

VIMY PAPER

**WHAT THREATS DOES
CLIMATE CHANGE POSE
TO CANADA AND HOW
ARE WE SITUATED TO
FACE THOSE THREATS?
PART ONE.**

MITCHELL BINDING

MARCH 2022 — VOLUME 50



Conference of Defence Associations Institute

The Conference of Defence Associations Institute is a charitable and non-partisan organisation whose mandate is to provide research support to the CDA and promote informed public debate on security and defence issues and the vital role played by the Canadian Armed Forces.

Conference of Defence Associations Institute 75 Albert Street, suite 900
Ottawa, Ontario K1P 5E7 613 236 9903 www.cdainstitute.ca

Views expressed here are those of the authors and do not necessarily reflect those of the CDA Institute.

All logos and trademarks used are the property of their respective holders. Use in this publication is under non-commercial and normative fair use provisions of applicable Canadian law.

Institut de la Conférence des associations de la défense

L'Institut de la Conférence des associations de la défense est un organisme caritatif et non partisan dont le mandat est de fournir l'appui de recherches à la CAD, et de promouvoir le débat public sur les questions de sécurité et de défense, et le rôle essentiel des forces armées canadiennes.

Institut de la Conférence des associations de la défense 75 rue Albert,
bureau 900 Ottawa (Ontario) K1P 5E7 613 236 9903
www.cdainstitute.ca

Les opinions exprimées sont celles des auteurs, et ne reflètent pas nécessairement les opinions de L'Institut de la CAD.

Tous les logos et les marques de commerce utilisés sont la propriété de leurs détenteurs respectifs.

L'utilisation qui en est faite dans cette publication l'est en vertu des dispositions de la loi canadienne applicable sur l'utilisation équitable non commerciale et nominative.



WHAT THREATS DOES CLIMATE CHANGE POSE TO CANADA AND HOW ARE WE SITUATED TO FACE THOSE THREATS? PART ONE.

MITCHELL BINDING

ABSTRACT

Events through 2021, including deadly heat domes, widespread wildfires, and devastating floods, brought the consequences of climate change to the fore in Canada. It is true that climate change is but one threat among many – given current geopolitical escalation in Eastern Europe, the security threats brought on by climate change may be pushed to the backburner. Nonetheless, climate change is increasingly described as the *most likely* threat with *very high impacts* to security and wellbeing. Indeed, the recently published Munich Security Index 2022 placed climate change, extreme weather, and environmental destruction as the top risks. Accordingly, the significant and diverse impacts on Canadians and their security make climate change a threat worth addressing immediately. This paper contributes to an examination of the threat, including to national security, human security, and political stability; it then assesses Canada's weaknesses and strengths in addressing those threats. This examination provides a foundation on which to base deeper analysis of implications and ways forward in Part Two.

INTRODUCTION

Events through 2021, including deadly heat domes, widespread wildfires, and devastating floods, brought the consequences of climate change to the fore in Canada. These are not just passing news stories — in a broad strategic sense, the threat environment Canada faces is expected to become more complex and unpredictable due to increasing security threats related to climate change. It is true that climate change is but one threat among many: China and Russia pose ever more threat to Western democracies and international stability, and Canada's closest and most powerful ally wanes in relative influence. These geostrategic threats, along with cyber and information warfare, global terrorism and violent extremism, multinational crime, and ostensibly, global health and pandemics, all continue to shape Canada's strategic thinking. Nonetheless, climate change is increasingly described as the *most likely* threat with *very high impacts* to security and wellbeing.¹ The threats related to climate will have serious, diverse, and lasting impacts on Canadians and their security.

The potential magnitude of the threats and the increased probability that they will affect security in significant ways compels the question, “what threats does climate change pose to Canada and how are we situated to face those threats?” This paper first seeks to contribute a balanced examination of the threats, considering national and human security and political stability. It will then analyze Canada's position in addressing those threats by looking at both weaknesses and strengths. This examination provides a foundation on which to base deeper analysis of implications and ways forward in Part Two of this research.

WHAT THREATS DOES CLIMATE CHANGE POSE TO CANADIAN SECURITY?

Canada will experience complex and diverse threats from climate change.² This section discusses in turn national security, human security, and political stability.

National Security

National security generally relates to sovereignty, territorial integrity, and threats to the homeland. This lens of security embodies the more traditional approach of military strength and high politics to protect the interests of the state itself. Arctic security and sovereignty, climate threats to international stability, and the overburdening of the CAF will be examined here.

Canada has historically felt insecure over its limited ability to demonstrate sovereignty over its Arctic territories and maritime approaches — this sovereign insecurity has formed the main focus of Canadian discussions related to climate security for decades.³ This anxiety has only grown as the Arctic has warmed due to climate change and become more accessible to maritime traffic.⁴ The perceived threat is loss of sovereign control of

Canada's territory and maritime approaches if it is unable to physically secure them. There are ongoing legal and diplomatic disputes over Hans Island with Denmark and the Beaufort Sea with the United States (US), but no dispute looms larger in Canadian threat perceptions than the Northwest Passage (NWP). The international community, including US and the European Union, have argued against Canada's position that the NWP constitute internal sovereign waters and are instead an international strait.⁵ This position would strip Canada of the right to secure the NWP from air- and naval craft deemed hostile to Canadian interests, forcing it to allow free passage to all vessels.

Aiming to alleviate this threat militarily could instead worsen it. Despite much writing on arms build-ups in the Arctic, the region currently remains one of peaceful cooperation, and so aggressive defence policies may antagonize Canada's Arctic neighbours and allies unnecessarily.⁶ Furthermore, an exclusively military approach is negated by the realities of whom Canada is trying to overcome in this dispute — primarily the US.



Canada has been cooperating with the US in the Arctic since the 1950s, and, except for a few incidents, the two allies have managed the relationship exceptionally well.⁷ One example of this cooperation was the implementation of the Distant Early Warning (DEW) line in the Canadian Arctic. Opponents were profoundly worried that allowing American radar installations on Canadian territory would erode sovereignty. In offering the sites for radars, however, Canada maintained a strong position, setting a long list of conditions to which the Americans acquiesced — improving Canadian security *and* reinforcing its Northern sovereignty.⁸

Many scholars deem the threat of armed attack through the Arctic as extremely low, with the threat to Canadian sovereignty instead rising from legal and diplomatic disputes over the status of Canadian waters.⁹ As such, the use of the CAF is necessary for projecting presence and capability in order to substantiate “ownership,” but not preparing for armed warfare in the region.¹⁰

Yet, the Canadian Army Land Warfare Centre found in 2017 that among all possible future scenarios, defending sovereignty is among the most likely and impactful security concerns Canada will face.¹¹ In all of these cases, whether there may be armed warfare in the Arctic or not, increased military presence in the region will remain critical, particularly for Humanitarian Assistance and Disaster Response (HADR), Search and Rescue (SAR), and Intelligence, Surveillance, and Reconnaissance (ISR) of Northern maritime approaches.¹²



These capabilities will bolster Canada's security stance as well as its legal arguments for ownership of the territory.

Threats from abroad are also likely to affect national security. National security practitioners have for many years described climate change as a "threat multiplier," accelerating security trends already seen in unstable regions.¹³ Based on Intergovernmental

Panel on Climate Change (IPCC) projections, climate change will increase intrastate conflict, instability, and the number of climate refugees.¹⁴ Canada will feel compelled to assist in these more frequent climate-related conflicts for the same reasons it participated in Afghanistan, Iraq, Libya, Mali, and many smaller missions — to reduce regional instability and failed states, as well as contributing to coalition burden-sharing. These threats may oblige Canadian participation in diverse expeditionary missions, including Peace Support Operations, Security Sector Reform (SSR), and advisory missions (to which Canada already has a penchant for contributing).¹⁵

Conversely, climate change may do more harm to the CAF than any adversary by means of damaged infrastructure and equipment, interruptions to training and exercises causing atrophy of combat skills, and the ever-present problem of being over-stretched responding to domestic emergencies.¹⁶ Increasing domestic disaster operations and the expectation of the CAF "backstop" to federal and provincial emergency management agencies has increasingly strained the CAF's ability to fulfil mandated missions.¹⁷ Furthermore, disaster response often overrides critical training and exercises the CAF undergoes to ensure constant readiness for expeditionary and combat operations.¹⁸ A former Chief of Defence Staff (CDS) has warned climate disaster-related strain on the CAF will create serious challenges to military preparedness.¹⁹

These threats to Canadian security, in the Arctic, internationally, and to the CAF, are fundamental to understanding climate change through a national security lens. The national security approach only presents half of the picture, however; deeper insight will be obtained by also viewing climate threats through a human security lens.



Human Security

Human security refers to the community or individual levels of analysis, rather than the state level (a view Canada helped pioneer).²⁰ This concept of security became prominent as the Cold War ended and the “consensus on the nature of security was challenged.”²¹ This came partly from the recognition that states themselves were often the cause of *insecurity* for their own people, lacking “effective capacities for providing internal peace and order.”²² Scholars of human security generally argue against the securitization of climate change,²³ tending to view a focus on national defence and military security as an inadequate, and often counterproductive, solution to the real threats facing people.²⁴ The defining feature of human security to these scholars is to examine not territorial and military security, but “conceptual extensions” of security that affect peoples’ ability to survive and thrive, such as food and water security, health security, and economic security.²⁵

One of Canada’s largest human security threats is in the North, as climate change will be (and has already been) experienced most drastically there. There exist severe infrastructure shortfalls in the Arctic, and climate change, through sea-level rise and melting permafrost, is expected to worsen the problem.²⁶ Climate-related incidents have already cost communities in the Canadian North millions of dollars in damages and interruption to essential socio-economic services. Damaged infrastructure has included water and sewage services, bridges, roads, and sea- and airports that are critical for bringing food to the region.²⁷ This becomes all the more serious as the climate exacerbates wild food shortages, so Northern Canadians increasingly struggle to hunt and fish climate-reduced wildlife stocks.²⁸ As a result of these climate threats to human security, the Canadian North will be the most severely impacted region in Canada (and one of the hardest hit in the world).²⁹

Threats to human security already manifesting in the Canadian North foreshadow what is expected further south. All Canadians will face food security threats, primarily related to agricultural production and distribution, as droughts, infestations, flooding, and fires become more frequent and devastating.³⁰ In the breadbasket of Canada, reduced rainfall coupled with reduced river flows from glacial runoff for irrigation will result in a higher frequency of failed crops.³¹ These factors, along with heatwaves, droughts, and floods are projected to harm agriculture virtually everywhere and could lead to food shortages.³² A stark example of this threat was observed in 2021 when widespread fires, heat domes, and droughts led to drastically reduced summer yields across Western and Central Canada. This was followed by a season of severe flooding in lower British Columbia resulting in the main transit corridors being wiped out — including three major highways and railways — leading to widespread food shortages, not just on the production side but on the supply-chain logistics side as well.³³ Climate crises will continue to impact agriculture, fisheries, and livestock, as well as distribution logistics, further increasing food security threats to Canadians.³⁴

Similarly, environmental scientists predict every region in Canada will experience some climate-induced water insecurity — despite possessing vast reserves of fresh water.³⁵ The Prairies and Southern Ontario already experience water withdrawals that exceed stress levels, and water availability and drought conditions are expected to worsen alongside amplifying demographic pressures.³⁶ With water being critical to human survival and well-being, especially in a warming environment, this threat requires particular attention.

Canadians will face threats to health security as well; this threat will include acute conditions like heat stress and mortality during wildfires, flooding, ice storms, and hurricanes.³⁷ Worsened heatwaves have already occurred that significantly increased mortality rates in affected regions; for example, 2021 saw almost 600 heat-related deaths in British Columbia, and the 2010 Quebec heatwave increased mortality by 33 per cent over four days.³⁸ Respiratory and cardiovascular diseases will also result from reduced air quality from wildfires; large areas of Western Canada have already experienced several seasons of suffocating smoke.³⁹ Long-term health problems also include increased pathogens and disease from a warmer climate.⁴⁰ Global pandemics and infectious diseases, as well, are a newly appreciated threat; as traumatic and disruptive as COVID-19 has been globally, pandemics are only predicted to become more likely with climate change.⁴¹

Lastly, climate change will affect economic security. It is worth noting countries at northern latitudes with quickly adapting markets will likely see some economic benefit from climate change.⁴² However, the threats of failed crops and water shortages, floods, wildfires, and health risks all foreshadow huge costs.⁴³ McKinsey Global Institute calculates tens of billions of dollars already lost in floods, heatwaves, and droughts made more likely or more intense by climate change.⁴⁴ The IPCC details significant impacts to energy, water systems, transportation, insurance and financial services, crop and animal production, forestry, fisheries, mining, manufacturing, construction, and housing — almost every economic sector

in Canada.⁴⁵ These sectors are even more important viewed through a regional lens; consider that the Atlantic fisheries constituted a tiny portion of national GDP, yet their collapse devastated the region.⁴⁶

Another threat to economic security is the response to climate change itself, as entire industries, and regions of the country that rely on them, are upended in the pursuit of decarbonization.⁴⁷ The severity of the consequences is reflected in the intensity of debate over achieving Canada's climate mitigation obligations while still maintaining a productive energy sector.⁴⁸ This is particularly the case regarding opposition in Alberta, Saskatchewan, and Newfoundland, where the oil and gas sector accounts for 700,000 jobs and the largest portion of provincial GDP.⁴⁹ Thus, the impacts to economic security from climate mitigation policies could be more severe in some regions than climate change itself, creating perceptions of "maladaptation."⁵⁰

Impacts to food, water, health, and economic security all present threats to human security of individuals and communities in every region of Canada. These threats may themselves affect the political stability of Canada.

Political Stability

Political stability is often a sub-section of human security.⁵¹ When political stability is viewed as a matter of national survival, however, it merits its own detailed examination.⁵² Since climate change worsens insecurity by acting upon already-existing environmental conditions, social tensions, and governance failures, there is a higher probability of intrastate conflict than interstate conflict.⁵³ With political stability in rich, democratic countries typically overlooked as a threat, recent years have shown episodes of instability across the West, including the US, UK, and Europe.⁵⁴ In the US, Canada's most important ally, politics has grown extremely polarized and has entered a new era "when the occupant of the Oval Office is seen as illegitimate by roughly half the country," a situation leading to increased political instability.⁵⁵ Homer-Dixon, a long-time scholar in environmental crises and social breakdown, warns that "American democracy could collapse, causing extreme domestic political instability," and that Canada must prepare.⁵⁶ It is therefore worth considering that political instability could pose a serious threat to Canadian security.⁵⁷



Climate change is expected to accelerate and exacerbate demographic, economic, and governance trends, with far-reaching consequences for stability.⁵⁸ Within Canada, instability could be elicited by an overwhelming burden on governance capacity from domestic emergency overload, from economic consequences of climate change, or social instability related to climate refugees.

Political instability may result as domestic emergency capacities are overwhelmed; coastal communities will be impacted by rising sea levels and more frequent hurricanes, while the prairies will be susceptible to increased droughts and wildfires, and Canadians across the nation will suffer floods and heatwaves.⁵⁹ Instability in these cases will be predicated entirely on the effectiveness of government response and public perception thereof. The US provides an example of ineffectual government response contributing to instability; Hurricane Katrina caused tremendous damage in 2008, yet the government response made matters much worse in some instances and turned citizens against each other in others.⁶⁰

Another driver of instability may be the economic consequences of shutting down high-emissions industries. In 2020, many of the largest protests in Canada, the US, and Europe were a result of “shutting down the economy” in response to the pandemic.⁶¹ These were not the first in Canada; in 2018/2019, prolific protests surrounding climate-versus-energy debates culminated in a cross-country convoy from Alberta to Parliament Hill to air grievances.⁶² The 2019 federal election further demonstrated huge regional divides, with the provinces of Alberta and Saskatchewan completely shutting out the ruling Liberal party, who ran on a national carbon tax and greener climate policies — and whom Westerners viewed as wanting to destroy the oil and gas industry. These divisions will ensure economic and energy security remain a pressing matter in protecting Canadian political stability.⁶³

Lastly, political security could be impacted by large numbers of climate-driven refugees. Severe drought conditions were a factor in political unrest and civil wars in numerous African and Middle Eastern countries from 2011–2015 — conflicts that led to regional instability and the 2015 migrant crisis in Europe.⁶⁴ Canada attempted to show solidarity and leadership by admitting 40,000 Syrian refugees during this crisis.⁶⁵ This number was not high compared to European countries, yet the resulting debate about immigration was politically divisive.⁶⁶

Canada will not encounter the same numbers of refugees as Europe, the US, or even Australia; all of these allies have neighbours expected to be extremely hard-hit by climate change and already experience demographic, economic, and governance challenges.⁶⁷ The Canadian government, however, anticipates significant climate refugee flows from the Asia-Pacific, as well as from Mexico and Central America.⁶⁸ Canada will likely undertake similar resettlement endeavours in the coming decades as in 2015, both voluntarily to bolster its image as a global leader but also under pressure from allies to help share the burden.⁶⁹

However, political instability as a result of these climate migration flows, especially if not effectively managed, may result in anti-immigrant views and hostile interactions. In the past, this discontent has fuelled protests, hate crimes, and even terrorist attacks.⁷⁰ Thus, stability abroad has real and tangible effects on stability in Canada.

Conclusion

The threats climate change will present to Canadian security are complex and diverse. The threats to national security, human security, and political stability each interact and overlap, and will be critical to address in the coming years. The next question is whether Canada is ready to address these threats.



IS CANADA WELL-POSITIONED TO ADDRESS CLIMATE THREATS?

The threats analyzed thus far are best understood alongside an analysis of the ability to confront them. The impact climate threats have on any country has much to do with its geographical, political, and economic context, or its “adaptive capacity.”⁷¹ Canadian weaknesses in confronting climate threats include economic reliance and political-cultural obstacles. Strengths include geographical advantages, demographic diversity, institutional strength, and financial resilience. Ultimately, Canada is well-positioned to address these security threats given its abundant strengths and resources, yet the tendency for inaction may inhibit those strengths.

Canadian Weaknesses

The *threat* to economic security was discussed previously; but while agriculture, forestry, and fisheries all represent vulnerabilities to climate threats, they will not *weaken* Canada's ability to address them. Economic dependence on energy and resource extraction, however, does weaken Canada's ability to adapt.

The Canadian energy sector is not currently compatible with mitigation efforts agreed to under the Paris Climate Agreement.⁷² Reliance on this sector, and the difficulty in disconnecting the economy from oil and gas due to fears of profound damage to regional economies, presents perhaps the biggest cognitive dissonance in Canadian climate policy.⁷³ Economic disruptions to these sectors will not just present weaknesses nationally, but represent a difficult obstacle for affected regions and provinces, creating considerable roadblocks to adaptation policy.

A continuation of this pattern is likely in the next decades as these economic weaknesses are met with current financial challenges; as Canada grapples with inflation and an exploding government deficit from pandemic spending, it simultaneously faces mounting household debts.⁷⁴ These trends will make it all the more difficult to intentionally disconnect from a lucrative oil and gas sector. In either case, budgets may tighten again, causing security funding to suffer. David Perry has noted that successive Canadian governments have “often issued declaratory policy without the [budgetary] resources to operationalize it.”⁷⁵ This underfunding represents a perennial weakness in Canadian defence policy and will have implications for climate security adaptation.

The second category of Canadian weakness — political-cultural — encompasses several trends, such as interprovincial discord over policies and political hesitance to commit to action, which are trademark features of Canadian politics.

One of the most potent issues in Canadian political stability relates to regional discord over the way to deal with climate change and what aspect of it poses the greatest threat. The IPCC has probed “what adaptation options are considered useful and by whom,” noting that different social, cultural, and geographical groups perceive climate threats differently.⁷⁶ Herein lies a Canadian weakness; those who bear the greatest threats from climate change are not the same as those who bear the highest costs in mitigation or adaptation (undeniably an example of the wider phenomenon in global mitigation efforts).⁷⁷ This divergence is the foundation for strong disagreement on what mitigation efforts are worth their costs, furthering regional discord and potentially national political stability.

The most obvious example of this regional disagreement remains energy policy. The details of the already-discussed economic debate have driven a sharp wedge between several Canadian provinces — in particular, Alberta (and to a lesser extent Saskatchewan and Newfoundland) in opposition to British Columbia and Quebec. Political and rhetorical fights often revolve around the ability of Alberta, a land-locked province, to get its oil and gas “to tidewater” so it can be transported to markets in Asia and Europe. Other provinces, however,

see a moral hazard in allowing the transport of oil and gas through their jurisdictions, thereby making them an accomplice to climate-warming fossil fuels, which to them is the greater threat.⁷⁸ There is a complicated Indigenous component to this divide as well; some Indigenous groups support oil and gas for the economic benefits to their communities, while others are vehemently opposed and have staged protests and blockades.⁷⁹ Neither Conservative nor Liberal federal leadership has yet been able to overcome these divisions and often have been frozen in political inaction.



This divergence of interests resulted in a lack of political representation by the governing party in Western provinces and resurging alienation, particularly in Alberta and Saskatchewan, following the 2019 election.⁸⁰ Since Alberta has historically been Canada's richest province *per capita* by a large margin,⁸¹ and it sees itself as a major contributor to the national purse, the efforts to impede its industry have led to a strengthening movement for it to separate from the Canadian federation so it can establish its own climate and economic policy.⁸² Separatism is not in the national nor regional interest, and would paradoxically not solve Alberta's landlocked nature nor the collapse of the energy export market as America has developed its own energy sector.⁸³ Yet rational argument has not always muted cultural identity nor regional disillusionment during previous Canadian separatism crises.⁸⁴ This inter-provincial discord, and indeed the legitimate concerns that underlie the disagreements, often results in inaction from Canadian decision-makers.

Canadian Strengths

The obstacles and weaknesses detailed thus far are balanced by a robust complement of strengths that Canada will need to leverage effectively to address the national security, human security, and political stability threats it faces. These include geographical advantages, demographic diversity, institutional strength, and financial resilience.

One of Canada's greatest strengths is its geographical circumstance. It is widely agreed there is an extremely low threat of armed attack from hostile states largely due to Canada's location — guarded on three sides by oceans and on the fourth by a close ally.⁸⁵ This advantaged position allows Canada to focus on less traditional security threats and will allow Canada to apportion the requisite focus on the threats from climate change.

Canada's nearly ten million square kilometres of land and sea grant it a massive resource endowment, and the temperatures that accompany its northern latitudes will present some respite in a warming climate. These together mean that, while Canada certainly faces

serious climate threats, it faces significantly less than many — particularly those in conflict-prone neighbourhoods and those that consider themselves existentially threatened by climate change.⁸⁶ Geography also protects Canada from threats of international stability when compared to allies that are adjacent to conflict-prone regions; this is why Canada did not suffer the same destabilizing influx of millions of refugees as Europe in 2015, and why refugees from Central America and Mexico will not flood Canada's southern border as per the American experience.

The second strength is demographic, an important element of the climate threat discussion since “population trends have been shown to matter both for mitigation efforts as well as for societies’ adaptive capacities to climate change.”⁸⁷ A common argument is that demographic trends represent a major weakness and liability for Canada; an aging population, paired with low birth rates, is seen to “pose a major challenge.”⁸⁸ Charles Davies, writing for the CDA Institute in 2018, argues demographic trends represent a “long term tectonic influence on Canada’s national security,” given “nations with shrinking populations may see their national capacities to protect their interests and influence global events diminish proportionally over time.”⁸⁹

The observance of this weakness, however, heeds only the trend of an aging population and low birth rate; it ignores Canada’s openness to and encouragement of immigration. Openness to immigration and refugees may outweigh demographic weakness and instead serve as a strength and opportunity.⁹⁰ In fact, including immigration numbers, Canada has historically seen “the highest growth rate among major industrial countries.”⁹¹ Christian Leuprecht convincingly argues that a defence establishment effectively utilizing the diversity available in the high numbers of immigrants to Canada will be better placed to succeed in the diverse expeditionary missions it fulfills abroad, including peace enforcement, stabilization, counter-insurgency, and civil-military operations.⁹² This strength is notable for its own sake but will be specifically important as a mitigating strategy against the threats relating to climate refugees and migrants.

As some Canadian allies continue to become more suspicious of and unfriendly to refugees and migrants, Canada could provide benefit by accepting higher numbers of refugees during crises in return for favourable positions in diplomatic negotiations or trade discussions (a transactional approach, but a practical one).⁹³ It is important to note that strength here is not negated by threat; that is, the threat of instability from climate refugees previously discussed does not take away from the fact that Canada possesses demographic strength that can be leveraged. The trade-offs involved in accepting increased numbers of refugees and climate migrants would benefit Canada in many ways — fostering stability in over-burdened allies, receiving diplomatic points in return, mitigating the demographic gap in Canada, and stimulating the economy.⁹⁴ In this sense, Canada’s reliance on and appreciation of immigration will serve as a strength and could help mitigate threats related to climate migration and economic threats.



Thirdly, institutional strength will prove one of Canada's greatest assets. The IPCC considers institutional capacity a key factor in effective climate risk adaptation.⁹⁵ Institutions have been referenced as an important "mediating factor between climate phenomena and security outcomes," and several studies have demonstrated the importance of institutional capacity related to climate threats and resource management, disaster planning, conflict management and dispute resolution.⁹⁶ Given this importance of institutional capacity, Canada is well-placed.⁹⁷ It possesses the requisite "dimensions of public governance" most relevant in effective institutional capacity, including robust political institutions for "selecting, monitoring, and replacing governments," citizen engagement with the political process, strong political rights, civil liberties, media independence, and high-quality civil service.⁹⁸

Notwithstanding these strengths, the Council of Canadian Academies worries governance capacity may be one of the main risks to Canada from climate change, based primarily on the risk that government failures are yet possible in the face of widespread and expensive disasters, jeopardizing public services and public trust in government.⁹⁹ However, this has so far not been observed regarding the instructive case of government response to the pandemic crisis, nor previous climate-related disasters like wildfires and floods.

Currently, as Canada moves toward a post-pandemic (or COVID-endemic) world, fervent debates have grown over civil liberties and inflation caused by government spending. Nonetheless, while there has always been partisan disagreement on specific measures and scope in responding to the pandemic, the Canadian government generally demonstrated a robust response to the crisis, including multiple arms of institutional capacity, in what might resemble a Whole-of-Government approach.¹⁰⁰ This included the use of social programs and fiscal tools to buoy the economy and markets, public health measures across disparate provincial health systems, an information campaign to steer the whole country in the same

direction, and the use of the military to fill gaps in logistical capability (including in long-term care facilities and vaccine distribution).¹⁰¹ Difficulties in logistics were apparent, yet the use of the flexible operational capabilities of the CAF helped to ensure vulnerable communities across the country were served effectively by the government response.¹⁰²

Similarly, the Canadian government has shown strong institutional capacity during previous climate-related disasters. This was observed during the Fort McMurray wildfire; flooding in British Columbia, Alberta, Ontario, Quebec, and New Brunswick; ice storms in Ontario and Quebec; and hurricanes in the Maritime provinces.¹⁰³ Where shortfalls and failures have existed, Canadian government institutions, in partnership with provincial and local agencies, acknowledge them and work toward better mitigation, preparedness, response, and recovery stages of disaster management.¹⁰⁴ Between the emergency management of these disasters, and the response to the COVID-19 pandemic, Canada has so far demonstrated that its adaptive and governance capacity should be well-suited to addressing emerging climate threats to Canadian security.¹⁰⁵ This capacity translates to higher public confidence in and support for response measures, and more importantly, to proactive measures in mitigating and adapting to climate threats.

A particularly strong element of Canadian institutional strength, yet one which merits separate consideration, is its financial system. Despite economic exposures and difficulties balancing the national chequebook, Canada remains financially strong. While financial threats from climate change will be multiplicative to those from the pandemic and to existing household and corporate debt level risks, the Canadian financial system has shown its sturdiness during several tests. During the 2008 financial crisis, Canada's system endured remarkably well, especially considering its closeness to the US market.¹⁰⁶ The Bank of Canada has continued to assess that, before the pandemic, the Canadian financial system was very resilient and Canadian banks and institutions were well-positioned to manage risks.¹⁰⁷ Even following the upheaval of the pandemic, "the Canadian financial system continues to function well...and Canada's financial institutions have proved to be resilient during the crisis."¹⁰⁸ This directly strengthens Canada's ability to address climate threats; the IPCC advises that "[w]ell-functioning markets provide an additional mechanism for adaptation and thus tend to reduce negative impacts and increase positive ones for any specific sector or country."¹⁰⁹ This financial strength will be important as communities and economic sectors are adversely affected by climate threats.

Conclusion

The set of strengths Canada wields in its counterattack against climate threats to national security, human security, and political stability is robust. These strengths include geographical advantages, demographic diversity, institutional strength, and financial

resilience. Canada should be well-positioned to excel and provide leadership in addressing climate threats if it can leverage these strengths and minimize the tendency for inaction due to economics and discord.

CONCLUSION

The strategic problems Canada faces will be exacerbated by climate change and its resultant threats, making Canadian security more complex and difficult. As has been elucidated, this makes climate change a “threat multiplier;” however, climate change will create its own threats that require their own countermeasures, such as widespread threats to infrastructure, increased domestic operations wearing out the CAF, threats to global health, and economic threats from industrial and energy transition.

This paper examined three categories of climate threat facing Canada: national security threats, including Arctic sovereignty and security and international stability; human security threats, including food, water, health, and economic security, especially in the Arctic; and political stability threats, including those from economic consequences, government capacity limits, and climate refugees. In addressing these threats, both weaknesses and strengths were examined. Weaknesses include economic exposure, political inaction, and interprovincial discord. Strengths include geographic position, demographics and immigration, and institutional and financial assets.



Many of these threats will be simultaneous, creating a need for much faster, more decisive actions on issues that already exist but could create crises due simply to an accelerated pace of change.¹¹⁰ In 2020/2021, the global pandemic, economic recession, and social unrest (seen around the world, but very acutely in the US) all happened at the same time. Climate threats will be the same. Canada likely will not have the advantage of separately addressing threats to Arctic sovereignty, international instability, rampant costs related to disaster rebuilding, and climate refugees; as observed during the pandemic, these types of crises are often concurrent and convergent.¹¹¹ The implication is that Canadian academics and policymakers should consider these threats not as individual phenomena but as an approaching behemoth of threats that will need to be confronted in an integrated way. Part Two of this research will delve deeper into the implications of climate threats given Canada’s current strengths and weaknesses and provide recommendations for how to better prepare. If the course of action continues to be to react instead of pre-empt, there will be significant and

adverse implications to Canadian security and the livelihoods of Canadians in the decades to come.

AUTHOR BIOGRAPHY:

Captain Mitchell Binding is a pilot and Flight Lead at 408 Tactical Helicopter Squadron in Edmonton, Alberta. He completed his Bachelor of Arts in Military and Strategic Studies at the Royal Military College of Canada, and his Master of Arts in International Relations and Contemporary War through King's College London, UK. Within the last two years he has deployed on Operation Lentus three times to support over-burdened provincial emergency management during wildfires and severe floods. The views expressed in this paper are the author's own and do not represent those of the Canadian Armed Forces, the Department of National Defence, nor the Government of Canada.

- ¹ Ministry of Defence, "Global Strategic Trends," *Government of United Kingdom* (2018), 10, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/771309/Global_Strategic_Trends_-_The_Future_Starts_Today.pdf; Guy et al., "A Security Threat Assessment of Global Climate Change," (Washington: Center for Climate and Security, 2020): 14. https://climateandsecurity.files.wordpress.com/2020/02/a-security-threat-assessment-of-global-climate-change_nsmip_2020_2.pdf.
- ² Council of Canadian Academies, *Canada's Top Climate Change Risks* (Ottawa: Expert Panel on Climate Change Risks, 2019), 11, <https://cca-reports.ca/wp-content/uploads/2019/07/Report-Canada-top-climate-change-risks.pdf>.
- ³ Lackenbauer, "From Polar Race to Polar Saga: An Integrated Strategy for Canada and the Circumpolar World," in *Canada and the Changing Arctic*, ed. Griffiths, Huebert, and Lackenbauer (Waterloo: Wilfrid Laurier University Press, 2011), 73; Lajeunesse, *Lock, Stock, and Icebergs: A History of Canada's Arctic Maritime Sovereignty* (Vancouver: UBC Press, 2016), 67, 2978.
- ⁴ Lackenbauer and Huebert, "Introduction: An Important International Crossroads," in *(Re)Conceptualizing Arctic Security*, ed. Lackenbauer, Huebert, and Dean (Calgary, AB: Centre for Military, Security and Strategic Studies, 2017); *Canada First Defence Strategy* (Ottawa: Department of National Defence, 2008), 6, https://www.canada.ca/content/dam/dnd-mdn/migration/assets/FORCES_Internet/docs/en/about/CFDS-SDCD-eng.pdf.
- ⁵ Huebert, "Canadian Arctic Sovereignty and Security in a Transforming Circumpolar World," in *Canada and the Changing Arctic: Sovereignty, Security, and Stewardship*, ed. Griffiths, Huebert, and Lackenbauer (Waterloo: Wilfrid Laurier University Press, 2011), 49.
- ⁶ Lackenbauer, "Polar Race to Polar Saga," 945.
- ⁷ Lajeunesse, *Canada's Arctic Maritime Sovereignty*, 89, 89; Lackenbauer and Huebert, "Premier Partners: Canada, the United States and Arctic Security," *Canadian Foreign Policy Journal* 20, no. 3 (2014): 320, <https://doi.org/10.1080/11926422.2014.977313>.
- ⁸ Lajeunesse, 63.
- ⁹ Lackenbauer, "Polar Race to Polar Saga," 945; Lackenbauer and Huebert, "Premier Partners," 320.
- ¹⁰ A. MacDonald, "The Militarization of the Arctic," *Canadian Military Journal* 15, no. 3 (2015): 23, <http://www.journal.forces.gc.ca/vol15/no3/eng/PDF/CMJ153Ep18.pdf>; Lajeunesse, *Canada's Arctic Maritime Sovereignty*, 201.
- ¹¹ Canadian Army Land Warfare Centre, *Canada's Future Army, Volume 3: Alternate Worlds and Implications*, (Kingston: Canadian Army Publishing Office, 2017), 51, https://publications.gc.ca/collections/collection_2018/mdn-dnd/D2-354-3-2017-eng.pdf.
- ¹² Lackenbauer, "Polar Race to Polar Saga," 104; Lajeunesse and Lackenbauer, "Defence Policy in the Canadian Arctic," in *Canadian Defence Policy in Theory and Practice*, ed. Juneau, Lagassé, and Vucetic (Cham, Switzerland: Palgrave Macmillan, 2020), 3756, <https://doi.org/10.1007/978-3-030-26403-1>; *Strong, Secure, Engaged: Canada's Defence Policy* (Ottawa: Department of National Defence, 2017), 51, <http://dgpaapp.forces.gc.ca/en/canada-defence-policy/docs/canada-defence-policy-report.pdf>.
- ¹³ CNA Military Advisory Board, *National Security and the Threat of Climate Change* (Alexandria, VA: CNA Corporation, 2007), 6, https://www.cna.org/cna_files/pdf/National%20Security%20and%20the%20Threat%20of%20Climate%20Change.pdf.
- ¹⁴ Adger et al., "Human Security," in *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects*, ed. Field et al. (Cambridge: Cambridge University Press, 2014), 772, http://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-PartA_FINAL.pdf; conversely, the academic literature has not fully settled the question of the causal role climate change plays in stoking conflict.
- ¹⁵ Boucher, "Public Opinion and Canadian Defence Policy," *Canadian Defence Policy in Theory and Practice*, ed. Juneau, Lagassé, and Vucetic (Cham, Switzerland: Palgrave Macmillan, 2020), 1623, <https://doi.org/10.1007/978-3-030-26403-1>.

- ¹⁶ Brock et al., "World Climate and Security Report 2020," *International Military Council on Climate and Security*, ed. Femia and Werrell (Center for Climate and Security: 2020), 756, https://imccs.org/wp-content/uploads/2020/02/World-Climate-Security-Report-2020_2_13.pdf; CNA Military Advisory Board, "Threat of Climate Change," 37; Guy et al., "Security Threat Assessment," 57, 75.
- ¹⁷ Leuprecht, "The Moral Hazard in Using the Canadian Military as Provincial First Responders," *Macdonald-Laurier Institute* (2020), https://macdonaldlaurier.ca/files/pdf/20201201_Moral_hazard_using_CDN_military_Leuprecht_COMMENTARY_FWeb.pdf.
- ¹⁸ Ibid.
- ¹⁹ Major and Shivji, "Canada's military feeling the strain..." *CBC*, June 24, 2019, <https://www.cbc.ca/news/politics/canada-s-military-adopting-climate-change-1.5186337>.
- ²⁰ Adger et al., "Human Security," 759; Axworthy, "Canada and Human Security: The Need for Leadership," *International Security* 52, no. 2 (Spring 1997), <https://www.jstor.org/stable/40203196>.
- ²¹ Huebert, "Canadian Arctic Sovereignty," 17.
- ²² Sorensen, "After the Security Dilemma: The Challenges of Insecurity in Weak States and the Dilemma of Liberal Values," *SAGE Publications* 38, no. 3 (2007): 365, <https://doi.org/10.1177/0967010607081516>.
- ²³ Dalby, *Security and Environmental Change* (Cambridge: Polity Press, 2009), 46; Kalliojärvi, "Age of Changes: Threat of Climate Change and Its Meaning for Security," in *Climate Change and Arctic Security: Searching for a Paradigm Shift*, ed. Heininen and Exner-Pirot (Cham, Switzerland: Palgrave Macmillan, 2019), <https://doi.org/10.1007/978-3-030-20230-9>.
- ²⁴ Barnett, Matthew, and O'Brien, "Global Environmental Change and Human Security: An Introduction," in *Global Environmental Change and Human Security*, ed. Matthew et al., (Cambridge: MIT Press, 2010), 20; Adger et al., "Human Security," 760.
- ²⁵ Huebert, "Canadian Arctic Sovereignty," 18; Adger et al., 761.
- ²⁶ National Aboriginal Economic Development Board, *Study on Addressing the Infrastructure Needs of Northern Aboriginal Communities*, 2014, 3, <http://www.naedb-cndea.com/reports/northern-infrastructure-report.pdf>; Larsen et al., "Polar Regions," in *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects*, ed. Barros et al., (Cambridge: Cambridge University Press, 2014), 15701, https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-PartB_FINAL.pdf.
- ²⁷ Council of Canadian Academies, "Climate Change Risks," 17, 1920.
- ²⁸ Larsen et al., "Polar Regions," 1583.
- ²⁹ Larsen et al., 1571; Council of Canadian Academies, "Climate Change Risks," 19.
- ³⁰ Campbell et al., "Food Production," in *Canada in a Changing Climate: Sector Perspectives on Impacts and Adaptation*, ed. Warren and Lemmen (Ottawa: Government of Canada, 2014), 101, https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/earthsciences/pdf/assess/2014/pdf/Full-Report_Eng.pdf; Council of Canadian Academies, 24.
- ³¹ Romero-Lankao et al., "North America," in *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part B: Regional Aspects*, ed. Barros et al., (Cambridge: Cambridge University Press, 2014), 1462, https://www.ipcc.ch/site/assets/uploads/2018/02/WGIIAR5-PartB_FINAL.pdf.
- ³² Woetzel et al., "Climate Risk and Response: Physical Hazards and Socioeconomic Impacts," *McKinsey Global Institute*, January 2020, 72, <https://www.mckinsey.com/business-functions/sustainability/our-insights/climate-risk-and-response-physical-hazards-and-socioeconomic-impacts>.
- ³³ Hernandez, "Food banks in flood-ravaged communities..." *CBC*, December 2, 2021, <https://www.cbc.ca/news/canada/british-columbia/food-banks-in-flood-ravaged-communities-anticipate-long-term-demand-surge-1.6270280>.
- ³⁴ Campbell et al., "Food Production," 116.
- ³⁵ Popovich, "Canadian Water Security in the 21st Century," in *The Security of Canada and Canadians: Implications of Climate Change*, ed. McBean et al. (London, ON: University of Western Ontario, 2010), 44, https://www.ivey.uwo.ca/cmsmedia/202722/climate_security_final.pdf.
- ³⁶ Popovich, 457; Romero-Lankao et al., "North America," 1456.

- ³⁷ Berry et al., “Human Health,” in *Canada in a Changing Climate: Sector Perspectives on Impacts and Adaptation*, ed. Warren and Lemmen (Ottawa: Government of Canada, 2014), 2038, https://www.nrcan.gc.ca/sites/www.nrcan.gc.ca/files/earthsciences/pdf/assess/2014/pdf/Full-Report_Eng.pdf; Council of Canadian Academies, “Climate Change Risks,” 21.
- ³⁸ BC Public Safety and Solicitor General, “Almost 600 lives lost to extreme heat in summer 2021,” November 1, 2021, <https://news.gov.bc.ca/releases/2021PSSG0085-002074>; Council of Canadian Academies, 21.
- ³⁹ Harris et al., “The Effects of Climate Change on Health Security,” in *The Security of Canada and Canadians: Implications of Climate Change*, ed. McBean et al., (London, ON: University of Western Ontario, 2010), 207, https://www.ivey.uwo.ca/cmsmedia/202722/climate_security_final.pdf.
- ⁴⁰ Council of Canadian Academies, “Climate Change Risks,” 22 (see Lyme Disease study).
- ⁴¹ Patz et al., “Climate Change and Infectious Diseases,” *World Health Organization* (2003), 104, <https://www.who.int/globalchange/publications/climatechangechap6.pdf>.
- ⁴² Arent et al., “Key Economic Sectors and Services,” in *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects*, ed. Field et al., (Cambridge: Cambridge University Press, 2014), 663, <https://www.ipcc.ch/report/ar5/wg2/full-report-global-aspects>.
- ⁴³ National Round Table on the Environment and the Economy, “Paying the Price: The Economic Impacts of Climate Change for Canada,” 2011, 15, 40, <http://nrt-trn.ca/wp-content/uploads/2011/09/paying-the-price.pdf>.
- ⁴⁴ Woetzel et al., “Climate Risk and Response,” 54.
- ⁴⁵ Arent et al., “Key Economic Sectors,” 660.
- ⁴⁶ Government of Canada, “Overview of Climate Change in Canada,” 2015, <https://www.nrcan.gc.ca/changements-climatiques/impacts-adaptation/overview-climate-change-canada/10321>.
- ⁴⁷ Council of Canadian Academies, *Technology and Policy Options for a Low-Emission Energy System in Canada*, (Ottawa: Expert Panel on Energy Use and Climate Change, 2015), 39, https://cca-reports.ca/wp-content/uploads/2018/10/energyuse_fullreport_en.pdf.
- ⁴⁸ Galvez and M. MacDonald, “Canada’s Oil and Gas in a Low-Carbon Economy,” *Senate of Canada*, May 4, 2018, <https://sencanada.ca/en/committees/report/56660/42-1>; MacLean, “Paris and Pipelines? Canada’s Climate Policy Puzzle,” *Journal of Environmental Law and Practice* 32, no. 1 (2018), <https://www.researchgate.net/publication/327716676>.
- ⁴⁹ Galvez and M. MacDonald, 12; Government of Canada, “Economic Overview,” *Western Economic Diversification Canada*, 2018, <https://www.wd-deo.gc.ca/eng/243.asp>.
- ⁵⁰ Arent et al., “Key Economic Sectors,” 6623.
- ⁵¹ Adger et al., “Human Security,” 759.
- ⁵² National Intelligence Council, *Implications for US National Security of Anticipated Climate Change*, (Washington: Office of the Director of National Intelligence, 2016), 67, <https://fas.org/irp/nic/climate-change.pdf>.
- ⁵³ Barnett, “The Geopolitics of Climate Change,” *Geography Compass* 1, no. 6 (2007): 1364, <https://doi.org/10.1111/j.1749-8198.2007.00066.x>; Adger et al., “Human Security,” 772.
- ⁵⁴ Brady, “Globalization and Political Instability,” *The American Interest* 11, no 6 (March 8, 2016), <https://www.the-american-interest.com/2016/03/08/globalization-and-political-instability>; Abel, “America is Deeply Divided...” *Maclean’s*, December 5, 2019, <https://www.macleans.ca/society/america-is-deeply-divided-and-some-say-its-only-going-to-get-worse>.
- ⁵⁵ Bremmer and Kupchan, “Top Risks 2021,” *Eurasia Group*, January 4, 2021, 5, <https://www.eurasiagroup.net/files/upload/top-risks-2021-full-report.pdf>.
- ⁵⁶ Homer-Dixon, “The American polity is cracked...” *Globe and Mail*, December 31, 2021, <https://www.theglobeandmail.com/opinion/article-the-american-polity-is-cracked-and-might-collapse-canada-must-prepare>.
- ⁵⁷ Homer-Dixon, “The Great Canadian Climate Delusion,” *Globe and Mail*, June 1, 2018, <https://www.theglobeandmail.com/opinion/article-is-canada-going-to-be-the-first-country-to-break-apart-over-climate>.

- ⁵⁸ Briggs, "Climate Security, Risk Assessment and Military Planning," *International Affairs* 88, no. 5 (2012): 1052, <https://doi.org/10.1111/j.1468-2346.2012.01118.x>.
- ⁵⁹ Council of Canadian Academies, "Climate Change Risks," 2, 26.
- ⁶⁰ Basolo, "Environmental Change, Disasters, and Vulnerability: The Case of Hurricane Katrina and New Orleans," in *Global Environmental Change and Human Security*, ed. Matthew et al., (Cambridge: MIT Press, 2010), 97; Newkirk, "Floodlines," *The Atlantic*, March 11, 2020, Podcast, see esp. Part 5, <https://www.theatlantic.com/podcasts/floodlines>.
- ⁶¹ Carothers, "The Global Rise of Anti-Lockdown Protests," *World Politics Review*, October 15, 2020, <https://www.worldpoliticsreview.com/articles/29137/amid-the-covid-19-pandemic-protest-movements-challenge-lockdowns-worldwide>.
- ⁶² Mosleh, "Canada's yellow vest movement..." *Toronto Star*, January 4, 2019, <https://www.thestar.com/edmonton/2019/01/04/canadas-yellow-vest-movement-looks-like-its-here-to-stay-but-what-is-it-really-about.html>.
- ⁶³ Council of Canadian Academies, "Policy Options," xiv.
- ⁶⁴ Conley and Ruy, *Crossing Borders: How the Migration Crisis Transformed Europe's External Policy*, (Washington: Center for International and Strategic Studies, 2018), 7, https://csis-website-prod.s3.amazonaws.com/s3fs-public/publication/181002_Crossing%20Borders_report.PDF.
- ⁶⁵ Government of Canada, "Syrian Refugee Resettlement Initiative," updated January 21, 2019, <https://www.canada.ca/en/immigration-refugees-citizenship/services/refugees/welcome-syrian-refugees/looking-future.html>.
- ⁶⁶ Markusoff, "Why the explosive debate over asylum seekers could define the next federal election," *Maclean's*, August 3, 2018, <https://www.macleans.ca/news/canada/why-the-explosive-debate-over-asylum-seekers-could-define-the-next-federal-election/>.
- ⁶⁷ International Organization for Migration, *World Migration Report 2020* (Geneva: International Organization for Migration, 2019), 26, 104, https://publications.iom.int/system/files/pdf/wmr_2020.pdf.
- ⁶⁸ Ibid, 97; Government of Canada, "Climate Change and Risk of Displacement in Asia," *Policy Horizons Canada*, 2014, <https://horizons.gc.ca/en/2014/02/01/climate-change-and-the-risk-of-displacement-in-asia>. Romero-Lankao et al., "North America," 1452, 1462.
- ⁶⁹ Strong, *Secure, Engaged*, 7, 49; Greco and von Hlatky, "Soft Contributions are Hard Commitments," *Canadian Foreign Policy Journal* 24, no. 3 (2018): 274, <https://doi.org/10.1080/11926422.2018.1467837>.
- ⁷⁰ Markusoff, "Explosive Debate"; Zine, "Remembering the Quebec City Mosque Attack," *The Conversation*, January 28, 2021, <https://theconversation.com/remembering-the-quebec-city-mosque-attack-islamophobia-and-canadas-national-amnesia-152799>.
- ⁷¹ Noble et al., "Adaptation Needs and Options," in *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects*, ed. Field et al., (Cambridge: Cambridge University Press, 2014), 8368, <https://www.ipcc.ch/report/ar5/wg2/full-report-global-aspects>.
- ⁷² Climate Action Tracker, updated September 15, 2021, <https://climateactiontracker.org/countries/canada/>.
- ⁷³ Government of Canada, "Overview of Climate Change."
- ⁷⁴ Conference Board of Canada, "Canada's Outlook to 2045," updated December 17, 2021, <https://www.conferenceboard.ca/focus-areas/canadian-economics/canadian-long-term-outlook>.
- ⁷⁵ Perry "Canadian Defence Budgeting," in *Canadian Defence Policy in Theory and Practice*, ed. Juneau, Philippe Lagassé, and Vucetic (Cham, Switzerland: Palgrave Macmillan, 2020), 63, <https://doi.org/10.1007/978-3-030-26403-1>.
- ⁷⁶ Klein et al., "Adaptation Opportunities, Constraints, and Limits," in *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects*, ed. Field et al., (New York: Cambridge University Press, 2014), 915, <https://www.ipcc.ch/report/ar5/wg2/full-report-global-aspects/>.
- ⁷⁷ Library of Parliament, *Climate Change: Its Impact and Policy Implications*, (Ottawa: Library of Parliament, 2020), 1819, <https://lop.parl.ca/staticfiles/PublicWebsite/Home/ResearchPublications/BackgroundPapers/PDF/2019-46-e.pdf>.
- ⁷⁸ Hoberg, "The Battle Over Oil Sands Access to Tidewater," *Canadian Public Policy* 39, no. 3 (Sept 2013): 371, <https://www.jstor.org/stable/23594717>.

- ⁷⁹ Lawrynuik, "Oil and Gas in Western Canada Divides Indigenous Communities," *National Observer*, November 6, 2019, <https://www.nationalobserver.com/2019/11/06/features/when-it-comes-oil-and-gas-western-canada-it-divides-indigenous-communities-too>.
- ⁸⁰ Sorensen, "Analysis: Western alienation is very real in Alberta and Saskatchewan," *Global News*, October 25, 2019, <https://globalnews.ca/news/6084080/analysis-western-alienation-alberta-saskatchewan/>.
- ⁸¹ Conference Board of Canada, "Income Per Capita," accessed January 27, 2022, <https://www.conferenceboard.ca/hcp/provincial/economy/income-per-capita.aspx>.
- ⁸² Mintz, "Canada's Catalonia? Careful Ottawa, Western Alienation is Beginning to Rear Its Head Again," *University of Calgary School of Public Policy*, October 13, 2017, <https://www.policyschool.ca/news/canadas-catalonia-careful-ottawa-western-alienation-beginning-rear-head/>.
- ⁸³ Krugel, "Splitting From Canada Won't Solve Alberta's Landlocked Oil Problem," *National Observer*, November 4, 2019, <https://www.nationalobserver.com/2019/11/04/news/splitting-canada-wont-solve-albertas-landlocked-oil-problem-expert>.
- ⁸⁴ Naidu, "FLQ Terrorism in Quebec, A Case Study," *Canadian Journal of Peace and Conflict Studies* 27, no. 4 (1995): 115. <https://www.jstor.org/stable/23607375>.
- ⁸⁵ Nossal, "The Imperatives of Canada's Strategic Geography," in *Canadian Defence Policy in Theory and Practice*, ed. Juneau, Lagassé, and Vucetic (Cham, Switzerland: Palgrave Macmillan, 2020), 123, <https://doi.org/10.1007/978-3-030-26403-1>.
- ⁸⁶ Brock et al., "World Climate Security Report," 138; Guy et al., "Security Threat Assessment," 47.
- ⁸⁷ Fleurbaey, et al. "Sustainable Development and Equity," in *Climate Change 2014: Mitigation of Climate Change*, ed. Edenhofer et al., (Cambridge: Cambridge University Press, 2014), 299, <https://www.ipcc.ch/report/ar5/wg3/>.
- ⁸⁸ Deshpande, "Seven Sinister Strategic Trends," *Canadian Military Journal* 11, no. 4 (2011): 18, http://www.journal.forces.gc.ca/vo11/no4/doc/30728_CMJ.Vol11.4.DDE.FINAL_web.pdf.
- ⁸⁹ Davies, "Irresistible Forces: Long-Term Tectonic Influences on Canada's National Security," *Conference of Defence Associations Institute Vimy Paper no. 38* (2018): 179, <https://cdainstitute.ca/wp-content/uploads/2019/06/Vimy-Paper-Vol.-38-Final-Charles-Davies-1.pdf>.
- ⁹⁰ Ibid, 26; El-Assal and Fields, *Canada 2040: No Immigration Versus More Immigration*, (Ottawa: Conference Board of Canada, 2018), 19, https://www.conferenceboard.ca/temp/536fef1a-4b92-4682-8e7f-98b9218c7a62/9678_Canada2040_NIC-RPT.pdf.
- ⁹¹ "Census Sensibility: Canada's Demography is Changing Fast," *Economist*, May 25, 2007, <https://www.economist.com/news/2007/05/25/census-sensibility>.
- ⁹² Leuprecht, "The Demographics of Force Generation," in *Canadian Defence Policy in Theory and Practice*, ed. Juneau, Lagassé, and Vucetic (Cham, Switzerland: Palgrave Macmillan, 2020), 186, <https://doi.org/10.1007/978-3-030-26403-1>.
- ⁹³ Schubert et al., *Climate Change as a Security Risk*, (Berlin: German Advisory Council on Climate Change, 2007), 206, https://www.wbgu.de/fileadmin/user_upload/wbgu/publikationen/hauptgutachten/hg2007/pdf/wbgu_hg2007_engl.pdf.
- ⁹⁴ Century Initiative, *For a Bigger, Bolder Canada: Long-term Thinking, Starting Now*, (2019), 67, https://uploads-ssl.webflow.com/5f931bff6aee7ca287dbada2/5f99ce137eaf1ee0243f1d98_CI-Report.pdf.
- ⁹⁵ Klein et al., "Adaptation," 916; Somanathan et al., "National and Sub-national Policies and Institutions," in *Climate Change 2014: Mitigation of Climate Change*, ed. Edenhofer et al., (Cambridge: Cambridge University Press, 2014), 1149, https://www.ipcc.ch/site/assets/uploads/2018/02/ipcc_wg3_ar5_full.pdf.
- ⁹⁶ Busby, "The Field of Climate and Security," *Social Science Research Council* (2019), 8, <https://www.ssrc.org/publications/the-field-of-climate-and-security-a-scan-of-the-literature/>.
- ⁹⁷ "Government Effectiveness - Country Rankings," *Global Economy*, accessed January 8, 2020, https://www.theglobaleconomy.com/rankings/wb_government_effectiveness/.
- ⁹⁸ Willems and Baumert, "Institutional Capacity and Climate Actions," *OECD Environment Directorate and International Energy Agency*, (2003), 14, <https://www.oecd.org/env/cc/21018790.pdf>; Romero-Lankao et al., "North America," 1478.
- ⁹⁹ Council of Canadian Academies, "Climate Change Risks," 26.

- ¹⁰⁰ Robertson and Graves, “The Global Exchange: Time for Inspired Leadership,” *Canadian Global Affairs Institute*, January 18, 2021, Podcast, 3:00, https://www.cgai.ca/time_for_inspired_leadership.
- ¹⁰¹ Vance and A. MacDonald, “Shifting Focus but Not Purpose: The Canadian Military’s Role in the COVID-19 Vaccine Rollout,” *Macdonald-Laurier Institute*, November 28, 2020, <https://www.macdonaldlaurier.ca/shifting-focus-not-purpose-canadian-militarys-role-covid-19-vaccine-rollout-carter-vance-adam-p-macdonald-inside-policy/>.
- ¹⁰² Ibid.
- ¹⁰³ Mamuji and Rozdilsky, “Wildfire as an Increasingly Common Natural Disaster Facing Canada: Understanding the 2016 Fort McMurray Wildfire,” *Natural Hazards* no. 98 (2019): 176, <https://link.springer.com/article/10.1007/s11069-018-3488-4>; Government of Canada, “Departmental Results Report 2019-20,” *Public Safety Canada* (2020), see section “Results: What we achieved,” <https://www.publicsafety.gc.ca/cnt/rsrscs/pblctns/dprtmntl-rslts-rprt-2019-20/index-en.aspx#s33>.
- ¹⁰⁴ Mamuji and Rozdilsky, “Wildfire,” 167.
- ¹⁰⁵ Government of Canada, “Adapting to the Impacts of Climate Change in Canada: An Update on the National Adaptation Strategy,” *Environment and Climate Change Canada* (2021), <https://www.canada.ca/content/dam/ecccc/documents/pdf/reports/report-update-national-adaptation-strategy.pdf>.
- ¹⁰⁶ Downe, “The Canadian Banking Model and Lessons Learned from the Global Financial Crisis,” *Policy Options*, June 1, 2010, <https://policyoptions.irpp.org/magazines/g8g20/the-canadian-banking-model-and-lessons-learned-from-the-global-financial-crisis/>.
- ¹⁰⁷ “Financial System Review – 2019,” *Bank of Canada*, accessed December 23, 2020, <https://www.bankofcanada.ca/2019/05/financial-system-review-2019/>.
- ¹⁰⁸ “Financial System Review – 2021,” *Bank of Canada*, accessed January 27, 2022, <https://www.bankofcanada.ca/2021/05/financial-system-review-2021/>.
- ¹⁰⁹ Arent et al., “Key Economic Sectors,” 663.
- ¹¹⁰ Ruttinger et al., “A New Climate for Peace: An Independent Report Commissioned by the G7 Members,” *European Union Institute for Security Studies* (2015), 5, <https://climate-diplomacy.org/magazine/conflict/new-climate-peace>.
- ¹¹¹ Ibid.