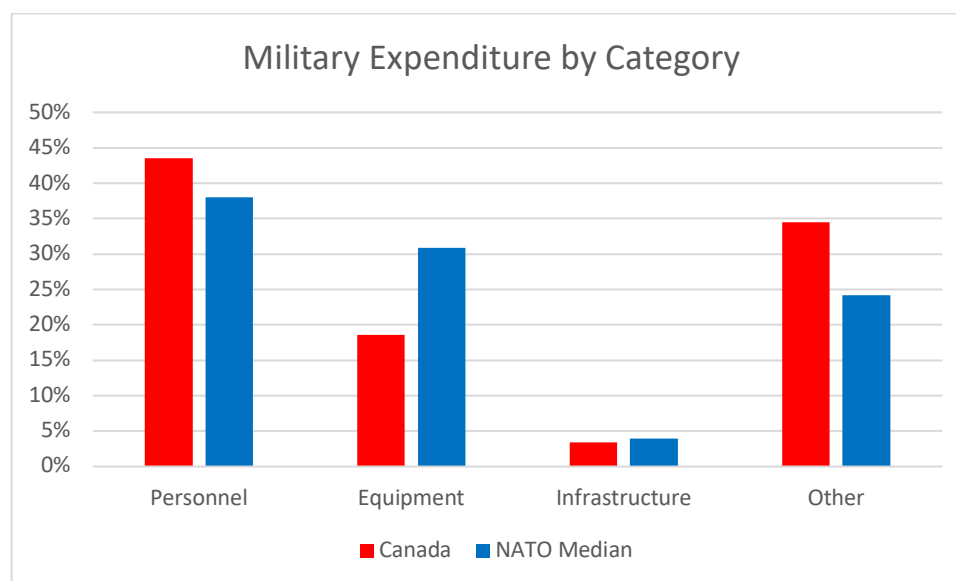
The current official policy of Canada, outlined in the 2024 defence policy update *Our North Strong and Free*, aims to incrementally increase spending every year until at least 2030. [The policy's spending emphasizes](#) naval and equipment maintenance, as well as ammunition production. Though not detailing any spending past 2030, it mentions the desire to achieve the 2% target by 2032. To this end, Canada has developed a NORAD modernization plan, [which involves almost 40 billion dollars in investment over 20 years](#). In line with this plan, and responding to President Trump's proposal to create an 'Iron Dome'-inspired missile defence system over North America, [Canada has offered to develop the sensor system](#), a program that may yet involve more spending.

The Prospective Future Spending Plans

With Canada in the middle of an election, the two main contenders have limited proposals for updating the current policy. Pierre Poilievre, the Conservative candidate, has not given extensive details on his plan to reach the NATO target. He previously said that he would maintain the [current \(Liberal\) defence spending policy](#). He has also said that [he said he would cut "wasteful foreign aid" to reach the target](#), and, more recently, [stressed that the Arctic would be a key focus in his defence plans](#). The newly appointed prime minister, and Liberal candidate, Mark Carney, [promised to accelerate the current plan by two years during the leadership race](#). He also announced a partnership with Australia to develop [Over-the-Horizon Radar technology for the Arctic](#). It is unclear if this is a new investment or part of the existing spending plan.

Canada's Current Spending

NATO divides defence spending into four categories: Equipment, Personnel, Infrastructure, and Other (operations). At first glance, Canada's spending on infrastructure is in line with other NATO members, but it overspends on personnel, and operations, relative to other areas. The relatively low spending on equipment, which includes research and development (R&D), suggests that it may be an under-explored avenue for going about further investment.



Personnel

Although increasing personnel directly increases capacity, the Canadian Armed Forces (CAF) have failed to meet recruitment targets for the last three years, with the available [military personnel, at best, stagnating](#). Nevertheless, the CAF has recently implemented important changes to facilitate recruitment, [loosening medical criteria](#) and hastening [the recruitment process](#). They have also improved [working conditions](#) for the members of the force. Recruitment continues to be an important concern, with key policy initiative undertaken, but personnel spending is unlikely to grow drastically in the next few years.

Infrastructure

Infrastructure is in a similar situation to personnel. Additional investment would theoretically be possible. [With only 60% of the Department of National Defence's \(DND\) infrastructure in "suitable condition"](#), it is even necessary. However, the long-term nature of infrastructure investment and the ["payment actually made" approach to calculating defence spending](#) makes it hardly suitable for a fast turnaround to hit the 2% target. Though out of scope for this analysis, infrastructure investment needs to figure within the medium-long term plan and will certainly play an important in maintaining 2% target and ensuring sustained capacity. Furthermore, similar to R&D and as [acknowledged by the Department of National Defence Deputy Minister](#), military infrastructure often has a dual uses such as: runways in the Arctic connecting remote communities and housing for the CAF reducing pressures on the commercial market.

Operations (Other)

Operations spending — essentially, ammunition, fuel, and repairs — is unlikely to move the needle in the short term as the CAF is already particularly active [in training missions](#) and spends a sizeable segment of its budget on operations. Compounding this issue is that operations costs often scale with personnel and, as explained above, that is unlikely to grow in the short term. Furthermore, the current spending, [inflated by donations to Ukraine](#), may to cool down, [as ceasefire negotiations are underway](#).

Equipment

Equipment includes two major components: procurement and R&D. [With almost half of equipment "unavailable and unserviceable"](#), expenditure on procurement will have to be a major priority for future budgets. Nevertheless, even if the Canadian government wanted to spend the money, it might not be able to do so with its current approach. The Parliamentary Budget Officer [estimates a 25% discount on equipment](#) spending because of consistent delays in procurement, suggesting the need to, especially if the timeline becomes constrained, look at other spending avenues. These delays are likely to be further exacerbated by [reconsiderations of procurement in the United States](#) and pressure on Europe's industrial base from the [continent's rearmament](#). These two issues highlight the need and opportunity of developing a domestic technological development industry. The lack of personnel also throws into sharp relief the importance of R&D spending: with fewer troops, effectiveness becomes more important. Furthermore, [with one of the most highly educated populations in the world](#), and a number of high technology research centers and universities, Canada has a large pool of potential employees for R&D heavy industries.

A glance at Canada's spending relative to other NATO members and the current geopolitical context suggests that equipment is a good category to target for spending increases.

Canada and R&D

Looking at spending provides one reason to focus on R&D, but Canada's economic characteristics as well as recent trends in both domestic and alliance-wide R&D lend further support for having such emphasis. NATO has recently accorded much significance to equipment development, with [Canada set to host the North American office of NATO's Defence Innovation Accelerator for the North Atlantic \(DIANA\)](#).

Hosting this office positions Canada well so that it can contribute to, and benefit from, NATO's research investments. The purpose of DIANA is to bring early-stage startups to market is also where Canada falls furthest behind comparable countries. Indeed, [Canada ranks last in the ability of its startups to scale and to make it to market as well as in average funding per startup](#). Pairing R&D funding and military needs addresses both of these problems. [Canada also consistently underperforms its peers in research intensity \(R&D spending/GDP\)](#). As the defence industry is [three times more research intensive \(R&D spending as a share of profits\) than the broader manufacturing sector](#), jumpstarting it may help Canada catch up. Investing in the defence industry is also particularly interesting for its impact on the broader Canadian economy as [the industry keeps 55% of its supply chain expenditures within Canada](#).

Investing in defence R&D also opens the door to the development of dual use technologies that could propel Canada's capacity for pursuing cutting-edge research. [NATO prioritizes nine disruptive technology fields](#). Of those, in 2022, [barely 3% of Canadian companies adopted artificial intelligence, and slightly more than 2% adopted robotics](#). This statistic is a reflection for how Canada's [real R&D funding has been declining for decades](#). Finally, investment in R&D also alleviates another of Canada's problems: its relatively small population. As shown by how Ukraine has resisted Russian aggression, [technology acts as a force multiplier for armies](#). Canada will never be able to contribute significant troop numbers to NATO, but it can still strengthen the entire organization by mobilizing its strong economy, its highly educated population, and integrated research ecosystem.

Key Policy Areas

Canada currently has two main defence research funding programs: Innovation for Defence Excellence and Security (IDEaS) and (Mobilizing Insights in Defence and Security (MINDS)). [MINDS mostly targets policy and public information solutions](#), while [IDEaS aims to solve technological shortcomings](#) in Canadian defence. Both qualify as defence spending, but IDEaS aligns more directly with the development part of R&D since it provides support and funding through all steps of the innovation cycle, from idea generation to real world testing.

Unfortunately, since its launch in 2018, IDEaS has only had [four projects make it to the "test run" phase](#). This fact, in addition to the lack of post-development steps such as commercialization, [were highlighted as key weaknesses of the program in its 2023 evaluation](#). This evaluation also highlighted that this step was determined as "international best practice" by similar programs in the United States, the United Kingdom, Australia, and New Zealand. However, the core problem is insidious as single-use military technologies have limited commercial potential outside of militaries. This flaw highlights the need to focus research on dual-use technologies which can then be commercialized to a greater

market. Refocusing the IDEaS program to incentivize dual-use development as well as increasing funding and support at the commercialization phase would thus both provide a more targeted avenue for mass-production scale defence capability development and help bring Canadian disruptive technologies to market. The IDEaS program should thus be complimentary with the new NATO DIANA accelerators which share the same goal but [approach it with a squarely commercial focus](#).

Two complimentary technologies are worth highlighting for their potential for Canada: artificial intelligence and drones

Artificial Intelligence

Canada has had great success developing basic research in AI, with one British-Canadian academic based at the University of Toronto [recently receiving a Nobel Prize for “foundational discoveries that enable machine learning.”](#) Canada has thus shined as an early player in the field, [being the first country to establish a comprehensive national strategy and the development of the Digital Charter](#). This edge has dulled slightly in the last few years, but the formal structure of research institutes and advisory council remain key actors in promoting the ethical use of AI.

In more recent times, Canadian industry has had difficulty in operationalizing its research. The [Pan-Canadian Artificial Intelligence Strategy](#) has tried to address this challenge by tasking three institutes with commercialization. However, the lack of focus and guidance in the policy has produced mixed results, [especially regarding domestic ownership and adoption of the technology](#). Adding a defence pillar to the strategy, including guidance on priority technologies, could be sound. This pillar could take the form of military-civil partnerships, solving both problems by drawing a clear path from research to market and aligning military needs with research, ensuring demand. This collaboration, [as shown by the United States’ Project Maven](#), allows the tech sector to develop useful products that align closely with military needs, while funding research into those technologies that can then be commercialized. Canada should draw on its strength in both AI ethics and development to ensure its industry remains world leading, not only for its capability but also for its reliability.

Drones

Though NATO does not label drones as an ‘emerging and disruptive technology,’ their manufacturing is downstream from all but one of the nine. [Drones were specifically targeted in DIANA’s 2024 challenge](#). Canada is already a global leader in the civil aerospace industry, [ranking in the top four largest producers for both engines and aircraft manufacturing](#).

Still, the Canadian drone industry lags behind. In 2024, the CAF purchased combat drones for the first time. [These drones will be manufactured entirely by a U.S. company based in California](#). As Canada reconsiders the reliability of the integrated defence supply chain with the United States, it becomes imperative that the development of this future technology happen, at least partially, in Canada. This need for domestic production is further emphasized by the importance of Arctic capacity for Canada, [a capacity that no drone currently has](#), and the new market opportunities that [European rearmament \(which excludes U.S. corporations\)](#) could perhaps creates.

This year is also a key moment for the drone industry in Canada as the [Drone Strategy](#), established in 2021, is expiring this year. This policy has a squarely civil and risk management focus, but its renewal opens the door to rethinking its structure. Section 4.4 currently involves investment in safety research

and mandates the Ministry of Transportation (MoT) with simplifying access to market by aligning international certification. The partnership between the MoT and the DND already included in the strategy could be bolstered to add a second pillar to the section. It would focus on providing additional investment in dual-use drone technologies - especially at the development and commercialization stage - and on ensuring interoperability with other NATO members. This approach aligns with the EU defence fund's focus on [increasing interoperability](#) and investing heavily in [rapid technological turnover to catch up Russia and China](#).

Conclusion and Recommendations

Canada is under intense pressure to reach the NATO 2% target: the United States threatening [to pull out of the organization or to impose tariffs](#), and it is now in the slim minority of members which has not reached the benchmark since Russia launched its full-scale invasion of Ukraine. Canada's military equipment is falling apart, while its innovation ecosystem fails to deliver disruptive technologies. Canada's innovation capacity has been hindered by chronic underinvestment and its economic growth has been hampered by low productivity and failure to commercialize the country's extremely educated population.

These challenges can be addressed by focusing investment in defence R&D and aligning civil and military research. Of course, Canada will not be able to meet the entirety of its NATO obligations simply by increasing R&D spending. However, this avenue is arguably the most useful, practical, and scalable one for increasing defence spending, all while maximizing the benefits to the Canadian economy. Canada must leverage its potential by investing in key industries and creating guiding frameworks, notably by:

- 1) Bolstering the IDEaS program to incentivize dual-use technologies and facilitate commercialization, in line with NATO Diana Accelerators;
- 2) Redesigning Canada's AI Strategy to give it a clear defence pillar, aligning defence needs with civil utility;
- 3) Modernizing the Ministry of Transportation's Drone Strategy to emphasize dual-use drone technology R&D.