

CANADIAN GLOBAL AFFAIRS INSTITUTE
INSTITUT CANADIEN DES AFFAIRES MONDIALES

Western Canada's Capabilities in Supporting Arctic Sustainment

By Judy Alomari

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ROUNDTABLE REPORT

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Overview

This Prairie Shield Initiative roundtable, hosted in Edmonton, Alberta, focused on Western Canada's capabilities in supporting Arctic sustainment and brought together members of the Canadian Armed Forces (CAF), government, industry, academia, and training institutions. The conversation highlighted one overarching message: Canadian defence in the Arctic is currently, and will continue to be, a sustainment challenge. Canada's main objective is to build the systems that enable military forces to reach and operate in the North, communicate securely, refuel, maintain equipment, and scale up during crises. Roads, runways, fuel, power, housing, secure facilities, and supply chains are core enablers of Arctic readiness, as they determine whether the CAF can operate effectively beyond short-term deployments.

Alberta and Western Canada are well positioned to secure their role as the "gateway" to the North, supporting Arctic sustainment through strengths in energy, logistics, aerospace, manufacturing, training, autonomous systems, and satellites. However, this capacity cannot be fully utilized without clear links to specific CAF requirements. There must be early and consistent engagement with Indigenous and Northern partners, since Arctic defence projects directly affect housing, labour, power, and local services in these remote communities.

Key Themes

Sustainment is the Core Arctic Challenge

The problem is not getting forces into the North; it is keeping them there. Limited infrastructure, vast distances, and harsh operating conditions mean the CAF's presence in the Arctic risks remaining episodic unless Canada builds a persistent, integrated sustainment system. A weakness in any single element—such as fuel, power, communications, or housing—can undermine the entire operation.

Alberta as a Western Gateway to the North

Alberta's energy corridors, logistics networks, 4 Wing Cold Lake, Edmonton's broader aerospace and defence infrastructure, aviation capacity, training institutions, and advanced manufacturing sector are important contributors to Northern defence operations. Highway 28 between Edmonton and Cold Lake is a practical example of how southern infrastructure supports Northern readiness. The development of a 'living map' of Alberta's defence-relevant capabilities would be helpful for all stakeholders: this would offer a clear, regularly maintained picture of what the province can offer and how those capabilities align with CAF requirements.

Fuel, Energy, and Secure Communications are Immediate Bottlenecks

Fuel is one of the clearest operational challenges. Aviation fuel is extremely costly to transport to the North, resupply options are limited, and fuel can degrade when stored for long periods in Arctic conditions. Canada's limited cold-weather testing capacity for fuels and equipment is also a significant gap. A practical near-term approach would be to adopt dual-use fuel systems, such as storing commercial Jet A-1 and adding military-specific additives only when operationally required. Over the longer term, strengthening energy sovereignty through investments in technologies such as small modular reactors and synthetic fuels should be a strategic priority.

Secure communications is an equal concern. Northern operations require polar SATCOM, resilient fibre connectivity, and infrastructure capable of operating at classified levels. Radio frequency spectrum can be denied by adversaries, making redundant fibre rings essential. Sensitive Compartmented Information Facility (SCIF) construction as an area requiring innovation, as current approaches are slow, expensive, and difficult to replicate across multiple Arctic sites. Proactive cybersecurity for companies involved in defence-related Northern projects is also an area requiring greater awareness and prioritization.

Industry Requires Clearer CAF Problem Articulation

Industry stakeholders, especially those from small and medium-sized enterprises (SMEs), have expressed consistent frustration at being unable to understand the CAF's needs. There needs to be more structured CAF–industry engagement, including base lunches, site visits, demonstration opportunities, and problem-focused workshops where innovators can identify current operational challenges and demonstrate applicable technologies to the CAF. The Department of National Defence (DND) needs to identify the specific problems Alberta's industry should address, given the province's particular industrial strengths.

The structure of innovation challenges is also as a limitation. Programs that expect a single company to provide a single solution risk missing opportunities for collaborative problem-solving, where one firm's capabilities build on another's to deliver a complete solution more quickly.

Security Clearances and Decision Speed are Limiting Readiness

Security clearances are a barrier for industry participation. This leads to delays, slows engagement at every level, makes it more difficult to onboard new employees, and creates significant bottlenecks for companies seeking to scale operations or deploy specialized teams in support of defence projects. Since Northern construction seasons are short and unforgiving, procurement processes, regulatory approvals, security clearances, and funding timelines must reflect the realities of operating in the North, where a single delay can push a project back by a full year.

Innovation Pathways Need More Speed and Risk Tolerance

Canada's existing defence innovation programs are widely seen as underfunded and slow. The IDEaS program was described as difficult to navigate and underfunded relative to comparable programs in allied countries, particularly the United States. There are cases in which companies reached the end of the process with little to show for it, having developed a market-ready product only to discover that the CAF lacked the systems or infrastructure required to integrate it, or that program funding had been exhausted before a usable outcome could be delivered. There needs to be faster processes, increased funding, and a greater willingness to take calculated risks on innovative solutions. The longer-term solution can be summarized as build, partner, buy plus innovate: developing capabilities internally where necessary, partnering with industry, purchasing available solutions, and supporting the development of new technologies where gaps remain.

Indigenous and Northern Partnerships Must Come First

Indigenous partnerships are essential to successful Arctic sustainment. Indigenous economic development corporations bring local knowledge, procurement legitimacy, and operational capacity that are essential to projects in the North. There are often the absence of Indigenous voices and there should be more meaningful inclusion during future discussions. Poorly planned Arctic defence projects could create additional pressures on housing, labour, power, and local services if Northern communities are not involved from the outset. Existing Indigenous economic councils and partnerships with Inuit-owned companies can serve practical starting points for future efforts.

Workforce Capacity is a Looming Constraint

Labour shortages could significantly delay Arctic projects. A robust talent pipeline, along with investment in training, recruitment, retention, housing, and skills development, will need to be established early. The Southern Alberta Institute of Technology (SAIT), the Northern Alberta Institute of Technology (NAIT), Saskatchewan Polytechnic, and other training institutions can be key contributors, particularly in aircraft maintenance and the skilled trades. Retaining workers in the North will require the creation of long-term career pathways linked to both defence and community development.

The Canadian Rangers are also an underutilized strategic asset. Expanding the Rangers would strengthen Canada's regional presence, while improved systems for capturing and transferring Ranger knowledge would help preserve valuable local expertise as members join and leave the organization, reducing the risk of institutional knowledge loss.

Collaboration Should Build on What Already Exists

Canadian industry stakeholders urge Canada to avoid duplicating existing capabilities. Logistics firms, construction companies, fuel operators, and Northern supply chain networks are already supporting both CAF and commercial operations in the Arctic. The CAF and DND should

identify and build on these existing networks rather than recreate them. The same principle applies across sectors. Alberta's strengths in energy, agriculture, environmental services, and healthcare include technologies and expertise that could be adapted for defence applications. Bringing these sectors together with the CAF could create opportunities that may be overlooked in defence-focused discussions.

Considerations and Takeaways

- **Treat sustainment as readiness:** Roads, runways, fuel, power, small modular reactors, synthetic fuels, dual-use energy infrastructure, housing, communications, cybersecurity, maintenance, and supply chains are core enablers of Arctic readiness. Without them, the CAF cannot sustain an effective presence in the North.

- **Act with urgency:** Northern construction seasons are short and unforgiving. Delays in contracting, security clearances, approvals, or funding can push projects back by a full year.

- **Provide clearer CAF problem statements and strengthen industry engagement:** Industry requires specific operational problems, clear demand signals, demonstrations, workshops, and site visits to move from generic capability pitches to practical solutions for Northern operations.

- **Position Alberta as the Western gateway to the North:** Alberta's strengths in energy, logistics, aviation, training, manufacturing, autonomous systems, and satellites should be mapped to specific CAF sustainment requirements through a maintained provincial capability strategy.

- **Build Indigenous and Northern partnerships early:** Indigenous economic councils, Inuit-owned companies, and Northern communities should be involved from planning through implementation, as Arctic defence projects affect housing, labour, power, local services, and community capacity.

- **Plan the workforce and preserve Northern expertise:** Training, recruitment, retention, housing, long-term Northern career pathways, and improved systems for capturing Canadian Ranger knowledge require early investment to prevent labour shortages and preserve local expertise.

- **Reform innovation pathways and leverage existing capacity:** Defence innovation requires faster processes, increased funding, clearer outcomes, greater risk tolerance, and more collaborative challenge models. The CAF and DND should also map existing Northern logistics, fuel, aviation, construction, and supply chain capacity before investing in new long-term systems.

Adopt a coordinated Western approach: Success in Arctic sustainment requires deliberate, coordinated action across the CAF, federal and provincial governments, industry, Indigenous partners, training institutions, and Northern communities.

About the Author

Judy Alomari is the Communications Lead at the Canadian Global Affairs Institute, where she supports strategic communications, media relations on Canadian foreign, defence, trade, and energy policy. She holds a Master of Strategic and Security Studies and a Bachelor of Arts in Communication and Media Studies and Political Science from the University of Calgary.

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