Securing Military Supply Chains

Introduction

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The post-Cold War period saw increased international economic integration and growing technological sophistication in industrial products, trends that produced extended and globalized supply chains, especially in the defence sector. The relative calm in international security relations following the collapse of the Soviet Union has now clearly ended, with actual or threatened interstate war involving a major power becoming a daily reality. Russia's invasion of Ukraine has led to growing concern over a potential wider European conflict, and China is using its growing military and economic strength to reorder global relations. The United States is breaking many of the norms of a system it largely created and defended. The previous stability in commercial and security relationships has declined precipitously, putting our economies at greater risk.

The COVID-19 pandemic illustrated the vulnerability of extended supply chains. While the accidental disruption caused by the pandemic was severe, a far greater risk is posed by states deliberately interrupting supply chains to target the military capacity of rivals. For example, China threatened to restrict the export of rare earths, Russia interrupted natural gas supplies to punish uncooperative states, and the United States is preventing the export of advanced computer chips to China and others. Adversaries weaponize market power to restrict access to critical defence inputs originating within their countries or in states within their economic reach. Consequently, it is imperative for governments to identify security threats posed by military supply chains' reliance on imports, especially from adversarial states, rather than on domestic production or that of trusted allies. Strategies to reduce supply chain risk have implications for weapons choices, production processes, stockpiling, and costs of production.

At the 20th Defence & Security Economics Workshop (Carleton University,[1] October 31, 2025), a panel, "Securing Military Supply Chains", examined how to keep our military reliably supplied.

Key lessons from the workshop included:

- The post-Cold War peace dividend left defence supply chains less resilient. That era is over, and today's security environment features competition, and possibly conflict, with peer and near-peer rivals, alongside rapidly evolving technology and tactics.
- Commercial supply chains are built to minimize cost, through practices such as just-in-time delivery and global sourcing. That model does not suit defence, where security, resilience, and the ability to scale up quickly matter most.
- Defence supply chains must be seen as part of military capability, not as a cost centre.
- Defence supply chains must balance the reliability of domestic sourcing against the economies of scale that come from partnering with allies. Among allies, each country specializing in niche production can create a balanced interdependence that makes supply chains more innovative, reliable, and affordable.

- Effective defence supply chains rest on deep, stable relationships between key people across the supply chain. These relationships enable fast communication, information sharing, and administrative efficiency, but they must be built in peacetime to be useful in crisis.

This report summarizes panel presentations on why defence supply chains, unlike their cost-driven civilian counterparts, must be built for security and resilience.

Rebuilding Canada's Sovereign Logistics Mass: Lessons from History and Today's Imperatives

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Why Logistics Mass Matters

The COVID-19 pandemic and the war in Ukraine have exposed critical vulnerabilities in global supply chains and underscored the return of industrial-scale warfare. For Canada, these developments are a stark reminder that sovereign logistics mass—the ability to generate, sustain, and scale materiel support independently—is not a luxury but a necessity. Deterrence and defence depend not only on advanced platforms, personnel and technology but on the capacity to mobilize resources at scale and speed.

Historical Evolution of "Mass"

The concept of logistics mass has evolved dramatically over the past century. During World War I, the interdependence of industry, government, and military became painfully clear. A single decision by a German railroad CEO to halt a section of track caused an irrecoverable dip in Germany's war machine production because those trains carried raw materials from northern France back to Germany. This episode illustrates a fundamental truth: War is a system of interdependent gears, and when one gear fails, the entire machine falters.

By World War II, the concept of mass had matured significantly. Militaries exercised direct control over vast production and supply chains, ensuring that industrial output aligned with operational needs. The synchronization of industry, government, and armed forces was unprecedented, enabling the Allies to achieve decisive victories through sheer materiel superiority.

However, the end of the Cold War brought a "peace dividend" that led to the atrophy of mass. Defence budgets shrank, and control over production and logistics shifted from militaries to the private sector. This trend accelerated with globalization and the rise of business practices such as Just-in-Time inventory management. Economic efficiency became the watchword, often at the expense of resilience. Supply chains stretched across continents, and stockpiles disappeared, leaving countries and their defence forces vulnerable to disruptions.

Today's Strategic Challenge for Canada

Fast forward to the present: The pandemic and the war in Ukraine have shattered the illusion that global supply chains can always deliver. The return of industrial-level warfare demands a reassessment of Canada's defence posture. Our new defence policy, *Our North, Strong and Free*, combined with a significant budget increase, the Buy Canadian initiative, the new Defence Industrial Strategy, and the creation of the Defence Investment Agency, represent important steps forward. Yet these initiatives risk fragmentation unless they are cohered into a unified approach that restores Canada's ability to surge and sustain materiel support under stress.

The challenge is clear: How do we integrate these policies and programs into a national

framework that ensures Canada can deter adversaries and, if necessary, defend its sovereignty? The answer lies in rebuilding a sovereign logistics mass.

Imperatives for Action

1. **Rebuild a Sovereign Mass**
   Canada must secure domestic production of critical inputs, including ammunition, spare parts, and energy. This requires investment in scalable logistics infrastructure and strategic stockpiles. Sovereign mass is not about autarky; it is about ensuring that Canada can act independently when global supply chains fail.
2. **Synchronize the System**
   Industry, government, and the Canadian Armed Forces must operate as a coherent system. This means aligning procurement and sustainment strategies with operational requirements and embedding resilience into every aspect of defence planning. Efficiency cannot be the sole metric; adaptability and surge capacity must be prioritized.
3. **Leverage Partnerships, Guard Autonomy**
   Canada's alliances are a strategic asset, but reliance on partners must not become dependency. We must work closely with allies while maintaining the ability to generate and sustain forces independently. Sovereign mass is the foundation of credible deterrence.

Conclusion: A Call to Coherence

Canada's deterrence and sovereignty depend on more than advanced platforms and cutting-edge technology. They depend on logistics mass—the ability to mobilize resources at scale and speed. History teaches us that wars are won not only on the battlefield but in the factories, railways, and supply chains behind them. The time to act is now. We must integrate policy, industry, and military logistics into a coherent national strategy for mass. Only then can Canada ensure that it is prepared to deter adversaries and, if necessary, defend its sovereignty in an era of renewed great-power competition and industrial-scale warfare.

An analysis of military supply chains

By Dr. Elizabeth Hastings Roer
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Operations and difficulties of military supply chains

First, there has been a transition since about 2018 away from a national security environment characterized as "post-Cold War peace dividend" and towards "peer/near-peer competition". This has important implications for the anticipated nature of military operations. Operations against a peer-level threat will likely:

1. be multidomain, requiring integrated activities on land, at sea, in the air, in space, and in cyberspace.
2. require sophisticated capabilities to be effective.
3. need to be robust to contests in every domain. Cannot presume sustained air superiority, need to be robust to dilemmas such as degraded communications and denied logistics.

Second, fielding advanced capabilities generally entails:

1. high expenses.
2. time-intensive production. In particular, production lead times that are long relative to the timelines of planned operations, with production bottlenecks often being deep in supply chains.
3. global supply chains—the globally best solution for a given technological requirement will often have very few, or even one, supplier globally, due to the high investment needed to achieve sophistication and/or economies of scale. The result is that supply chains for most military equipment are global.
4. susceptibility to operational fragility. Sophisticated technology often requires sensitive calibration or data and communications integration with other equipment, leaving it susceptible to failure or degraded functioning if operational conditions compromise these system requirements.

Third, despite these challenges, deterrence and readiness against a peer-level threat mean that this sophisticated technology cannot be avoided, since the adversary will have access to the capabilities enabled by these technologies.

Fourth, therefore, partners and allies are crucial to ensuring deterrence and readiness. On the supply side for sophisticated technology, partners and allies expand the marketplace of ideas and access to talent. On the demand side, partners and allies increase aggregate demand, improving economies of scale.

Fifth, climate change is inexorably shifting the planet's physical landscape, which will have irreversible consequences for the global security, economics, and geopolitical environments.

Procurement process adaptation to the changing industrial ecosystem

Statutorily, Canada fills a unique niche with respect to the US defence industrial base. Along with Australia and the UK, Canada is designated as part of the US's "National Technology Industrial Base". In addition, Canadian companies are eligible to receive funds through US Defense Production Act Title III authorities, on the same level with US domestic firms. At the same time, of course, Canada has close relationships with the UK and other NATO and Five Eyes countries, and with other US partners and allies around the world.

One way Canada may be able to advance its security and economic interests is to leverage its combination of international relationships, distinct legal and political structure, and sophisticated industrial capability to position its firms as preferred solution providers for carefully selected, niche industrial base challenges faced by its allies and partners. For instance, lengthening wait times for foreign military sales deliveries from US companies underscore hard capacity constraints for US production of key weapons systems. The US is increasingly seeking out co-production arrangements to support its allies and partners and increase global production capacity; perhaps there are certain supply chain bottlenecks Canada is well-positioned to fill thanks to its unique geopolitical position with respect to the US. There are other examples of specific pain points in the US defence industrial base where Canada may see opportunities to contribute, such as operational test and evaluation, Arctic operations, and critical materials. Canadian investment in its domestic capabilities in such niches may simultaneously advance its own immediate security and economic goals while also supporting its broader alliance and partner nations.

Policy issues in military supply chain efficiency

What efficiency means and how to achieve it mark a clear difference between military and commercial supply chain management. Commercial supply chain practices for maximizing profit, such as "lean" supply chains with minimal stockpiles and just-in-time delivery, can undermine military imperatives such as surge capacity and resilience to disruption. Nonetheless, cost efficiency is a key objective for military supply chain management.

Two priority policy problems come to mind as key drivers of military supply chain efficiency. First, and foremost, carefully defining security objectives and carefully choosing the systems used to pursue those objectives must avoid unnecessary fleet complexity. As mentioned above, sophisticated capabilities are necessary in a near-peer competition. However, that does not mean that every country needs to field every type of sophisticated capability. In fact, there may exist many cases where skillfully employed simpler systems are sufficient and cost-effective means of meeting security objectives. Technologically advanced capabilities often have drawbacks in terms of cost efficiency. For instance, cutting-edge technologies, still requiring advances in both military and commercial applications, often lead to added costs from configuration management, obsolescence mitigation, and duplicative logistics burden from needing to operate and sustain multiple configurations of the same types of equipment. Sometimes the sophisticated capability is worth the cost, but sometimes it is unnecessary. Tying capability investments tightly to carefully chosen security objectives is, in all likelihood, the most important way to improve military supply chain efficiency.

Second, at a more tactical level, going back to the challenges of commercial "lean" supply chain practices, defence supply chains and industrial base capacity should be managed as a military capability rather than a cost center. The drive to reduce supply chain costs by reducing risk of unused stocks creates military risk: What if an unexpected conflict emerges and needs are greater than anticipated? Yet it is important to pursue cost efficiency by avoiding excessive materiel expenditure. At least in the US, there may be a disconnect between the way military capability and materiel expenditures are viewed: It is accepted that some level of military readiness across a range of capabilities is worth maintaining, even if those capabilities go unused. Military capability, in addition to its deterrence function, is insurance: It will hopefully go unused, but needs to be available anyway. Similarly, unused materiel stockpiles and production capacity are not necessarily wasteful, so managing defence supply chains to achieve cost minimization—as is more or less the practice in the US military, may be misguided. Economics offers methods for making ex ante distinctions between excessive expenditures and wise—but ex post unnecessary—expenditures, akin to making decisions about how much insurance to purchase.

Research questions towards a better understanding of military supply chain operations

First, international trade theory may not be up to the task of supporting decisions about defence industrial base policy. It typically suggests free trade is ideal, with some exceptions for developing economies. However, clearly there are sound national security reasons for some level of government intervention or industrial policy to ensure secure and reliable supplies of defence items. What types of interventions and industrial policy would help meet these security requirements while minimizing the risks of market distortions, regulatory capture, and related problems?

Second, and more directly related to procurement, sourcing decisions have historically consisted of treating a weapon system as a single product. This means that source-selection decisions and contract management methods are constrained. Nevertheless, in cases where a weapon system can be broken down into constituent components, what are additional options for managing sourcing? For instance, where performance tradeoffs are low enough to enable modular open system architecture, how can and when should source selection and contract management approaches vary by system component?

Third, it seems as though manufacturing technology is progressing such that there is, in some cases at least, more flexibility regarding what outputs a given piece of production equipment can make. For many decades now, the legendary approach of WWII industrial base mobilization, like a sewing machine maker converting to weapons production, has been unrealistic because production equipment has been so specialized to its product. But new technology seems to have more flexibility. Certainly, the advanced manufacturing industry makes this claim. Is this true? To what extent and under what conditions? How can we know what outputs a given type of production equipment is capable of producing? How does this potential flexibility and agility in production equipment change industrial planning for defence production surge and mobilization?

Defence Supply Chain Collaboration

By Maj David Loska *PhD, Swansea University, UK, in collaboration with the University of Central Oklahoma, US. Active-duty Air Force logistics officer, formerly US Navy aircraft mechanic. He holds a B.S. in aviation technologies from Southern Illinois University Carbondale, an MBA from Western Kentucky University, and an M.S. in Operations Management from the Air Force Institute of Technology. The views expressed are his own and do not constitute endorsement by the Department of War, the Department of the Air Force, or the US Government.*

Interest, research attention, and collaboration around defence logistics have increased noticeably in recent years, boosted further by the Russian invasion of Ukraine in 2022. Moreover, with rising tensions in the Pacific, we observe growing discussions not only about alliances but also about international collaboration in procurement partnerships to enhance defence production capabilities.

This last development is exemplified by the trilateral security agreement between Australia, the UK, and the US, known as AUKUS. It was established to pursue international industrial joint capabilities and interoperability, primarily in the submarine industrial sector. It is well known that international cooperation and the sharing of information and technology can drive innovation and bolster global security.

The level of focus is quite different from what has been seen over the past 20-30 years. For example, back in 1997, a call for papers towards a special issue of *Acquisition Review Quarterly*, hoping to engage scholars in defence acquisition research, went unnoticed and, at best, was *underwhelming* as only one of seven accepted articles came from that call. Then in 2013, a special issue on defence acquisition for the *Journal of Public Procurement* similarly failed to attract attention. The attention was so disappointing that only six manuscripts were submitted and just two were accepted, not enough for a full special issue. This history is recounted in an article entitled "Research in defense logistics: where are we and where are we going?" that was published in the Journal of Defense Analytics and Logistics in 2020. In 2012, an important article[2] reviewed the early 2000s' peak in research interest in defence logistics and its decline in the following decade.

Recent research on collaboration-focused supply chains has identified several developments. For example, defence sector case studies from Sweden highlight the sources of complexity in defence-sector supply chains and the associated impediments to rapidly increasing output.[3] Complexity and production bottlenecks are particularly relevant to the Nordic countries such as Finland and Sweden, as they develop their defence industrial base strategies and relationships upon joining NATO.

What we learn from Logistics Research

The term "logistics" originates in military studies, whereas "supply chain" originates in commerce. Although the military often uses the phrase "defence supply chains", the complexity of military operations makes either the term "logistics", which in the military is generally

considered to encompass supply chain management, or the full phrase "defence supply chains" more appropriate for describing military supply chain management.

Defence supply chains are unique because they exhibit a multitude of defining characteristics. They involve a globally dispersed industrial base, event-driven demand instability, and multi-directional flows of materiel and information. These are not just transactional or voluntary relationships; rather, they involve deep dependency and integration between public and private organizations. Thus, one can invoke relational contracting as one of the essential defining characteristics of defence supply chains.

Moreover, these relationships have to be established before crises, not after—echoing the military maxim: *"You can't surge relationships."* In this respect, defence is similar to other public service responsive operations such as firefighting, police and ambulance services in terms of urgent surges in demand. Defence logistics is effects-based and capabilities-oriented, as seen in NATO's Defence Planning Process and distributed operations like the US Air Force's Agile Combat Employment as one example. Modern combat requires dispersed yet networked logistics and equipment locations to withstand targeting and precision strikes and sustain offensive advantage; these locations may need to be moved frequently to ensure survivability and responsiveness.

Military supply chains also share characteristics with humanitarian logistics, operating across complex, multi-location networks and responding to event-driven instability. Both emphasize flexibility, resilience, and integration to enable rapid response—or in military terms, "surge" capacity.

Economic Theory Connections

Foundational economic theories contribute to our understanding of defence collaboration.

Organizations decide on their input acquisitions as to whether to make domestically, buy off-the-shelf, or ally in terms of joint versus licensed production, grounded in Transaction Cost Economics (TCE) and the theory of the firm-on-firm boundaries and information sharing originally developed by such Nobel economics laureates as Ronald Coase and Friedrich Hayek. Oliver Williamson, another Nobel laureate, drew parallels between military strategy and economic governance, linking Clausewitz's ends-and-means of war to hierarchical and market mechanisms. His earlier work influenced US defence acquisition reform—advocating for more task specificity and reduced complexity—which ultimately shaped today's Defence Acquisition System.

Collaboration

As part of my research in collaboration, I interviewed 51 individuals from across the defence supply chain in the U.S.—spanning new and legacy aircraft, engine procurement, and a variety of contracting arrangements (firm-fixed-price, performance-based, public-private partnerships, depot maintenance, sustainment, and operational roles). Questions addressed such issues as where collaboration works, where it breaks down, and whether collaboration truly exists within the DoD given that it is technically one firm with an internal supply chain. The findings showed many parallels with commercial supply chains—particularly regarding aligned incentives,

information sharing, and leadership commitment to governance and to reducing bureaucracy. Access—to people, information, and resources—was another recurring theme.

Interestingly, not all inter- or intra-organizational conflict is negative. Task-based conflict can actually *foster* collaboration when managed well, while relational conflict tends to push partners apart. A major theme that emerged was mutuality—mutual gains and understanding. While it seems intuitive, research on collaboration does not emphasize mutuality as much as one would expect. My research findings support the idea that market-based governance structures can help turn task conflict into mutuality, not only in commercial but also in military contexts. This has significant implications for national and subnational collaboration between public and private sectors by supporting innovation, clarifying institutional roles, and enhancing partnerships across industry, the military, and academia. When designed with market-oriented modularity, contestability, and collaborative governance, these partnerships can greatly enhance mutual performance outcomes.

Summary

By Dr. U.G. Berkok, OCdt N. Mukherjee and OCdt G. Vernon
Dr. Berkok is Associate Professor and Chair of Economics at the Royal Military College. N. Mukherjee and G. Vernon are Officer Cadets at the Royal Military College.

The three panelists discussed the major issues in defence supply chain security. As the critical pillar of operational readiness, defence supply chains have been adapting to changes in modern communications as well as to the ubiquitous use of drones in modern combat.

Stylized facts and priority problems in securing supply chains

The current strategic global environment may be prone to near-peer conflict, which would require complex operations in integrated but challenged domains. Correspondingly, complex weapons systems require niche capabilities in production and continuous improvements to preserve the technological edge, which in turn, accelerates obsolescence. To overcome Augustine's Law,[4] larger demand- and supply-side partnerships become indispensable to exploit scale economies in order to lower the costs of the sophisticated weapons systems. Dual-use technologies are gaining prominence, generating new possibilities for capabilities and infrastructure but, also, triggering competition with civilian markets for production capacities. Yet, dual-use technologies also create challenges of restricted access, e.g. through contracts or sanctions. Should we limit trade in dual-use technologies and goods in the civilian realm with trade partners that could turn around and use them for unacceptable military purposes?

By analogy to the human body, defence supply chains are the blood supplies to organs where the latter are capabilities whereas the former are munitions, spare parts and the countless inputs that the military logistics network does relentlessly procure and forward to military units rain or shine. The potential security pressure points can be grouped as follows.

First, the back end of the supply chain is the industry and the front end is the logistics officer of the military unit. Long extended chains tend to suffer from outsourcing as predicted by transaction cost economics due to too many contracts and, perhaps, the difficulty of developing relational contracts.

Second, as a synchronicity challenge, an information transmission mechanism must be assured that a shell fired turns into an immediate demand signal to the manufacturer as well as to the whole chain. In this regard, one can anticipate that more redundancy would be required at each link of the longer chain.

Third, the industrial-age warfare requires mass and this continues to be the case as the COVID-19 pandemic as well as the war in Ukraine have demonstrated. Moreover, a current challenge to mass storing of equipment and inputs close to battlegrounds is the threat posed by drones. This challenge requires splitting stocks into spatially distant storage units to reduce the likelihood of being wiped out *en masse*.

Fourth, hybrid warfare, including cognitive components, increases the chance of no-notice escalation, which may be difficult to detect. Detection delays undermine responses such as

repairing and reinforcing the supply chain and transmitting information from front to back end more efficiently.

Canada: Adaptation of the military supply chain to changing industrial ecosystems

A secure defence supply chain is a network that swiftly deploys assets and their inputs to the correct destinations. Domestic supply chain resilience depends on robust critical infrastructure, including power and utility grids, food supply chains, healthcare, and emergency services. The same requirement is further complicated in deployments by the fact that host countries must provide such critical infrastructure.

Canada's Defence Supply Chain Resilience Strategy 2025 focuses on:

- boosting domestic defence industry (e.g. strengthening the domestic ammunition industry);
- securing critical minerals processing;
- modernizing logistics by leveraging AI in supply-chain monitoring;
- strengthening international partnerships with NATO countries and other democracies in the Indo-Pacific Economic Framework for Prosperity (IPEF) bloc;
- fostering small and medium enterprises (SMEs) via Regional Defence Industry Innovation (RDII) program aiming at advanced materials, critical minerals extraction and processing, software, and dual-use technology scaling up for defence needs and, moreover, joining NATO's Innovation Fund for emerging technologies.

Further thoughts on adapting the Canadian supply chains included the following:

- Economic spillovers must be leveraged to improve job markets and strengthen the political coalition to implement the new strategy. Integrating with allies operationally and economically may strengthen leveraging by adding quantity and quality through partnerships.
- As Canada was the original partner with the US defence industrial base starting in the 1950s, Canadian companies qualify as domestic producers in the US for defence products. This should enable Canada to become a problem solver for niche defence problems that other countries, including the US, may not be able to solve, such as critical minerals supplies and stocks.
- In terms of niche products, Canada has potentially much greater influence in the Arctic, and is therefore well positioned to complement the US uniquely through its financial, political, and technological sophistication in what is becoming a major strategic front.

Better understanding of the military supply chain operations to inform policy

Military supply chains differ from those of other sectors because of the potential for adversaries to target them at their weakest points. The limited number of suppliers of technically sophisticated weapons systems or components means that if one part of that supply chain becomes incapacitated by hostile action, overall defence capabilities may be seriously degraded. Post-production, the spatial concentration of logistical supply lines and stockpiles risks exposure to direct attack, for example through drone attacks. Mitigating these risks requires detailed mapping of defence supply chains both organizationally and geographically.

To this effect, panelists emphasized several points about modern warfare and the role of supply chains.

- With near-peer threats, superiority cannot be assumed and multi-domain weapons operations are critical, which necessitates a very complex web of supply chain operation. Modern weapons are expensive and time-consuming to produce and require global production units. This requires leveraging of allies and partners for economies of scale as well as mass production needed in protracted wars and the accompanying requirement for maintenance of weapons systems.
- As technology evolves, as we observe in the war in Ukraine, and the military competes in the civilian market for dual-use technology weapons market, major obsolescence issues emerge, e.g. with drones modified on the ground.
- The war in Ukraine demonstrates the importance of mobilization. This requires building the reserve forces for the frontline as well as the supply chains and the critical infrastructure. The population at large must be prepared for this eventuality.
- As part of supply chain optimization, information transmission from the operations theatre to industry gains prominence. Transitioning from "just-in-time" efficiency to "just-in-case" resilience by stockpiling and diversifying suppliers, thus building an adaptive supply chain network proves vital. For example, the second a missile is launched the industry must know whether to produce more. This requires precision in supply contracts but also takes cumulative effort to build mutual trust between the military and the industry. Trust cannot surge, it must be built and maintained.

Open Discussion

The following thoughts emerged in the Q&A period.

- There exist asymmetries in supply chains and mutuality is not symmetric. Sometimes, the industry will not know what the military needs and, reciprocally, the military may not know the potential solutions the industry can offer: Supply information channels must be open both ways. Thus, it is important to understand the problem so that either side can ask the right questions in pursuit of solutions. The identification of the problem and the existence of solutions must exist in the same sphere of reflections.
- The peak-load demand problem is heightened during conflicts, as NATO's munitions shortages made painfully clear shortly after the Russian invasion of Ukraine. The surge required generated several suggestions. First, dual-use production capabilities such as steel-smelters pivoting to ammunition production. Second, some firms can pivot effortlessly as needs arise. Third, a portfolio of pre-existing solutions with multiple affordable products.
- To achieve sustainability in defence supply chains, Canada will have to adapt its defence procurement and production strategies to balance its need for immediate defence capabilities with R&D for longer-term production capacity, efficiency and resilience.
- The government-owned and -operated, or regulated, industrial base firms could be re-imagined to supplement the relationships between manufacturers and the defence procurer. Such a policy of multiple simultaneous projects may improve efficiencies by injecting competition and foster collaboration between government and industry.

ENDNOTES

[1] Sponsored by a MINDS grant from DND, ADM(Pol).
[2] K. Yoho, S. Rietjens & P. Tatham (2013), "Defence Logistics: An Important Research Field in Need of Researchers", *International Journal of Physical Distribution & Logistics Management*.
[3] I. Antai & R. Hellberg "Surge Complexities in Defence Industry Supply Chains: Evidence from Multiple Case Studies", *International Journal of Logistics Management (2025).*
[4] Augustine's Law, as introduced by Norman Augustine, is the empirical regularity that the cost of fighter aircraft doubles every 20 years. (See G.C. Allen & I. Goldston (2024), "Updating Augustine's Law: Fighter Aircraft Cost Growth in the Age of AI and Autonomy", Center for Strategic & International Studies, https://www.csis.org/analysis/updating-augustines-law-fighter-aircraft-cost-growth-age-ai-and-autonomy.