



A CLIMATE SECURITY PLAN FOR CANADA

HOW THE GOVERNMENT OF CANADA CAN COMBAT THE SECURITY RISKS OF CLIMATE CHANGE

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Envisat image of Nunavut territory in the Canadian Arctic, 2009.

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EXECUTIVE SUMMARY

The Government of Canada is well aware that climate change will continue to affect the country's security, given the focus of its security discourse on the transformation of the Arctic. The Canadian government, academia and civil society have brought a comprehensive approach to understanding and addressing climate security threats in the Arctic region. Following a number of dramatic natural disasters in recent years, there has also been significant attention to the growing risk of climate change-related disasters more broadly within Canada, including how defense policy and planning should manage the growing demand for domestic disaster response.

This *Climate Security Plan for Canada* aims to build on the body of existing Canadian government policies and interest aimed at addressing a range of climate-related security issues, from the community level to the international – as demonstrated by Canada's 2020 UN Security Council bid, which emphasized global climate security risks. It contains two parts, a Climate Security Risk Assessment (problem) and a Climate Security Action Plan (solution). The risk assessment aims to define the risks climate change poses to Canada's security, and the action plan details how the Government of Canada, particularly the security community, could strengthen its institutional capacity to manage these threats.

The *Climate Security Plan for Canada* is structured to reflect the 2017 Canadian defence strategy, *Strong, Secure, Engaged* (SSE). Part one, the Climate Security Risk Assessment, examines the risks climate change poses to Canada being “Strong at Home,” “Secure in North America,” and “Engaged in the World.” Part two, the Climate Security Action Plan, details how Canada can 1) *anticipate* climate security risks, 2) *adapt* to climate security risks and 3) *act* decisively in response to climate security impacts.

THE CLIMATE SECURITY RISK ASSESSMENT

The Risk Assessment offers an overview of the climate security risks that are broadly understood – Arctic challenges, domestic disasters – as well as less-appreciated ways that climate change might affect the global strategic environment and Canada's national interests, including geostrategic competition and growing demand for international disaster response and peacekeeping support operations.

In the Risk Assessment, the “Strong at Home” section evaluates domestic climate security risks, including those to the armed forces, to Canadians' human security, and risks across the Canadian Arctic. The “Secure in North America” section broadens the aperture to review the US approach to the climate security nexus, Canada's security posture in the Arctic, the geopolitics in the region among NATO, Russia and China, and US-Canada efforts to strengthen the North American defense perimeter and manage Northwest passage issues. Finally, the “Engaged in the World” section poses questions around Canada's global obligations and orientation, looking at the impact climate change may have on fragility and instability around the world, on migration and refugee issues, potential climate security implications for international institutions, and how these risks, as well as the energy transition, might influence the rise of China.

THE CLIMATE SECURITY ACTION PLAN

The Climate Security Action Plan proposes a series of responses for the Government of Canada, to develop an overarching strategy that can provide clear policy direction, maximize synergies between different program areas, and avoid missed opportunities in addressing climate-related security threats across the government.

Its central recommendation is the establishment of a “Climate Security Task Force” to develop an integrated and cross-agency climate security planning framework for Canada, monitor its implementation, and revise it in response to changing environmental and geostrategic dynamics. This Task Force would be made up of representatives from the lead government agencies – Global Affairs Canada (GAC), the Department of National Defence, and Environment and Climate Change – and overseen by the GAC division for security and defence relations. It should convene working groups informed by expert advisors from Canada’s research community to examine nodes of risk in detail, identify existing activities by the Canadian government, conduct a gap analysis on Canada’s policy to manage these risks, and develop near- and medium-term strategies for addressing them. Working group areas could include defence, the Arctic, domestic disaster resilience issues, international HA/DR and security operations, and geopolitical competition, among others.

In addition to anticipating climate-related security risks and adapting to the changing climate, this Plan recommends that Canada act decisively to prevent climate security risks by setting ambitious targets for official development assistance (ODA) that promotes climate resilience, peace and stability; improving rapid response capabilities for emerging climate security crises, leveraging Canada’s position within multilateral institutions to promote climate security risk management; and focusing on meeting its emissions target of net-zero by 2050, all of which would be supported by improving public awareness around the broader consequences of climate change, including the security dimensions.

INTRODUCTION

Canada has embraced the need to combat climate change, and has recognized that a shifting climate context will affect its future security. It has developed a comprehensive strategy to lower emissions, the *Pan-Canadian Framework on Clean Growth and Climate Change*,¹ and has integrated a proactive stance on climate into important strategic documents such as *Strong, Secure, Engaged*, its 2017 defence policy.² As a sign of the desire to address climate change across government planning, each of the mandate letters the Prime Minister gave to his government ministers in 2019 highlight the importance of fighting climate change – including the letters to the Ministers of National Defence³ and Foreign Affairs.⁴

To some degree, Canada's security enterprise has been oriented towards addressing the security implications of climate change for Canada, particularly in the Arctic. However, the Government of Canada could benefit from a more comprehensive plan to integrate climate change into broader efforts that deal with human and national security, and to further adapt its security structure to the changes that are coming.

Fundamentally, the foundation of such an approach is the premise that **climate change is a national security issue**. The implications span different aspects of Canadian security, including how climate change will impact Arctic geopolitics and security, the impact of climate change on Canada's military readiness, operations and strategy, and internationally, anticipating situations of emerging instability and fragility in which climate change might play a role – including climate-related instability in the broader Americas. More broadly, climate change will also affect the geoeconomics of energy and the energy transition, shape and frame geostrategic competition and the rise of China, and otherwise be relevant for many aspects of Canada's national security and national interests. In sum, climate change is an integral part of the global security environment and will exert increasing influence over time.

However, since the global community has unprecedented foresight of these external stresses, Canada not only has the opportunity, but also the responsibility to prepare for this climate changed security environment.⁵ This report examines the implications of climate change for Canada's security, and outlines a framework for response. The first part of the report is an assessment of the risks posed by climate change, and explores the threat that it poses to human and national security within Canada, including noting trends like increased incidence of flooding and wildfires, and the implications for Indigenous populations in the Arctic. It discusses implications for Canada's military forces and the increased risks to military personnel, to military infrastructure and to readiness. It examines the broader global security environment and the specific contingencies in which Canada may need to engage. Climate change shapes the behavior of all nations, whether that means the activity of Russia, China and the United States in the Arctic or responses to destabilizing stresses such as food insecurity, water scarcity and migration. The impacts of climate change will continue to be felt even if the world is responsive to calls for rapid reductions in emissions, and the security community must be poised to anticipate and respond to unavoidable challenges.

The second part of this report outlines an action plan which makes multiple recommendations to the Canadian security enterprise on how it should prepare for climate change and position itself to respond to emerging security challenges. While *SSE* incorporated laudable efforts to improve the sustainability of military forces and reduce their environmental impact, the recommendations herein are focused more on positioning Canada for a world in which the climate continues to change, and enabling it to address the threats that a climate-changed future will hold.

Together, the risk assessment and the action plan present a Climate Security Plan for Canada that builds upon both the climate strategy embodied in the *Pan-Canadian Framework* and the security strategy described in *SSE*. This approach mirrors the approach taken by the Center for Climate and Security in developing the *Climate Security Plan for America*,⁶ though that plan is focused on the risks and security priorities of the United States. Looking at this challenge through a Canadian frame yields a significantly different set of risks and recommendations.

PART 1:
**THE CLIMATE SECURITY
RISK ASSESSMENT**



Solitary man near Kangiqsualujuaq, Quebec, Canada, 2011. NICOLAS M. PERRAULT / WIKIMEDIA COMMONS

LOOKING THROUGH THE LENS OF CANADA'S CLIMATE STRATEGY

Considering the risks that climate change poses to Canadian security, it's helpful to begin by looking at the 2016 *Pan Canadian Framework on Clean Growth and Climate Change*,⁷ Canada's overarching strategy for addressing climate change. Within its first paragraph, the *Pan Canadian Framework* invokes security, noting that:

"The science is clear that human activities are driving unprecedented changes in the Earth's climate, which pose significant risks to human health, security, and economic growth."

Subsequent security discussions are limited to food security (recognizing the fact that climate change will stress Canadian agriculture) and energy security (with a focus on grid reliability as Canada decarbonizes). The follow-on report, *Federal Actions for a Clean Growth Economy*,⁸ never mentions actions by the Department of National Defence. Its international section is focused on important global efforts to reduce emissions, but does not raise the threats to global stability posed by climate change.

The *Pan Canadian Framework* is based on four pillars: pricing carbon pollution; complementary climate actions such as energy efficiency; adapting and building resilience; and investing in clean technology, innovation, and jobs. This approach is already quite mature and has been implemented across the Canadian government. A comprehensive Canadian climate security plan would therefore need to complement this approach.

Within its complementary actions pillar, the *Pan Canadian Framework* highlights \$2.65 billion of investment in climate finance through 2020 that the federal government is making to help other countries transition to low carbon economies and build climate resilience. This investment has broader security implications than helping to achieve the long-term goal of lowering climate emissions, as these investments can be targeted to increase stability in fragile regions and to build goodwill. Future investments along these lines should undoubtedly be part of a prospective climate security plan.

Preparing for the security risks of climate change requires a broader aperture. From a security perspective, planning for climate change must focus on helping the country persevere as it deals with the shocks of climate change and adapts to a changing world. For Canada, that will include promoting human security and safety for the Canadian people, particularly for the Indigenous peoples living in Arctic regions. It also means adapting infrastructure where appropriate--at military installations, for example---to improve resilience to extreme weather, flooding, wildfire, or other climate-driven impacts. The *Pan Canadian Framework* highlights the need to invest in infrastructure to reduce climate-related risks, but a security plan will also need to address the need to respond to climate disasters when they occur.

Canada should build on this initial foundation by more comprehensively addressing security concerns in future updates to the *Pan Canadian Framework*.

LOOKING THROUGH THE LENS OF CANADA'S SECURITY STRATEGY

Strong, Secure, Engaged (SSE) Canada's 2017 defence policy, comprehensively incorporates climate change concerns. In particular, it recognizes climate change to be a "security challenge" and states that "[t]he effects of climate change must be viewed through a security lens."⁹ This is undoubtedly true, as climate change will shape both the domestic and the international security environment.

Looking through the security lens at climate change, *SSE* makes several key observations:

- "Climate change threatens to disrupt the livelihoods of millions around the world."¹⁰ The strategy goes on to state that "the effects of climate change can aggravate existing vulnerabilities, such as weak governance, and exacerbate sources of tension, such as resource scarcity, which in turn heightens tensions and forces migrations."¹¹
- It highlights the "increased frequency, severity and magnitude of extreme weather events all over the world – one of the most immediate and visible results of climate change"¹² and its link to humanitarian crises.
- The Arctic is seen as "increasingly accessible" and "an important international crossroads where the issues of climate change, international trade and global security meet."¹³

The responses proposed in the policy document are weighted toward reducing emissions, including several goals focused on reducing the carbon footprint of Canadian installations. This is critical, but it does not resolve the impacts imposed by climate change. The two specific responses to the security threats posed by climate change are that Canada must "bolster its ability to respond to severe weather events and other natural disasters,"¹⁴ and that it must "enhance its ability to operate in the North and work closely with allies and partners."¹⁵

As its name implies, *SSE* details a strategic vision of three pillars: Strong at home; Secure in North America; and Engaged in the World. By focusing on each facet of the strategy and thinking about the climate implications, several important risks and requirements emerge.

Strong at Home: Canada's first priority is the safety and security of the Canadian people, which includes not only military defense of the homeland, from the highly populated South to the Arctic, but also response to natural disasters. Within this context, the rapidly warming Arctic has growing safety and human security implications for those living in the North. Climate change also has implications for the frequency and severity of extreme weather events, flooding, and wildfires. The increased demand for the military to respond to these threats will have reverberations throughout the system, disrupting training schedules and deployments and increasing funding requirements. The implications of climate change on military capability will also need to be considered, as installations and training ranges will need to be made resilient to the same climate impacts.

Secure in North America: Within this pillar, *SSE* recommit to a strong military partnership with the United States and a focus on NORAD commitments. It highlights the importance of air and maritime domain awareness and the need to prepare for a full range of threats. One of those threats is undoubtedly climate change. As the Arctic ice melts, there will be increased activity in Arctic waters, emerging requirements to conduct search and rescue commensurate with increased activity, new border patrol requirements, and emerging challenges for the North Warning System. The U.S. military has significantly increased its focus on climate resilience in recent years, and a close partnership with the United States should include cooperation in responding to climate impacts.

Engaged in the World: Canada has a strong interest in international stability, trade, and peace. It is a founding member of NATO, a leader in international peacekeeping and peace building efforts, and a strong supporter of diversity and human rights. As we consider Canada's engagement in the context of climate change, the geopolitical implications come into full focus. Climate change amplifies risks throughout the world, increasing challenges to fragile nations and unveiling the brittleness of nations once considered stable. Food insecurity, water scarcity, extreme weather, sea level rise and other climate impacts have implications for global stability, migration, and trade, not to mention the seeds of conflict. With Canada's interests rooted firmly in strong international institutions and stability, climate change poses one of the most significant short- and long-term threats to those interests. To varying degrees, the world order will be reshaped by the impacts of climate change over the coming century. Canada's international engagement should be informed by this changing environment, and Canada should look to ensure its international partners and institutions are engaged similarly.



Quebec Floods - Cartierville neighborhood of Montreal, 8 May 2017. WIKIMEDIA COMMONS

CLIMATE RISKS TO STAYING STRONG AT HOME

The first set of security risks posed by climate change examined in this report mirror the first pillar of its security strategy: Strong at Home. Canada's citizens will be directly impacted by climate change in the coming years, from the rapid changes occurring in the Arctic, to the increased incidence of extreme weather, flooding, and wildfire that are anticipated from coast to coast.

In considering strength at home, it is also important to examine climate change's impacts on Canada's Armed Forces and its domestic footprint. Climate change poses risks to all infrastructure, which includes the military as the Federal Government's largest landholder. In addition, climate change puts stress on readiness, both through its impact on training ranges, and the increased requirements that climate change will place on existing forces.

RISKS TO THE CANADIAN ARMED FORCES

Impacts on military forces are a significant facet of climate security and how it is viewed around the world, particularly within the United States. The U.S. Department of Defense has issued multiple reports describing the direct impact of climate change on military capability. For example, in 2014, it issued a Climate Change Adaptation Roadmap¹⁶ which stated that climate change poses immediate risks to national security. The U.S. plan looked at risks in four primary categories:

- Plans and Operations – such as increased demand for humanitarian assistance both domestically and internationally, increased requirements for the Arctic, and international instability that drive contingencies;
- Training and Testing – citing the potential for increased high heat days limiting training, reduced carrying capacity for ranges, increased stress to threatened species and ecosystems – which in turn limit range use;
- Built and Natural Infrastructure – listing impacts such as flood damage, increased maintenance requirements, disruption to energy and water access, damage from thawing permafrost, changing heating and cooling costs; and
- Acquisition and Supply Chain – with effects driven by changing operational parameters for planned systems, interrupted access to specific materials or components, changing access to food or water resources to support personnel.

In subsequent reports across multiple administrations, the U.S. military has maintained this posture, issuing a report in 2018¹⁷ that highlighted climate impacts at half of its military installations and a report in 2019¹⁸ that identified specific vulnerable installations and maintained that “the effects of a changing climate are a national security issue with potential impacts to Department of Defense missions, operational plans, and installations.”

The same concerns apply to Canada’s military forces in character if not in degree. Below this report outlines probable impacts on Canadian military infrastructure, operations and planning, and training.

RISKS TO MILITARY INFRASTRUCTURE

The Department of National Defence maintains 21 military installations comprising 21,000 buildings and covering 2.2 million hectares of land, which while smaller than the U.S. footprint, still faces challenges from sea level rise and wildfires. Electricity is supplied to Canadian installations from the vulnerable civilian grid, compelling military installations to consider challenges of assured power and continuity of operations.

For example, Canadian Forces Base Halifax, Canada’s largest naval base and home to its Atlantic Fleet, will see steady increases in sea level rise over this century, leading to increased flooding and greater damage from coastal storms. The International Military Council on Climate and Security (IMCCS) World Climate and Security Report 2020 analyzed Halifax, stating that the installation could see a 20-centimeter increase in mean sea level rise and a quadrupling in flooding by 2050, even in a low-emissions scenario. Moreover, it stated that extremely high water levels that once occurred as infrequently as every 50 years could occur as often as every 2 years by mid-century.¹⁹

Esquimalt, home to Canada’s Pacific Fleet, faces similar issues from sea level rise. The experience of adaptation measures at Norfolk Naval Station in the United States suggests this could lead to requirements for higher piers, higher floodwalls on drydocks, and other flood mitigation measures.

With Arctic temperatures rising much more quickly than in other parts of the country, Canadian Forces Stations Alert, and possibly other northern sites and installations, will likely be impacted as ice melts and permafrost thaws. Damage to runways, lack of access due to impacts on ice roads, and evolving storm behaviors are likely to affect Canada's northernmost bases.

RISKS TO PLANS AND OPERATIONS

The Canadian Army Operational Research and Analysis Team has been researching the possible impacts on Army operations²⁰ and how the Army may choose to adapt.

One quantifiable operational impact is the increased requirement to respond to domestic natural disasters. According to Public Safety Canada, disasters are increasing in frequency and severity across Canada; the Canadian Disaster Database identified 195 major disasters from 2008 to 2018, which cost tens of billions of dollars in damages and displaced hundreds of thousands of people.²¹ When provincial and territorial governments require additional support to deal with disasters, Canadian Armed Forces contributions to domestic disaster response occur under a standing, continual response called Operation LENTUS, while any search and rescue operation that requires air capabilities fall under the remit of the Armed Forces. In January 2020, Canadian Army commander Lt.-Gen. Wayne Eyre observed that “If this [natural disaster assistance] becomes of a larger scale, more frequent basis, it will start to affect our readiness.”²²

More regular calls for military responses to natural disasters may ultimately require it to be an input to force structure requirement calculations. While the U.S. military is similarly called upon to respond to disasters, it is significantly larger with a smaller domestic territory in which to respond. In the United States, these requirements don't yet significantly drive force structure. The strain on Canada's smaller force is proportionally magnified, and capacity will reach its breaking point more quickly. Canada's Defence Minister, Harjit Sajjan, raised this issue in 2019, specifically citing climate change as a possible driver of larger military force requirements, and opening the door to a climate-driven force structure assessment.²³ At the time, he stated, more Canadian troops were responding to domestic disasters than conducting operations abroad. Chief of Defence Staff Gen. Jonathan Vance has suggested that the demand for disaster response within Canada may require additional specialized training for forces to respond to floods and wildfires.²⁴

As Canada considers options to increase domestic capacity and capability to respond to these disasters, it should approach the issue deliberately, with preparation and funding committed to the training and equipping it will require.

More broadly, climate change raises pressing questions for national governments around how to balance across the wide range of more traditional and non-traditional security threats that climate change is already influencing. Climate change will influence security dynamics beyond natural disaster risks at home, from strains among nuclear weapons-possessing countries to increased instability in fragile states. In many countries this is fueling general discourse on how to balance defense strategy and investments required by different approaches to addressing security interests (i.e., the balance of what threats to confront with special operations forces and conflict prevention approaches, and how much to invest in high-cost platforms intended largely to deter widespread interstate conflict).

The COVID-19 pandemic has provided a recent example of a transnational security issue creating unexpected demands on Canada's military capacities. In April 2020, the Canadian Armed Forces deployed in response to the pandemic through Operation LASER, supporting 54 long-term care facilities in Ontario and Quebec.²⁵ Although this specific deployment was not anticipated prior to the emergence of SARS-CoV-2, the use of defence forces in support of a threat like a pandemic was addressed in the DND/CAF strategic foresight document *The Future Security*

Environment, 2013-2040, which stated that, “In a domestic emergency or crisis, possibly involving more than one province or territory, the Government of Canada could mobilize its resources and the CAF could have a supporting role.”²⁶ This serves as a reminder that transnational threats can impact defence forces, perhaps without much warning, and that they should be considered a consistent part of strategic planning.

RISKS TO TRAINING

Training bases will be vulnerable to changes in climate, whether through changes to terrain, drought that can lead to wildfires, stress on threatened and endangered species, unprecedented temperature regimes such as extreme heat, or new pest vectors, any of which could constrain training operations and create new risks.

Specifically, climate impacts are likely to continue to disrupt military training schedules, particularly for reservists, who typically have a limited window of 2-3 weeks in which to train during the summer months. Training periods are targeted for particular weather conditions, but are increasingly coinciding with a more active natural disaster hazard season, which also increases demand for disaster response activities related to fires and floods. This overlap has proven disruptive to institutionally mandated training regimes. Because of this, reservist readiness may change under climate change. In 2018, Gen. Vance testified to the House Standing Committee on National Defence, that:

“I would say that the impact of such things as climate change or the advent of natural disasters has certainly made it clear to me...You asked me about how we are prepared to respond. We maintain force structure. We maintain a part of the armed forces at readiness, and in some cases quite high readiness, to be able to respond to Canadians in need. We have now a process whereby we anticipate fire season, flood season and increases in the requirement for search and rescue response, depending on when people will be out on the water and land. We are then poised to respond more quickly.

“It has, though, become not a case of the odd occurrence. It's now almost routine. We have, I think, for the last three years, deployed to support provinces in firefighting and managing floods. It's now becoming a routine occurrence, which it had not been in the past. We take that into consideration in terms of the force structure and employment of the reserves. I've given direction to look at developing ways to make the reserves far more capable and ready, in terms of initial response, because they are present there.”²⁷

These considerations have implications for resourcing and prioritizing within the CAF related to defence procurement, equipment, and force structure.

RISKS TO HUMAN SECURITY

The 2010 synthesis report *The Security of Canada and Canadians: Implications of Climate Change*²⁸ identified risks to Canadians' health, water, food, economic and social security, as well as to the broader security environment. The dramatic reshaping of Canada's frozen north is perhaps the most visible national impact of climate change, but as the 2010 study indicated, all parts of the country will be affected. Canada has seen temperatures rise at about double the global average, and this rate of change is projected to continue. Even if ambitious emissions reductions are achieved, Canada will experience increases in overall precipitation, greater precipitation extremes, and more “fire weather” (which increases fire potential) as a result. It will experience changes in freshwater availability, sea level rise and climate-driven changes in regional oceans.²⁹

Public Safety Canada's 2019 Emergency Management Strategy notes that climate change is already driving an increase in the frequency and intensity of "floods, wildfires, drought, extreme heat, tropical storms, melting permafrost, coastal erosion, and, in Northern Canada, damage to seasonal ice roads."³⁰ This 2019 Strategy builds on the 2017 Emergency Management Framework for Canada, and is "aimed at strengthening Canada's ability to assess risks and to prevent/mitigate, prepare for, respond to, and recover from disasters," taking a whole-of-society approach to support emergency management and resilience.³¹ Together, these Framework and Strategy documents define how climate change might impact Canadian domestic security, and how military and civilian agencies should manage these risks.

Such climate impacts threaten lives and livelihoods, create challenges for ensuring human security, and could undermine economic well-being and demand costly responses. Their effects will also be unevenly distributed, as capacity to adapt to climate change and the resilience to cope with climate impacts varies across different parts of Canadian society. Those who are more exposed to climate-related hazards, have fewer options for income diversification, and are lower on the socio-economic scale will be the most vulnerable.

Canadian First Nation and Indigenous populations are particularly at risk. These communities often have lower average socio-economic status, and make up a larger share of the population in Canada's northern territories, which are experiencing the most extreme impacts of climate change. Risks to these communities are compounded by the high cost of addressing infrastructure and resilience issues in the High North, underpinned by the remoteness of the human settlements and infrastructure, and the extreme reshaping of the physical environment that climate change is bringing to the region.

Climate change will also lead to more forced displacement and planned relocation as impacts such as coastal erosion make resettlement necessary. This impact is most pronounced in the North. Funding for adaptation and resilience investments in northern Canada, which could mitigate some of these risks, has most often been in response to serious incidents rather than committed at a scale and pace that would be preventive.³² For these reasons and others addressed elsewhere in this risk assessment, the human security of Indigenous Canadians is disproportionately threatened by climate change.

This risk picture indicates that civil and military agencies responsible for emergency management will need to continue to strengthen preparedness for increased demand for emergency and disaster response. There may be a number of cascading risks to be aware of in this process; for example, effective emergency management relies on infrastructure, which is itself vulnerable to climate change impacts. Compound crises, such as climate-related extreme weather events occurring during a pandemic, or 'wildcard' events that exceed projected extremes, should also be gamed out and used for baseline planning and preparedness.

RISKS ACROSS THE CANADIAN ARCTIC

The rapid pace of climate change in the Arctic and the significance of this territory in Canada's terrain means that Arctic climate change presents the most immediate climate security challenge for Canada, as detailed in *Canada's Changing Climate Report 2019 (CCCR2019)*.³³

CCCR2019 states that Canada's North is warming around three times as rapidly as the global average. This increase in temperature is associated with decreasing snow cover, the loss of freshwater ice cover as well as ground ice, glaciers and ice caps, increasing permafrost temperatures leading to thicker active layers (those layers of soil which overlay the permafrost and thaw and refreeze each year), thermokarst formations (where land subsides as permafrost thaws) and

rapid lake drainage, declining sea ice extent, and ocean acidification (resulting from rising CO₂ levels, rather than rising temperatures per se).³⁴ Relative sea levels are rising in the Beaufort Sea, where the height and seasonal duration of waves are increasing, with impacts on coastal infrastructure and ecosystems including erosion and flooding; by 2100, local sea levels could increase 50-75cm under a median projection, which would pose serious threats to coastal communities.³⁵ It is worth noting that sea levels are falling in Hudson Bay (Nunavut) and the Arctic archipelago, due to land uplift following the last ice age exceeding the rate of sea level rise.³⁶

Precipitation will continue to increase at high latitudes, including daily extreme precipitation, as warmer air retains more moisture. Increasing heat and lightning strikes are driving more wildfires in the Arctic, including “zombie fires” or overwintering fires that can smoulder in peat and reignite in spring, outside of the normal fire season. Fire is a natural part of the Arctic ecology, but the patterns are changing with the climate, with potentially unpredictable results.

Permafrost thaw will undermine roads, bridges, railbeds and runways, decreasing the reliability of transportation in the region, and increasing its cost. Melting permafrost endangers the integrity of pipelines and existing waste storage in permafrost. Warmer temperatures will mean less reliable “ice roads,” further inhibiting transportation. These changes will affect regional industry and northern communities, and can increase strain on health services and other local service provision, to the detriment of the well-being of local residents.

These physical changes have an array of national and human security implications, from reducing access to NORAD surveillance stations to slowed disaster response, to additional challenges to economic well being, food security and health. For communities that have limited ability to buffer themselves from the manifestations of climate change, the impacts will be more severe. The region has already seen the evacuation of local communities, for example the May-June 2019 evacuation of Pikangikum First Nations in Ontario, who moved away from heavy smoke originating in forest fires in Manitoba.

Given the significance of climate change for Canada’s Arctic, there is a mature discourse on its likely impacts on Canadian security, along with accompanying policy. Canada’s September 2019 *Arctic and Northern Policy Framework* sets out both the national and human security aspects of these changes. The framework was developed in collaboration with northern provincial and territorial governments and 25 organizations representing Inuit, First Nations and Métis peoples. It defines eight goals towards creating a more sustainable future in the region, including strengthening local and regional economies in a sustainable and inclusive way, ensuring the resilience and wellbeing of Canadian Arctic and northern Indigenous peoples, and ensuring the region is “safe, secure and well-defended.” The recommendations also address strengthening infrastructure and local ecosystems, and supporting a strong “rules-based international order” and other governance norms in the region that can respond to emerging challenges.

The *Arctic and Northern Policy Framework* notes the impact of climate change on Indigenous stakeholders in the north, who “continue to rely on the land and wildlife for their culture, traditional economy and food security.”³⁷ These changes raise safety issues, including harvester safety for communities with subsistence or partial-subsistence lifestyles, food safety and traditional lifestyle preservation.

In sum, climate change will be a highly significant factor in shaping the future of human security in the Canadian Arctic. In reshaping the physical environment, it threatens Indigenous ways of life, makes infrastructure less reliable, and increases the threat of human-made disasters due to increasing commercial activity in the region.



Very large flames and heavy smoke surrounding Highway 63 in south Fort McMurray, Alberta. DARRENRD / WIKIMEDIA COMMONS

CLIMATE RISKS TO KEEPING SECURE IN NORTH AMERICA

The second part of the *SSE* vision, Secure in North America, presents a different set of climate change impacts to consider. The continental focus of “Secure in North America” shifts the focus to external threats and Canada’s security relationship with the United States.

In this context, the Canadian security enterprise must consider how climate change will reshape the threat from the North, particularly with increasing accessibility to Northern waters. This affects the NORAD mission and collaborative surveillance efforts with the United States.

In addition, the United States military maintained a steady recognition of the impacts of climate change on its enterprise even during the climate-skeptical Trump Administration. Senior U.S. Department of Defense officials have continued to make public statements affirming its relevance to U.S. security interests.³⁸ Therefore, the climate risks prioritized by the U.S. military could impact joint military interests and priorities.

THE UNITED STATES AND CLIMATE SECURITY

In describing its vision for being “Secure in North America,” Canada’s Defence Strategy is quite clear that “the United States continues to be Canada’s most important military ally.” As such, the degree to which the U.S. prioritizes climate change, and particularly the degree to which the U.S. military prioritizes climate change, must necessarily inform climate security strategy for Canada.

Intriguingly, the fact that climate change impacts national security has become a broadly accepted principle within both the Pentagon and the U.S. Congress. In 2017, for example, when conservative Republicans controlled both chambers of Congress and President Trump was in the White House, Congress still passed legislation declaring climate change to be a direct threat to the national security of the United States, and despite his articulated skepticism of climate change, President Trump signed it. In part, that was due to the tone set by then-Secretary of Defense Jim Mattis, who had testified earlier in the year that climate change was “impacting stability in areas of the world where our troops are operating today.”³⁹ He also stated that “the effects of a changing climate – such as increased maritime access to the Arctic, rising sea levels, desertification, among others – impact our security situation,” promising to ensure the DoD is “prepared to address the effects of a changing climate on our threat assessments, resources, and readiness.”⁴⁰ Since the 2017 legislation passed, the recognition that climate change affects national security has been embraced by a relatively broad political consensus.

The United States has historically prioritized several specific risks in considering climate’s impacts on national security. First, as noted in the 2014 Quadrennial Defense Review, or QDR, has been the risk that climate change will act as a “threat multiplier” by aggravating social, economic, environmental and political stressors that contribute to security threats.⁴¹

The United States Intelligence Community has repeatedly highlighted these same risks. The 2019 Worldwide Threat Assessment published by the U.S. Director for National Intelligence (the most recent publicly available assessment) states that:

“Global environmental and ecological degradation, as well as climate change, are likely to fuel competition for resources, economic distress, and social discontent through 2019 and beyond. Climate hazards such as extreme weather, higher temperatures, droughts, floods, wildfires, storms, sea level rise, soil degradation, and acidifying oceans are intensifying, threatening infrastructure, health, and water and food security.”⁴²

In addition, the United States has focused attention to the Arctic, noting that climate change and increased access have led to increased activity by Russia and China, prompting the issuance of U.S. Arctic Strategies in 2013,⁴³ 2016,⁴⁴ and 2019.⁴⁵ Notably, the most recent report is silent on climate change, but the update’s very existence is prompted by it. As it looks North, however, the United States is cognizant that it has not necessarily adopted a posture that enables robust Arctic activity. For example, it has only one operational heavy ice-breaker, and while six more have been authorized, it will be many years before they are operational.⁴⁶

Moreover, in 2019, the Supreme Allied Commander of NATO, General Curtis Scaparrotti, testified before the U.S. Senate that he had changed force posture and updated operational plans in response to Russian activities in the Arctic, noting that they had “begun to move, on periodic times, different weapons systems up there for control of the area.”⁴⁷ The U.S. Intelligence Community, however, cautioned that “Arctic states have maintained mostly positive cooperation in the region through the Arctic Council and other multilateral mechanisms, a trend we do not expect to change in the near term.”⁴⁸

Perhaps the climate change risk that has received the most attention by the United States recently is the impact on military infrastructure and installations. In recent years, climate change has imposed billions of dollars of costs, to include \$5 billion in impacts to Tyndall Air Force Base in Florida, \$3.6 billion in projected costs to Camp Lejeune in North Carolina, and \$1 billion in flood damage to Offutt Air Force Base in Nebraska. In addition, wildfires have prompted evacuations of key installations across California in recent years, notably Travis Air Force Base (2020); Marine Corps Mountain Warfare Training Center (2018); Naval Air Station Point Mugu (2018); Vandenberg AFB (2016); and Camp Pendleton (2014). These huge costs, along with DoD continuing to highlight risks to dozens of its installations,⁴⁹ have made this an issue of near-term concern for policymakers.

These risks, and the way they are framed by the multiple, and sometimes conflicting, elements of the United States security establishment, will necessarily impact priorities within the Canada-U.S. security relationship. For example, the productive relationship that existed between the Trudeau government and Obama Administration led to the March 2016 U.S.–Canada Joint Statement on Climate, Energy, and Arctic Leadership,⁵⁰ but did not transition to the Trump Administration. Some Arctic observers interviewed in the course of this assessment found that the Canadian Arctic agenda lost momentum and coherence with the change of administration in the United States. This example points to the impact of the partnership, and potential risks associated with joint strategies, given the deep policy divisions on climate change matters in the United States and the potential for dramatic swings in approaches to these issues in its two-party system. The incoming Biden administration will offer more common ground on climate and Arctic policy, and may provide a window for reassessing this dynamic within Canadian Arctic policy.

Taking the long-term view, military-to-military relationships may promise the most stable venue for conversations with the United States on climate change, regardless of future election results. Despite varying approaches to the issue from the White House, attention to the security dimensions of climate change has been stable within the U.S. Department of Defense.⁵¹ This stability has been reflected in bipartisan Congressional support for climate security measures within the military, even when other climate measures meet resistance.⁵² Indeed, even noted climate change skeptic Senator James Inhofe stated in 2018 that he would support climate resilience measures that boost military readiness, even if he disagreed with the underlying science.⁵³

Navigating this relationship with the United States and understanding its idiosyncrasies will be essential to development of Canada's climate security strategy, whether that means focusing on threats from Russia and China in the Arctic, instability driven by climate stress in the Middle East, or sharing lessons on infrastructure resilience.

CANADIAN SECURITY POSTURE IN THE ARCTIC

Canadian Arctic security policy recognizes that climate change is driving international interest and competition in the region from both state and non-state actors.⁵⁴ The opening of potential shipping, hydrocarbons, mining, tourism and fishing activities is increasing the Arctic's geostrategic importance. Competition for these resources is tempered by the fact that the Arctic will remain a very difficult operating environment for industry; however, this also increases the potential for accidents or incidents that require search and rescue or other emergency responses.

Most resources are already allocated based on UNCLOS rules, although there is considerable overlap in extended continental shelf claims, which will likely remain outstanding for some time and ultimately be determined by political rather than geological factors. There is some precedent for amicably resolving other boundary disputes (when doing so has been mutually beneficial, i.e., Russia and Norway's 2010 agreement over their maritime boundary in the Barents Sea and the Arctic Ocean),⁵⁵ and other natural resource management agreements have been implemented. For

example, Arctic and Asian countries as well as the EU are currently ratifying the International Agreement to Prevent Unregulated High Seas Fisheries in the Central Arctic Ocean.⁵⁶

The Canadian military and constabulary forces as well as the broader security community recognize the need to improve capabilities to respond to the new Arctic risk landscape discussed earlier in the report. Canada has been oriented toward meeting these challenges through increasing Arctic presence, operating capabilities and domain awareness, and strengthening international and domestic partnerships with regional allies and local communities. The CAF have been expanding their engagement with Arctic Indigenous communities and governments, seeking to expand recruitment from these communities, partner with them in securing Canada's north and engage more closely around Arctic operations and exercises.⁵⁷ The constabulary personnel of the Canadian Rangers support capabilities in the Arctic, including by training regular forces in Operation NANOOK.

A range of investments to address these risks include adding six ice-capable offshore patrol ships to the Royal Canadian Navy's fleet, 88 additional advanced fighter aircraft to support the Royal Canadian Air Force's aerospace missions, as well as "all-terrain vehicles, snowmobiles and larger tracked semi-amphibious utility vehicles" suitable for the Arctic, and space-based assets to improve communications.⁵⁸ The Canadian Coast Guard icebreaking program is expanding its fleet, with three interim medium icebreakers and additional assets planned through the National Shipbuilding Strategy.

The more immediate maritime security issues in the Arctic are search and rescue emergencies or a potential oil spill response. Both navy and coast guard capacities are essential for responding to these incidents. This is a proven area of cooperation among Arctic states (e.g., Agreement on Cooperation on Aeronautical and Maritime Search and Rescue in the Arctic signed in 2011), and could be used for confidence-building between countries in the future. A greater demand for search and rescue missions will tax capabilities; pre-positioning equipment could help to meet this increasing demand. Ultimately, Canada needs robust and resilient CAF installations in its Arctic, to respond to search and rescue and support environmental monitoring in this rapidly changing domain.

The *SSE* policy states, "To enhance the Canadian Armed Forces' ability to operate in the Arctic and adapt to a changed security environment, the Defence team will:

- Enhance the mobility, reach and footprint of the Canadian Armed Forces in Canada's North to support operations, exercises, and the Canadian Armed Forces' ability to project force into the region.
- Align the Canadian Air Defence Identification Zone (CADIZ) with our sovereign airspace.
- Enhance and expand the training and effectiveness of the Canadian Rangers to improve their functional capabilities within the Canadian Armed Forces.
- Collaborate with the United States on the development of new technologies to improve Arctic surveillance and control, including the renewal of the North Warning System.
- Conduct joint exercises with Arctic allies and partners and support the strengthening of situational awareness and information sharing in the Arctic, including with NATO."⁵⁹

Canada's safety, security and defence priorities in the Arctic are outlined in the *Arctic and Northern Policy Framework* as:

- Strengthen Canada's cooperation and collaboration with domestic and international partners on safety, security and defence issues
- Enhance Canada's military presence as well as prevent and respond to safety and security incidents in the Arctic and the North
- Strengthen Canada's domain awareness, surveillance, and control capabilities in the Arctic and the North
- Enforce Canada's legislative and regulatory frameworks that govern transportation, border integrity, and environmental protection in the Arctic and the North
- Increase the whole-of-society emergency management capabilities in Arctic and Northern communities
- Support community safety through effective and culturally-appropriate crime prevention initiatives and policing services.⁶⁰

CLIMATE SECURITY AND GEOPOLITICS IN THE ARCTIC – NATO, RUSSIA, CHINA

Although all Arctic countries state their interest in maintaining the Arctic as a zone of cooperation and low tension, a changing international geostrategic picture has been reflected in the region. Increasing tensions and mistrust in Arctic military affairs are influenced by multiple factors, from Russia's breaking of international norms and rule of law elsewhere in the world, seen clearly in its behavior in Ukraine and Syria, to aggressive military posture and tactics. As Canada has keenly monitored for some time, Russia is modernizing and strengthening its civilian and military Arctic infrastructure, maintaining a higher level of readiness, and conducting regular exercises that demonstrate their capabilities for more sustained operations.

This in turn has been reflected in increasingly complex military exercises and shows of force from NATO and its allies. NATO Allied Command Transformation has established a new Joint Force Command focused on defending sea lines of communication, the U.S. Navy re-established its 2nd Fleet in 2018, and submarine activity around the region has increased significantly. Much of this activity is taking place beyond Canada's immediate Arctic territory, such as in the Barents Sea and Greenland-Iceland-UK Gap, but is of concern given Canada's relations as an Arctic state and NATO member. This increasing activity brings greater potential for misunderstandings and unintended consequences, particularly when national leadership may be accentuating the rivalry and threat through sharpened rhetoric.

China is aggressively pursuing a more active role in Arctic affairs, economically and politically. Given the increasing relevance of the Arctic for China's strategic goals, as reflected in its Arctic policy,⁶¹ its presence has increased markedly over the past decade, with two commercial research icebreakers, recently constructed scientific research stations in Iceland and Svalbard, and an economic strategy aimed at maximizing its involvement in Arctic commercial opportunities at state and sub-state levels. While China's military threat in the Arctic may be minimal at present, and that its pursuits there reflect a logical national interest,⁶² its behavior as an international actor continues to be a cause for significant concern.

Despite its claims to be a “Near-Arctic State”,⁶³ it does not, by definition, have the same territorial prerogatives and concerns that Arctic states can assert, and its presence in the Arctic is a notable outlier. Views differ on the significance of its military threat at present, in part due to ambiguity around the civilian versus military nature of its research activities in the Arctic. Its acoustic research program which has placed a network of sensors for ocean observation – which is not unique to the Arctic, but part of a worldwide effort – is one example of China’s increasing domain awareness. Some countries have raised concerns about these activities being “dual purpose,” and informing potential Chinese military capabilities in the Arctic; Denmark’s Defence Intelligence Service cited this in its 2019 Intelligence Risk Assessment.⁶⁴

The extent to which China might use its growing Arctic influence as leverage in relations with countries it has diplomatic tensions with is an open and evolving question.⁶⁵ This question will be one for Canada to observe closely – and share information on, as other Arctic states formulate their relationships with China on Arctic matters.

ARCTIC SURVEILLANCE AND NORTH WARNING SYSTEM

Changes in the Arctic domain, both in geostrategic terms and the human security terms discussed in the previous section, necessitate greater surveillance and situational awareness in Canada’s territory and approaches, on everything from environmental changes, civilian vessel traffic, supporting search and rescue operations, as well as air and sea domain awareness and warning systems for bombers, missiles, and surface and submarine naval vessels.

Canada is addressing this need in a number of ways, including by increasing its offshore patrol capabilities, commissioning six new offshore patrol ships and increasing use of drones, some of which will be used for Arctic surveillance. The Department of National Defence contract for a Remotely Piloted Aircraft System project is expected to be awarded in 2022-2023, with deliveries beginning in 2024-2025.⁶⁶ Transport Canada is conducting drone trials in advance of purchasing vehicles for its Arctic Unmanned Aircraft System Initiative.⁶⁷

The growing complexities and threats in the Arctic make joint intelligence, surveillance and reconnaissance increasingly important. The North Warning System, the North American Aerospace Defense Command (NORAD) early warning radar, is a key part of North American defence cooperation. The current system reaches the end of its lifespan in 2025, and conversations are ongoing around alternatives for this defence perimeter for the north of the continent. However, burden-sharing on the costs for its replacement remains a point of discussion between the United States and Canada, as these are likely to run into the tens of billions of dollars. Given the mutual security interests at stake, not only for the bilateral defence partnership but also for NATO’s deterrent posture, moving this conversation forward and implementing a solution in a timely fashion becomes ever more pressing.⁶⁸

The conditions of climate change, including unprecedented extreme heatwaves, such as that which occurred in the Arctic in the summer of 2020 and resulted in wildfires and accelerated ice loss, indicate that the domain is changing even more rapidly than predicted. Climatic conditions or events that were seen as low-probability or more likely to occur later in the century are emerging in ways that are surprising the scientists who work to predict them. This abrupt and nonlinear pace of climate change in the Arctic should increase the urgency with which Canada and the United States approach strengthening North America’s defence perimeter. For civilian Arctic surveillance, especially around environmental monitoring, the record-breaking changes that are emerging, and the implications they have for approaching critical tipping points in the Arctic and earth system, also increase the importance of rapidly enhancing capabilities in this area. One of the demonstrated advantages nations have in meeting climate security risks has been the unprecedented foresight they can bring to anticipating climate-driven changes. It is critical to continue driving this research, both for civilian and military purposes, to improve our focused ability to project changes in the Arctic.

NORTHWEST PASSAGE ISSUES

Disagreements with the United States on the status of the Northwest Passage, while sensitive, are unlikely to lead to serious diplomatic rifts, given the balance of mutual economic and security interests between the countries. While there have been changes in the U.S.-Canada relationship under different governments and administrations, this is still likely to hold true in the future. Nevertheless, the status of the Northwest Passage remains an outstanding issue with differences of opinion between the two countries that has implications for other countries' Arctic ambitions and the course of Arctic geopolitics, economic development and environmental risks.

If the United States expresses serious interest in Freedom of Navigation Operations through the Northwest Passage, it could have serious implications for Canada. Should the sea route be declared an international strait, any country – including China and Russia – would have rights to not only maritime (including submarine) but also air transit passage.⁶⁹ This would present significant new challenges for defending North American airspace. Commercial shipping use of the Northwest Passage, for example by tankers, will increase risks of accidents, environmental disasters and associated clean-up, as well as increase the demand for search and rescue operations. Lengthy response times to reach remote, uninhabited regions in the Northern Canada Vessel Traffic Services Zone Regulations (NORDREG) zone, along with the fragility of their ecosystems, increases the potential consequences of an accident.



The Copernicus Sentinel-3 mission image of Nunavut territory in the Canadian Arctic Archipelago.
EUROPEAN SPACE AGENCY / WIKIMEDIA COMMONS

ENGAGED IN A WORLD SHAPED BY CLIMATE CHANGE

Climate change and the energy transition are reshaping geopolitics and the global economy, while climate impacts threaten peace and stability in fragile regions around the world. As global temperatures rise, no region of the world will escape dramatic impacts,⁷⁰ and as Canada maintains global engagement as the third pillar of its security vision, it will need to incorporate the changes driven by climate change into its international security strategy.

Climate change is often described as a “threat multiplier” – a term coined to describe the fact that climate stress can exacerbate interrelated security risks.⁷¹ As noted earlier in this report, in 2019 the U.S. Director for National Intelligence stated that: “Global environmental and ecological degradation, as well as climate change, are likely to fuel competition for resources, economic distress, and social discontent through 2019 and beyond.”⁷²

Climate vulnerability and fragility risks are often co-located and can reinforce each other, in part because they are a function of weak governance.⁷³ Conflicts in some of the most climate change-affected regions could become more intractable, as implementing adaptation measures is considerably more difficult in unstable environments – for example in Yemen, the Levant, Afghanistan and the Sahel, where climate change will increasingly threaten societies, political stability, and the long-term ability of such regions to remain habitable year-round. This self-reinforcing dynamic raises the risk of persistent instability that would be challenging to reverse as climate change accelerates. In light of this, it is in Canada's interests as a global actor to focus on anticipating and reducing the destabilizing effects of a changing climate.

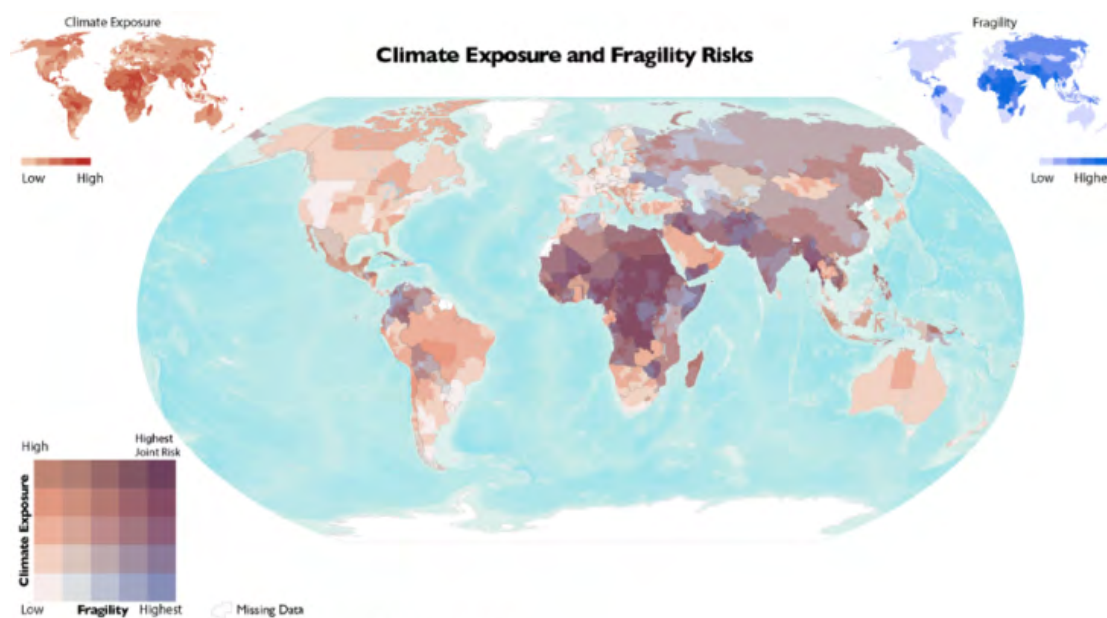


FIGURE 1: MAP SHOWING COMPOUND CLIMATE CHANGE AND FRAGILITY RISKS. USAID, 2018.⁷⁴

FRAGILE NATIONS AND CLIMATE-RELATED INSTABILITY

Climate change is highly likely to impact the security, fragility and stability of countries the Canadian Armed Forces are engaged with in a range of operations overseas, including Humanitarian Assistance and Disaster Response (HA/DR), peacekeeping operations, and stability operations. It may also drive emergency situations in partner nations, to which Canadian forces respond.

A strategic landscape reshaped by climate change will raise additional questions around what Canadian international engagement, as outlined in the security strategy, can and should look like. Canada's Arctic territory and populations will experience severe impacts from climate change, and Canada has also been historically deeply engaged with regions of the world most vulnerable to climate-related fragility, instability and conflict risk. In a globalized world, what happens in these regions does not stay in these regions. However, the degree to which Canada involves itself in these fragile areas remains, to some degree, a matter of policy choice. This leaves Canada with a set of questions and options about the nature of its strategic interests and how it should most effectively position itself in a geostrategic and security environment being reshaped by climate change.

These conversations will also be shaped by resourcing questions, as climate change impacts on Canadian territory increase the demand for domestic use of the CAF for disaster response, which competes with other mission requirements for a finite pool of funds. This may leave fewer resources for overseas commitments, unless more funds are earmarked for these purposes to a degree that limits domestic versus international operations from becoming a zero-sum game.

Climate change will likely increase demand for CAF involvement in overseas HA/DR through Operation RENAISSANCE, such as the January 2020 support to the Australian Defence Forces for bushfire fighting, the September 2019 response to Hurricane Dorian in the Bahamas, or the historic 2017 Atlantic hurricane season in which a frigate, among other air and maritime assets, was deployed to the Caribbean alongside nearly 300 personnel.⁷⁵ The Disaster Assistance Response Team (DART) is also available to deploy internationally, not as a first responder (e.g. with search and rescue capabilities), but providing support for health, water and engineering needs following disasters.⁷⁶

Canada has a long history of involvement in UN peacekeeping operations, and is currently contributing personnel to UN missions in Haiti, Mali, Democratic Republic of the Congo, South Sudan, Cyprus and the United Nations Truce Supervision Organization (UNTSO) in the Middle East. Although the tempo of Canadian involvement has slowed since its peak in the 1990s, the security impacts of climate change could lead to an increase in global demand for support to new or protracted peacekeeping or stabilization operations. Many Francophone countries in Central and West Africa are particularly vulnerable, as is Haiti; given the demand for Francophone uniformed personnel for UN missions (around half of UN troops deployed on peace operations are in Francophone countries),⁷⁷ this may send a stronger demand signal for Canadian involvement in these types of operations, and may prompt new domestic conversations about Canada's contribution to such efforts.

Climate change could also destabilize or further disrupt areas that have been strategically relevant for Canada, or the alliances to which it is committed. Although Canadian military engagement in the country has ended, Afghanistan is highly exposed to climate hazards including drought, which indirectly strengthens the Taliban by strengthening the economic rationale for growing opium poppy, which is resilient to water stress and significantly more profitable than wheat or other crops. The Taliban thrives on the opium trade as a revenue source, and this trade undermines state authority and the rule of law, within Afghanistan and increasingly along the routes it is trafficked.

Likewise, efforts to counter Daesh or its successors in Iraq and Syria will be complicated by the intersection of natural resource mismanagement, vulnerable livelihoods, climate change stresses and shocks – particularly those related to heat and water supply. When licit economic opportunities and livelihoods are diminished, due to crop failures or other market issues, this can lower the opportunity cost of joining non-state armed groups, including violent extremist organizations, who recruit with offers of a regular income, as well as a level of power and social status – although the empirical evidence base on this dynamic is still emerging. Environmental challenges, compounded by climate change-driven heating and drying trends, are likely to degrade the security situation in an area perceived as strategically significant for many of Canada's security partners. The same dynamics are present in unstable areas of the Sahel where violent extremist organizations are gaining strength, including the Lake Chad and Liptako Gourma regions; Canada supported the UN mission in Mali in 2018-2019, and may be engaged in similar missions in the future.

The extent to which Canada's military mission and national security are affected by growing international instability exacerbated by climate change depends on the nature of Canada's engagement with the world, and particularly its involvement in the type of climate security 'hotspots' illustrated above. These are defined as areas where exposure to climate hazards is high, resilience to climate impacts is low, and underlying fragilities and instability could be exacerbated by climate-related shocks and stressors.

Canada is geographically isolated from the places most affected by these climate change and conflict interactions, but the ways in which its national security could be indirectly affected are generally less emphasized in the national security discourse, and should be considered.⁷⁸ The “causal” chains are lengthy and complex, and the specific role of climate change in situations of instability may be difficult or impossible to parse out – although it is not necessary to definitively determine this. It is a sufficient basis for planning to know that climate change impacts are highly likely to affect the global security environment, including by exacerbating fragility and instability in vulnerable areas, to examine how this might affect Canada’s national interests and national security.

Tools for managing systemic risk, such as scenario exercises, could be especially helpful in considering potential interactions and security implications of climate change, to consider a range of outcomes and Canada’s current plans to address these potential outcomes.

MIGRATION AND REFUGEE ISSUES

Canada will increasingly be faced with decisions on how it handles immigration, as climate change drives more human mobility (both voluntary migration and forced displacement), including by contributing to instability or conflicts that result in more refugees seeking safety around the world. As *SSE* notes, “The effects of climate change can also aggravate existing vulnerabilities, such as weak governance, and increase resource scarcity, which in turn heightens tensions and forces migrations.”⁷⁹ As one of the developed countries that sets an annual quota for refugee resettlement, Canada has a strong record on facilitating international migration, and for many reasons is likely to continue to be affected by these dynamics.

People moving out of harm’s way do not present a direct security threat to Canada, and climate-related migration should not be framed as such. In fact, the climate security risk is generally risk to the displaced peoples, not from them. Indeed, *SSE* also notes that, “When large populations flee their homes in a desperate search for a better life, mass migration can undermine states and lead to humanitarian emergencies. But when managed properly, emigration and immigration are forces for diversity, for economic growth and vitality in the host countries.”⁸⁰

Nevertheless, migration is one of the impacts of climate change that can have a security dimension, amplifying tensions within affected states, creating frictions between populations, destabilizing economics of originating and destination states, and possibly undermining regional stability. It raises questions about how Canada will position itself in a climate-changed future. Since migration is an important climate adaptation strategy, any discussion around Canada’s immigration policies should be cognizant that, generally speaking, limiting human mobility could lead to worse security outcomes in the places most affected by the combined impacts of climate change and fragility. Canada will have to proactively monitor these trends and game out what those trends mean for its interests in the years ahead.

IMPLICATIONS FOR INTERNATIONAL INSTITUTIONS

From the United Nations to NATO to NORAD, Canada will continue to leverage international institutions to manage its security challenges, and climate change will increasingly influence their agendas.

The momentum for addressing climate security issues within the UN system, including but not limited to the Security Council, will likely continue. Following Canada’s 2020 bid for Security Council membership, there are opportunities

for Canada to remain engaged on this issue and advocate for additional action and uptake within the UN system. These may include participating in the Group of Friends on Climate and Security, a coalition of 27 UN member states created in 2018, or supporting the Climate Security Experts Network.⁸¹ Doing so could be in Canada's strategic interests, as demonstrating commitment to the issue could support a future Security Council bid.

Canada's key security alliance, NATO, has included climate change in its NATO 2030 strategic planning, aiming to encourage allies to address climate-related issues, and has been convening more direct discussions on how climate change affects the Alliance's remit.⁸² As discussed above, the destabilizing impact of climate on fragile nations may drive new NATO missions, or exacerbate existing missions in locations such as Afghanistan. NATO's internal discussions on climate impacts will not be monolithic, and Canada is in an excellent position to shape NATO's climate security posture in the coming years.

Within the Arctic, Canada has been engaged in multiple fora such as the Arctic Chief of Defence Staff (CHODs) Meeting, Arctic Security Forces Roundtable (ASFRT) and Arctic Coast Guard Forum (ACGF). A significant benefit to these Arctic-driven fora has been that they have engaged Russia in pan-Arctic discussions. However, since its invasion of Crimea and Eastern Ukraine in 2014 and subsequent isolation by the international community, the CHODs and ASFRT have not met, and Canada has engaged with Russia only on Arctic affairs. Arctic countries have different views on the preferred level of engagement and information-sharing with Russia within these fora. Russia is the next chair of the ACGF, for the 2022-2023 period, and is an upcoming Arctic Council chair; this offers an opportunity for engagement, for example on human security and constabulary matters.⁸³ The ability of Arctic multilateralism to withstand tensions with Russia may become increasingly important, not least as an example of regional institutions providing common ground to manage climate risks.

CHINA'S RISE IN A CLIMATE-CHANGED WORLD

While Canada will continue to engage with nations around the world both through international institutions and on an individual bilateral basis, it is important to note the way that China is incorporating climate change into its economic and geopolitical rise. Acknowledging the way that climate change is shaping the global stage, China has positioned itself both to prepare for the ways climate change may stress its people and to leverage the changes it foresees to its strategic advantage.

Anticipating changes in the Arctic, China has declared itself to be a Near Arctic State, invested in ice-breaking capacity, developed a diplomatic and commercial relationship with Greenland, and pursued dominance of the critical minerals supply chain to support the Chinese renewable energy industry. Its Arctic ambitions and influence on critical minerals supply chains are addressed in Canadian policymaking.⁸⁴

It has shored up access to food and water supplies, leveraging its Belt and Road Initiative, positioned itself to influence existing and emerging energy markets (including coal and nuclear as well as renewable energy), and exerts increasing influence over dwindling fish stocks in the South China Sea. The legal disputes and militarization of international waters in the South China Sea may have implications for future Arctic disputes.

The bottom line is that as Canada looks at key actors in the global security environment, China's actions are most certainly influenced and informed by climate change.

PART 2:

THE CLIMATE SECURITY ACTION PLAN

Climate change poses clear national security issues for Canada, as outlined in the preceding risk assessment, and in Canada's strategic policy documents. The second section of this report outlines a Climate Security Action Plan for deepening integration of climate change across Canada's security planning and processes, and for adapting the Canadian security structure to climate-related threats that will continue to evolve and accelerate in coming years. This Action Plan seeks to provide a practical framework to prepare for climate change-related impacts across a broad range of Canada's security interests. It takes into account existing activities of the Department of National Defence, the Canadian Armed Forces, Global Affairs Canada and others, and proposes new areas of action that build from this foundation.

Key strategic documents like Canada's 2017 security strategy *SSE* identify climate change as a driver of human and national security challenges in the Arctic, of disasters and humanitarian crises, and added stressors on fragile contexts. While climate security has been a major driver in Canada's defence posture and strategy, particularly in the Arctic, and is addressed in other ways across many areas of government, Canada has not yet developed a strategy to explicitly respond to these impacts holistically.

This Climate Security Action Plan for Canada is grounded in *SSE*. It assesses what climate change means for the strategy's goals of being strong at home, secure in North America and engaged in the world, and is structured in parallel to *SSE*'s three categories of initiatives: anticipate, adapt and act. Specifically, these recommendations support anticipating climate change risks, adapting to a changing climate and acting decisively in response to climate security impacts.

A framework for action addressing climate security necessarily involves the development, diplomacy and defence sectors of government, and the Climate Security Action Plan for Canada's recommendations are relevant for the Department of National Defence, Global Affairs Canada and other sub-entities including the Canadian Security Intelligence Service, and both Federal and Provincial governments, which have a responsibility to prepare for climate security challenges.

In addition to addressing the issue at domestic government level, Canada has an opportunity to show international leadership by coordinating and unifying strategies for addressing climate security threats in multilateral institutions.

The plan draws together activities that are already underway in the Canadian defence and intelligence establishment, broader Canadian government, and academic and NGO communities into a more unified strategy for understanding and addressing climate security threats. Given how dramatically climate change is reshaping Canada's north, and Canada's position in the world as an advocate for upholding a rules-based international order, Canada is in a position to demonstrate leadership in addressing the threat of climate change, which will be one of the most important drivers shaping political diplomatic and security agendas in the 21st century.

The principal recommendation of the plan is the establishment of a senior-level Climate Security Task Force that would bring together stakeholders from across the Canadian Federal Government and the provinces and territories in order to ensure a coordinated and focused response to this set of issues. Each member of the Task Force would monitor climate risks to their operations and integrate climate security risk management into their activities, ultimately developing an integrated climate security plan that could be incorporated into future climate change and security plans, respectively.



U.S.-Canada Fourth Joint Mission To Map the Continental Shelf in the Arctic Ocean, August and September 2011.
UNITED STATES DEPARTMENT OF STATE / WIKIMEDIA COMMONS

ANTICIPATE CLIMATE SECURITY RISKS

The Government of Canada should continue to incorporate the security dimensions of climate change across its strategic planning processes, build climate analysis into the missions of its departments and agencies, strengthen institutional infrastructure to address this cross-cutting issue, and develop new, long-term capacities to understand and address climate security threats.

1.1 Establish a Climate Security Task Force to develop climate security risk management plans for departments and agencies across the Government of Canada. Monitor their implementation and revise them periodically.

The Canadian government should establish a Climate Security Task Force (CSTF), made up of representatives from the lead government agencies – Global Affairs Canada (GAC), National Defence (DND), Environment and Climate Change, and overseen by the GAC division for security and defence relations. The CSTF should appoint a lead coordinator with primary responsibility for establishing institutional mandates, developing an overarching climate security plan and tracking its execution. The CSTF would be the top-level coordination point on the climate security nexus in the Canadian government, and the lead agencies contributing to it would have the mission of drawing together existing processes and expertise from across the government, with the aim of shifting to a more proactive stance on climate security risk management.

The CSTF should act as a clearinghouse for climate security issues, have the authority (through its members) to recommend policy and budgets in relevant areas, and be a coordinating point for strengthening institutional connective tissue among a wider set of entities within the Federal and Provincial governments and Canadian research community. Where possible, the CSTF should piggyback on existing structures that address aspects of Canadian climate security, such as the *Arctic and Northern Policy Framework* process, and integrate climate security research and policy efforts into existing interdepartmental working groups. Where necessary, the CSTF should form issue-based working groups that bring together representatives from relevant government agencies, departments and external expertise, as indicated below, to improve information flow and establish interdepartmental connections and processes necessary to address this multifaceted issue, which crosses many different agencies' remits.

The CSTF should be tasked with developing an integrated and cross-agency climate security planning framework for the Government of Canada, monitoring its implementation and revising it in response to changing environmental and geostrategic dynamics. Leadership posts or "point people" would be identified or established at the relevant departments and agencies to coordinate their department or agency response and engagement with the CSTF and its respective working groups.

The CSTF would lead on comprehensively integrating scientific research on climate impacts with socio-political and economic analysis from the Canadian Security Intelligence Service, in order to give policymakers a sound understanding of how climate might affect traditional security, diplomacy and development planning. This would support a comprehensive assessment of climate security threats to partner countries, as well as the state of readiness for dealing with those threats.

These processes can help to build out relationships, coordination and communication that are important for developing long-term capacity, among a broad array of actors that need to be able to consider different types of threats, which will require a significant level of collaboration to manage. This central organization effort should also support actors to coordinate with each other independently. Fostering partnerships and coordination can help to ensure that Canada's wealth of knowledge on these issues is shared and leveraged effectively. A steady demand signal from senior leadership to incorporate climate and security dimensions into analysis, policy and planning can help to strengthen these capacities.⁸⁵

The CSTF could lead on training and information provision across the Government of Canada, to develop a shared language on climate security risk, improve literacy and fluency around a breadth of climate security issues, beyond Arctic security and disaster response, including how climate change may affect fragility and conflict risk, geopolitical competition, and intersect with core national security interests such as the spread of violent extremism and nuclear risks.⁸⁶ This should be accompanied by a resource effort that takes this learning process seriously, and brings the issue to the attention of policymakers that are making decisions about resource allocation. Given that climate change may reverse progress in many areas of Canada's international engagement, particularly in light of security dimensions of climate change being under-appreciated in e.g., climate adaptation and development, getting ahead of climate security threats in these planning processes can be resource-efficient.

1.2 Establish working groups under the CSTF to examine particular nodes of climate security risk for Canada, and assess policy responses.

The CSTF should establish working groups to examine specific nodes of climate security risk for Canada, or, where possible, insert conversations on core climate security themes within existing interdepartmental structures. Working

groups would take an in-depth focus on specific areas, and could include defence, the Arctic, domestic disaster resilience issues, international HA/DR and security operations, geopolitical competition, and others. They would draw their membership from a broader set of relevant government agencies and other issue experts beyond core CSTF agencies.

Engagement from working group member agencies in a broader climate risk management discussion can ensure that relevant issues are addressed within a national framework. It could also build effective cooperation between provincial/territorial and Federal government entities to manage different aspects of climate security risk, including disaster risk reduction, response and resilience; infrastructure adaptation; and other matters executed primarily at the provincial and territorial level, yet are integral to a national climate security strategy.

The working groups would identify current and future climate security risks, existing policies to manage these risks (this document provides a start in this direction), and near- and medium-term strategies for addressing gaps. Environment and Climate Change could inform the risk assessments, with regard to the scope and pace of climate change as well as evolving international climate policy – particularly in light of an incoming Biden administration in the United States, and a number of major emitters' recent net-zero pledges. Risks associated with the energy transition should be assessed also, such as risks related to the demand for critical minerals. The U.S.-Canada Critical Minerals Working Group would be a key partner on this issue in particular.

The recent *Arctic Northern and Security Policy Framework* process thoroughly examined climate and security risks, and could be a useful model for other issue areas, as well as an ongoing forum for addressing climate security in the Arctic. Many issue areas the CSTF will need to examine are interconnected; for example, balancing the needs of domestic versus international military operations will be influenced by a mix of climate security related issues, including the role of resilient infrastructure in disaster response, current and future force structure, and geopolitical developments. Connecting these discussions under the CSTF can draw out synergies and conversations about trade-offs and priorities for Canada's security and national interests.

Canada's work on integrating gender issues across government may offer lessons for mainstreaming climate change and climate security as well. The issues are similar in terms of their pervasiveness and implications for many policy areas. Furthermore, given the gender-biased impacts of both climate change and climate security exposure and vulnerabilities,⁸⁷ Canada has an opportunity to take a global leadership role in incorporating gender-based biases and remediations into analysis of climate security vulnerabilities and responses to address them.

1.3 Engage expert advisors from Canada's climate security research community to inform CSTF working groups. Prioritize climate security topics in federal research funding.

The CSTF working group process can ensure that policy discussions around climate risk are informed by physical climate science from the Canadian and international climate science community, through the Canada's Changing Climate Report and broader Intergovernmental Panel on Climate Change (IPCC) reports. It should also include outcomes that today enjoy less certainty but that would have higher impact (e.g., significant feedback loops), as they are relevant for risk planning, but not emphasized as much in consensus scientific reports.

In order to thoroughly assess and shape policy responses, these working groups should continue to strengthen the research-policy interface by engaging expert advisors from Canada's academic and NGO community to further address information and capacity gaps. Canada is fortunate to have some of the foremost climate security researchers

in the field, with expertise covering matters ranging from Arctic security to the broader geopolitics of climate change, climate security considerations in sustainable development, and more. Canadian research capacity can further inform and contribute to data- and information-sharing, to strengthen integrated risk assessment frameworks and situational awareness, for both domestic and international climate security responses. This analysis can support incorporating climate threats into regular national security assessments.

The research community and working groups could design and contribute to an update to the 2010 knowledge synthesis research project *The Security of Canada and Canadians: Implications of Climate Change*,⁸⁸ with a substantial focus on indirect and internationally-focused impacts of climate change on the national interest. They could also advise on including broader climate security studies in Mobilizing Insights in Defence and Security (MINDS) and International Security Research and Outreach Program (ISROP)-style programs. ISROP should add climate security as a research focus area, and include a study on how climate change intersects with its existing research priorities.

The CSTF working group processes can clarify the Research Council's agendas for further exploring dimensions of climate security risks to Canada, particularly the Natural Sciences and Engineering Research Council and the Social Sciences and Humanities Research Council. A cross-sectoral research program that examines the climate security nexus for the Government of Canada, or a climate security theme across similar research programs for these departments, could further support the design and operation of climate security policies and risk management measures. To be effective, such research-policy engagement should establish durable channels for insight to reach policymakers, and institutional infrastructure for engagement. Such efforts will need to stay responsive to the dynamic nature of climate change impacts and an evolving international political arena, although the incoming U.S. administration's commitment to addressing the climate crisis, alongside numerous countries' recent announcements of net-zero commitments, signal a clear direction toward greater global prioritization of managing climate risks. A working group model may be effective, to define a climate security research agenda and ensure it is adequately resourced and feeds into the appropriate policy processes.

Non-governmental climate security experts could also develop a training program for policymakers and civil servants on how to best understand and assess risk in this space, which sits within the overlap of climate science, energy policy, international affairs, defence, infrastructure and other disparate but interrelated fields.

1.4 Assess climate security impacts on military installations, mission, and dependencies

Already today, some of the most persistently visible climate change impacts are effects on infrastructure. Considering this from a national security perspective, Canada needs to fully understand the risks posed to critical military installations and civilian facilities.

The DND should conduct comprehensive climate vulnerability assessments for each of its military installations, and develop resilience recommendations specific to each location. These assessments should incorporate the most significant scientifically supported projections in order to understand the potential risk. The DND should assess not only major military installations, but also smaller sites, such as the surveillance stations that are part of the North Warning System.

Each location faces different risks – some may experience increased flooding as the sea level rises and others could face challenges as the Arctic warms. Each location faces varying risk due to increased storms or to wildfires. It will be important to examine both the threats to each location and the vulnerability of missions to those threats. In addition,

many military installations depend on local communities and civilian infrastructure for support. As such, these analyses need to assess those dependencies and their vulnerabilities to climate change as well.

Once the assessments are conducted, a resiliency plan for each location should be developed, with recommendations that include both responses to near-term risks and anticipated long-term changes.

Similar assessments should be conducted by other Federal agencies and the provinces and territories for infrastructure deemed critical to both national and human security.

1.5 Replicate the Army's climate change assessments for other CAF branches

The Canadian Army has already undertaken an assessment of climate change implications for its operations.⁸⁹ Defence Research and Development Canada should conduct similar assessments for the Navy, Air Force and Coast Guard. Training and operations will be disrupted by extreme weather such as heat waves. Operations in the Arctic will change as the ice melts and access shifts. In addition, there are implications for deployed forces. For example, any deployed forces in the Middle East and other regions facing devastating temperature change projections will have to proactively plan for such conditions.

1.6 Review force sizing requirements for domestic disaster response

As detailed in the risk assessment, increasing domestic natural disaster requirements are burdening military forces, which are often called in to support the provinces and territories. The DND should conduct an assessment, incorporating science-based projections of natural disaster incidence and severity, of future trends and force structure requirements. This assessment should include extreme weather, flooding, wildfires, and other clear climate-driven requirements on military forces. It should develop options to either meet this need through increased force structure or to recommend non-military capabilities be increased to meet new requirements.

1.7 Strengthen intelligence monitoring and response capacities for emerging climate security risks

To monitor and respond to climate change impacts on conflict dynamics internationally, the Canadian Security Intelligence Service should include environment and natural resource-related metrics in its intelligence assessments, and incorporate these dimensions into conflict early warning systems. It should establish a climate security crisis watch center to focus on early indicators of emerging crises in areas experiencing climate variability. Responses to emerging or deteriorating situations of fragility or instability should be attuned to climate hazard exposure and how this might influence security dynamics. Crucially, these efforts should examine how these changes might impact Canadian security interests, broadly defined. They should include analysis of geostrategic trends in the context of climate change and the energy transition, such as the global balance of power, the rise of China, the evolution of NATO's mandate and relevance, and new trends in U.S. and Russian behavior.



Canadian forces participate in airborne operations during Rapid Trident 2011. CORPORAL JAX KENNEDY / CANADIAN FORCES COMBAT CAMERA

ADAPT TO CLIMATE SECURITY RISKS

Once the implications of climate change for security are comprehensively understood, the next set of tasks is focused on ensuring that existing institutions, infrastructure, assets and personnel are able to incorporate that knowledge to inform their current requirements. The notion of resilience – the ability to conduct security missions and implement security priorities despite ongoing and future changes to the climate – underlies this set of recommendations.

2.1 Adapt military and civilian infrastructure

Adapting critical civilian and military infrastructure to the changing climate, including infrastructure that is necessary for domestic disaster response and resilience, is essential to domestic and international climate security risk management. The strain that climate change will put on current infrastructure is enormous, and few if any countries have the resources to adapt their critical national infrastructures to the necessary extent. Adapting Canada's infrastructure for an uncertain climate future may require difficult prioritization and trade-offs. More widespread awareness of the security dimensions of climate change can help make the case for the scale of investment that is required, as well as the merits of proactive rather than reactive spending. It can also help to prioritize the investments most important for Canada's core national interests.

Specific investments should be derived from the results of the resilience plans discussed in recommendation 1.4 above. In its *SSE* strategy, the Department of National Defence committed to investing in sustainable infrastructure in response to climate change. That is certainly positive, but it should equally prioritize investments in resilience to climate impacts. It should seek to resource the most critical adaptation measures as it considers investments in infrastructure.

Finally, the DND should review building codes to ensure all new infrastructure projects are designed to be resilient to future climate conditions.

2.2 Continue to adapt force structure and operating capabilities

The Canadian Armed Forces should incorporate emerging requirements into force sizing decisions. In particular, the assessment described in 1.7 should inform decisions on the size of the Canadian Armed Forces, whether that mission is assigned to active or reserve forces.

CAF has already been making significant investments in Arctic capability, detailed in the first part of this report. This increased investment is prudent and should continue to reflect a priority specialization of Canadian forces and force structure. As the Arctic ice melts and there is increased access to the Northwest Passage, this focus will continue to be relevant to Canadian forces.

Globally, climate-driven instability will lead to an increased demand signal for humanitarian assistance and disaster responses, peacekeeping missions, and---if other interventions fall short---potentially significant diplomatic or military interventions. These requirements will often be in climate regions which face increasingly unhealthy temperatures, which may require new equipment to support peacekeeping forces.

2.3 Recapitalize the North Warning System

Strengthening the North American defence perimeter will continue to be a priority for both the United States and Canada. Given the prospect of increasing access to the Arctic, surveillance and monitoring is a leading requirement. Though the North Warning System faces the end of its projected operating lifespan in 2025 and needs to be upgraded to meet emerging requirements, it remains a critical capability and should not be decommissioned without a replacement. In the absence of funding for a replacement system, options for extending its operating lifespan should be identified to ensure there is no gap in surveillance capability.

2.4 Prioritize protection of vulnerable populations

Canada must ensure that its most vulnerable populations are taken into account when devising civil-military cooperation on addressing domestic climate and disaster-related human security risks. Such prioritization recognizes that climate risks will not fall evenly, and some groups – such as residents of coastal communities in the northern territories, or vulnerable populations within urban or rural areas, may have limited capacity to adapt to the strains that climate change will bring. The needs of these populations should be given particular attention in resourcing climate adaptation for human security in Canada.



Senior Arctic Officials at Portland, Maine plenary meeting in October 2016. LINNEA NORDSTRÖM/ARCTIC COUNCIL SECRETARIAT

ACT DECISIVELY IN RESPONSE TO CLIMATE SECURITY IMPACTS

In addition to anticipating climate impacts and adapting existing institutions to them, Canada will need to respond to crises and to proactively engage internationally to address climate challenges.

3.1 Set ambitious targets for promoting climate resilience, peace and stability through official development assistance (ODA)

The threat posed by climate change to societies' coping capacities and international security can be minimized, if the scale of the response to climate change is commensurate with the threat. Achieving this would require a significant focus on preventing fragility and instability by increasing societal resilience to climate impacts, through climate mitigation, adaptation and development, as well as focused diplomatic efforts around conflicts or geopolitical tensions that take environment, natural resources and climate science projections into account.

Canada made significant commitments to this end in the past, promising \$2.65 billion by 2020 “to help the poorest and most vulnerable countries mitigate and adapt to climate change.”⁹⁰ Canada should make new and ambitious commitments going forward, focused on preserving stability and resilience to increasing climate stresses on fragile nations.

Tilting ODA spending to support both climate resilience and peacebuilding, and assessing projects for both their potential impact on security dynamics⁹¹ and their sustainability in light of future climate projections, are essential.⁹² These responsibilities rest primarily with GAC, which should ensure effective processes to incorporate climate and environment analysis into work promoting international security, and peace and security analysis into climate adaptation, development, humanitarian assistance and peacebuilding. The Peace and Stabilization Operations Program's conflict prevention, stabilization and peacebuilding initiatives should be thoroughly sensitized to climate security, environment and natural resource dynamics, in the same way that it is currently informed by gender analysis, which supports a more comprehensive and sustainable approach to peace and security.

3.2 Champion climate security within multilateral fora including NATO, the Organization of American States, the UN, the G7 and G20.

Canada has an opportunity to show international leadership by coordinating and unifying strategies for addressing climate security threats in multilateral institutions, including NATO, the G7 and G20, the Organization of American States (OAS) and its Inter-American Defense Board, the United Nations and others. Canada could champion this issue, building on the history of action within these fora, including the G7 Foreign Ministers Working Group on Climate and Fragility,⁹³ momentum within the UN system including the formation of the interagency Climate Security Mechanism,⁹⁴ and attention to the topic from the Inter-American Defense Board, whose Secretariat was headed by Brig. Gen. S.M. Lacroix of the Royal Canadian Armoured Corps from 2017-2019.⁹⁵

How these institutions should approach the issue varies, but in broad terms, they should acknowledge climate security risks in high-level declarations and statements, create or strengthen capacities to analyse climate security threats to their remits and areas of responsibility, develop risk management and conflict prevention strategies rooted in climate resilience, and identify how to resource and implement them most effectively. The Government of Canada can help ensure that within these fora, security discussions and initiatives include climate, and climate discussions and initiatives include security.

Given the current momentum for addressing climate security within NATO and the UN, the OAS may be an opportunity for Canadian leadership to have a significant impact, particularly with a U.S. administration allied on these issues. There have been fewer climate security initiatives in Latin America and the Caribbean,⁹⁶ and while there is considerable regional expertise and capacities around disasters, policy responses do not yet take a comprehensive approach to an issue that cuts across livelihoods, resilience, human mobility, urban challenges, transnational crime and governance capacity, particularly in post-conflict settings. The high rate of femicide in the areas most vulnerable to climate security threats, particularly northern Central America, may offer another entry point for Canadian approaches to comprehensive security thinking.

3.3 Strengthen rapid response capabilities for emerging crises and situations of instability, where climatic factors may be a driver

In addition to leveraging its role in multilateral institutions to materially address climate-related threats, Canada should support responding to instability on the ground, where appropriate. This should include improving rapid response capabilities for emerging security situations in climate-vulnerable areas, such as those monitored by climate security watch centers or conflict early warning systems tracking environmental stressors. Canada can contribute to multilateral efforts

through intellectual leadership in prioritizing climate security, leveraging its domestic research community on these issues, continuing to demonstrate leadership in comprehensively addressing the root causes of instability (e.g. by integrating gender), and by contributing finance for emergency aid needs and military capacities, for example for HA/DR.

3.4 Engage multilateral institutions and bilateral relationships for prioritizing climate security risk management

For DND, military-to-military engagement can support information-sharing and trust building in the context of climate-related impacts on the security environment. In particular, Canada should use its close security relationship with the United States to engage the U.S. military bilaterally on climate change issues, to include climate resilience, assessing changing security requirements in the Arctic, conflict early warning to include climate-related drivers, and even defence emissions reductions. Canada should propose military-to-military climate security engagements on infrastructure resilience, Arctic security, and global stability. Of note, Canada's significant Arctic icebreaking capability could be of particular interest to U.S. stakeholders who have expressed public concern over U.S. shortfalls in this area. While both Canada and the U.S. are planning to procure new icebreakers, Canada's current capability far exceeds the current U.S. fleet, which includes a single operational heavy icebreaker.

Military-to-military engagement can also support reducing tensions between countries. The question of engaging with Russia, particularly on Arctic affairs, will likely continue to be an evolving one, with different schools of thought on the benefits for Canadian interests of pursuing more collaboration versus enforcing Russia's isolation from the international community. These are important questions, and Russia's upcoming chairing of the Arctic Council and Arctic Coast Guard Forum may be opportunities to open channels for communication on what responsible behavior in the Arctic, including responsible military behavior, looks like.

The Commonwealth may also be a forum for addressing climate security risks, despite security cooperation not being a major focus of the organization's work. Given Australia and New Zealand's defence focus on managing climate security threats in their region, as well as the UK's current leadership on the issue,⁹⁷ the existing body of climate security policy may provide a basis for integrating peace and security considerations into the Commonwealth's work on climate change and climate finance access, including do-no-harm and peace-positive approaches to climate adaptation. Likewise, Canada could advance climate security matters within the International Organisation of La Francophonie (IOF), just as Canada spearheaded the development of La Francophonie strategy for promoting gender equality and promoting the rights and empowerment of women and girls⁹⁸ in 2018. France may be an ally in this, given their attention to climate security matters, including the establishment of the Ministry of Defence's Observatoire Défense et Climat,⁹⁹ alongside their support for tackling the issue within European security architecture, the UN and elsewhere.

Canada should encourage international security fora such as the Halifax International Security Forum, Munich Security Conference and others to elevate their discussions of climate risk management, with solution-focused, high-profile sessions on this threat nexus, as well as broader integration of climate and energy matters across the security discussions.

3.5 Address long term security risks by advocating for and implementing emissions reductions

This report is largely focused on the current and near-future implications of climate change, which are already imposing significant security risks. However, the long-term implications of climate change could be significantly more dire, with implications for international stability, security, health and economic growth.¹⁰⁰

Canada has committed to net-zero emissions by 2050, and continues to be guided by the *Pan-Canadian Framework on Clean Growth and Climate Change*. Moreover, the Defence Energy and Environment Strategy's work toward efficiency,

green procurement and sustainability on the estate is successfully contributing to Canada's emission reduction targets.¹⁰¹ Reducing emissions from the security enterprise is one way in which Canada can lead by example, and join other NATO allies in recognizing the co-benefits of addressing climate security threats by both adaptation and strong mitigation measures.

To truly address long-term threats, however, a global solution will be required. Canada's advocacy in promoting and participating in a global solution will be even more important than its own emissions reductions, and it should work through appropriate diplomatic channels to ensure the success of the Paris Agreement and its successors. Canada should join the UK and other countries in making a declaration at UNFCCC COP26, recognizing the implications of climate change for international security, and the need to be guided by the science in scaling ambition for emissions reductions.

3.6 Communicate climate security risks and responses through the Communications Community Office

Public awareness of the broader consequences of climate change will be important for building momentum to address these issues and orient toward prevention. Clear communication with citizens about the domestic and international security dimensions of climate risk, including but not limited to Arctic affairs, will be important for laying the groundwork for managing the significant changes of the coming decades in ways that preserve stability and prosperity. Clear communications efforts from the government can support key messages entering the public discourses on security and climate change.

CONCLUSION

Canada faces a wide range of climate security challenges, from increasing threats to its citizens from natural disasters to its expansive Arctic equities. Climate driven instability around the world and the consequent effects on conflict, trade, and migration will shape the country's national interest in the years to come.

Canada has approached both its climate change and national security strategies seriously and comprehensively, but at their nexus there is a gap that should be filled. Climate change is a serious national security issue, and should be prioritized as such within Canada's security and foreign policy agencies. Canada should develop a comprehensive climate security plan that will serve to fully incorporate security risks into its climate change strategy and provide an explicit and distinct layer to its security strategy to ensure these risks – current and future - are being addressed and informed by the best possible scientific projections. Ultimately, Canada has a responsibility to prepare for the unavoidable changes that will be imposed upon it due to climate change, and to do everything possible to prevent catastrophic future security threats from emerging.

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A CLIMATE SECURITY PLAN FOR CANADA

HOW THE GOVERNMENT OF CANADA CAN COMBAT THE SECURITY RISKS OF CLIMATE CHANGE

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