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From obscurity to action

*Why Canada must tackle the security dimensions of
climate change*

Humanity is conducting an unintended, uncontrolled, globally pervasive experiment whose ultimate consequences could be second only to a global nuclear war.¹

This was the consensus conclusion of the first international conference on climate change and security—held in Toronto in 1988 and attended by scientists and policymakers from about 50 countries, including Canadian Prime Minister Brian Mulroney. In the 22 years since that groundbreaking event, the climate change-security nexus has not been discussed, debated, or

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¹ "Our changing atmosphere: Implications for global security," secretariat of the World Meteorological Organization, conference proceedings, 27-30 June 1988.

analyzed in any serious, sustained, or comprehensive way in Canada. Today, the security implications of climate change are obscure, almost invisible, to Canadians. This situation seems to be rooted in one or more of the following assumptions. First, the skeptics are right: climate science is imprecise and uncertain, and scientists cannot agree on the origins or consequences of a changing climate. Second, the people who are raising concerns about the possible security implications of climate change are scaremongers who lack credibility and tend to exaggerate risks and dangers. Third, climate change scenarios are not serious enough to translate into genuine security concerns for Canada. And fourth, Canada's security arrangements are adequate to handle whatever happens, and therefore it is okay to wait and see.

This article explores each of these assumptions and argues that too few people and organizations in Canada are paying serious attention to how climate change will affect Canadian security interests. This inattention is puzzling, particularly because two federal government departments have produced solid, science-based studies that could serve as the basis for assessing security risks and ensuring the right security strategies, policies, capabilities, and plans are in place.

Natural Resources Canada engaged hundreds of Canadian scientists in the production of "From impacts to adaptation: Canada in a changing climate," while Health Canada followed with "Human health in a changing climate: A Canadian assessment of vulnerabilities and adaptive capacity."² Together, these two reports provide almost 1000 pages of Canada-specific scientific analysis and projections—an extraordinary advantage that most other countries lack. Yet, paradoxically, security officials and organizations in Canada have failed to leverage this exceptionally strong foundation of scientific expertise.

This article examines why the climate change-security nexus is being ignored in Canada and recommends concrete actions for assessing and tackling a myriad of potential public safety, national security, and international security implications.

2 D.S. Lemmen, F.J. Warren, J. Lacroix and E. Bush, eds., "From impacts to adaptation: Canada in a changing climate 2007," Natural Resources Canada, Ottawa, 2008; Jacinthe Seguin, ed., "Human health in a changing climate: A Canadian assessment of vulnerabilities and adaptive capacity," Health Canada, Ottawa, 2008.

ASSUMPTION 1: THE SKEPTICS ARE RIGHT: CLIMATE SCIENCE IS IMPRECISE AND UNCERTAIN, AND SCIENTISTS CANNOT AGREE ON THE ORIGINS OR CONSEQUENCES OF A CHANGING CLIMATE.

Wrong. An unprecedented consensus now exists among the world's leading climate scientists. They agree that the climate is changing in dramatic ways, that no region of the world is untouched, and that human activity is the principal contributor to increased concentrations of carbon dioxide, methane, and other greenhouse gases in the earth's atmosphere. Scientific uncertainty cannot be cited as a legitimate reason for ignoring the security implications of climate change.

The current "go-to" document for the scientific consensus on climate change is a 2007 report issued by the intergovernmental panel on climate change (IPCC).³ The IPCC concluded that changes in the global climate system during the 21st century will exceed those observed during the previous 100 years, primarily as a result of fossil fuel consumption, agricultural expansion, and other human activities. Scientific academies and societies around the world, including the Royal Society of Canada, have endorsed these conclusions.

Four interrelated dimensions of climate change dominated the most recent IPCC assessment and are critical to understanding potential impacts on Canadian security interests. Average *global temperatures* are projected to rise between 1.1°C and 6.4°C by the end of this century, contributing to the melting of glaciers, the thawing of permafrost, and more frequent heat waves. *Precipitation patterns* will change: increased precipitation is projected for high latitudes and increased desertification and more severe droughts are foreseen in lower latitudes. The *sea level* is expected to rise between 18 and 59 centimetres, increasing the risks of coastal flooding and erosion and accelerating the submergence of some islands. *Extreme weather*—more frequent and more intense weather—is likely to trigger storms, storm surges, and flash flooding.

Despite scientific consensus in support of these IPCC conclusions, controversy emerged in early 2010 when critics pointed to a mistake in the report's projection with respect to the possible disappearance of the

3 The IPCC was established by two United Nations bodies—the World Meteorological Organization and the UN Environment Programme. The IPCC has issued four assessment reports (1990, 1995, 2001, 2007) based on the latest scientific, technical and socioeconomic literature produced worldwide. The 2007 IPCC report was entitled "Fourth assessment report: Climate change—the scientific basis."

Himalayan glaciers by 2035. At about the same time, emails released by scientists affiliated with a climate research centre in East Anglia revealed apparent efforts to limit publication of contrary opinions and avoid disclosures under freedom of information legislation. These revelations shook public confidence in the science underpinning climate change assessments and sparked further allegations, most of which had been debunked by March 2010.⁴

The so-called “climategate” controversy did not erode in any way the central conclusions in the 2007 IPCC report, or the unanimity of support from scientists around the world. Indeed, in a critical development insofar as security is concerned, scientists are now concluding that the IPCC—even in the worst-case emission scenarios—underestimated many aspects of climate change. Among the more disturbing recent findings are the following: the impacts of climate change may persist for more than 1000 years, even after human-induced emissions of carbon dioxide stop completely; unmitigated carbon dioxide emissions will likely generate greater warming than previously estimated; new estimates of average global sea level rise are up significantly; and Arctic sea ice and permafrost are melting more quickly than projected just two years ago.⁵

Canada has its share of climate skeptics. For example, a 2009 report from the Fraser Institute concluded that the scientific debate was far from settled and that “popularized notions about the causes and consequences of global warming are more fiction than fact.”⁶ Similarly, a survey conducted in January 2010 found that although more than half of Canadians polled believed that climate change was happening and was caused by human action, 16 percent thought that it was a natural occurrence and that spending money on mitigation would be wasteful. A full quarter of those polled said they were confused by the debate and unsure of the seriousness of the climate change issue.⁷ So long as Canadians are skeptical or confused about

4 “The emails from the University of East Anglia’s climatic research unit,” Pew Center on Global Climate Change, December 2009.

5 “Key scientific developments since the IPCC fourth assessment report,” *Science Brief* 2, Pew Center on Global Climate Change, June 2009.

6 “New report details overlooked scientific evidence against simplistic climate alarmism,” Fraser Institute, news release, 21 April 2009.

7 Christina Spencer, “Planet in peril: Poll,” *Ottawa Sun*, 4 January 2010 (reporting on a poll conducted by Leger Marketing).

global climate change, they are unlikely to turn their attention to associated security implications.

ASSUMPTION 2: THE PEOPLE WHO ARE RAISING CONCERNS ABOUT THE POSSIBLE SECURITY IMPLICATIONS OF CLIMATE CHANGE ARE SCAREMONGERS WHO LACK CREDIBILITY AND TEND TO EXAGGERATE RISKS AND DANGERS.

Wrong. In addition to climate scientists, the list includes a wide cross-section of world leaders, reputable think tanks, and serious scholars. Concerns about the climate change-security nexus date back at least 30 years, but only recently have national governments, multilateral institutions, and senior military, police, and intelligence officers acknowledged the seriousness of the issue.

The issues around climate change and security gained momentum in the 1990s, thanks in part to the 1988 Toronto conference. Scholars and policymakers frequently cited the issue in the context of redefining security interests after the end of the Cold War. Comparison with the dangers of nuclear conflict was also a recurring theme. Although many worrying scientific projections emerged in the 1990s, climate change failed to gain traction as a security issue in that decade, perhaps because the end of the Cold War was expected to yield a “peace dividend” or because cynics suspected that security agencies were exaggerating “non-traditional” security threats.

With the fall of the twin towers in 2001, attention was riveted on international terrorism. Other security concerns, including those involving climate change, moved to the margins. As time passed and as new antiterrorism measures took hold, security commentary broadened. Three years after the September 11 attacks, British Prime Minister Tony Blair’s chief scientific advisor was courageous enough to question the concentration of attention on terrorism. In a 2004 article, Sir David King observed, “[i]n my view, climate change is the most severe problem that we are facing today, more serious even than the threat of terrorism.”⁸ King’s comment generated some controversy, but at the same time stimulated public interest in the security dimensions of climate change. Three years later, and despite opposition from some member nations, the United Kingdom succeeded in organizing the first-ever climate security debate in the United Nations security council during its 2007 presidency.

8 “Global warming ‘biggest threat,’” BBC News, 9 January 2004.

2007 was also a watershed year for climate change-security research. The IPCC released its fourth assessment report and shared the Nobel peace prize with former US Vice President Al Gore that year. Think tanks and research institutes in the United States, Europe, Asia, and Australia released major reports—with consistent views about the transformational potential of climate change. Senior military and police officials also joined the dialogue that year. A report from the Center for Naval Analysis Corporation received widespread coverage, not only for what it said, but also for the credentials of its advisory board. Eleven retired American admirals and generals endorsed the conclusion that climate change threatens to add new hostile and stressing factors to the national and international security environments.⁹ Mick Keelty, Australia’s senior police officer, likewise caught public attention in 2007 by warning that climate change “has the potential to wreak havoc, cause more deaths and pose national security issues like we’ve never seen before.”¹⁰

Writing and talking about the nexus between climate change and security continued in 2008 and 2009, with more studies published and more conferences convened on the topic. In a significant development, several national governments and multilateral institutions publicly acknowledged climate change as a legitimate and serious significant concern.

Starting with its success in organizing the security council debate in 2007, the United Kingdom has consistently been the most progressive nation with respect to tackling the climate change-security issue. Specialists are stationed at a number of British diplomatic missions, including in Ottawa. The topic appears regularly in speeches by ministers and senior public servants and in key policy documents, including the national security strategy of the United Kingdom.¹¹ Climate change legislation passed in 2008 requires a countrywide climate change risk assessment by 2011 (and every five years thereafter), as well as a regular parliamentary review of adaptation efforts. The Ministry of Defence is approaching climate change as a defence issue for now, not the future, and has published a comprehensive climate

9 “National security and the threat of climate change,” military advisory board, Center for Naval Analysis Corporation, 2007.

10 Jamie Walker and Andrew Faulkner, “Keelty warning on global warming,” *The Australian*, 25 September 2007.

11 “The national security strategy of the United Kingdom: Security in an interdependent world,” Cabinet Office, March 2008.

change strategy. More recently, three major defence publications incorporated climate change as a critical consideration in assessing how military forces will be deployed and challenged in the coming decades.¹² These reports are the most recent illustration of the extent to which the UK government is treating climate change as a mainstream security issue, rather than as a vague, peripheral matter.

As think tanks were issuing major reports on climate change and security in 2007, the United States congress was directing the intelligence community to examine the issue. The head of the National Intelligence Council subsequently advised a congressional committee that “global climate change will have wide-ranging implications for US national security interests over the next 20 years.”¹³ A few months later, Barack Obama’s arrival in the White House seemed to mark a dramatic American reengagement on the climate change file. The new president’s aggressive approach appeared to stem from worries not only about economic and environmental impacts, but also about security risks. During his first week in office, Obama warned that unchecked climate change “could result in violent conflict, terrible storms, shrinking coastlines and irreversible catastrophe.”¹⁴

Rhetoric aside, delivering on climate change has not been easy for the Obama administration. Progress on legislation has stagnated, and two other issues—the economy and health care—have preoccupied the president. His 2010 state of the union address mentioned climate change only once, in the context of clean energy—perhaps reflecting the opposition his administration is experiencing on this issue. At the same time, however, US defence and security organizations have displayed a growing interest

12 “Strategic trends programme: Global strategic trends out to 2040,” Ministry of Defence, 12 January 2010; “Strategic trends programme: Future character of conflict,” February 2010; and “Adaptability and partnership: Issues for the strategic defence review,” green paper presented to parliament by the minister of state for defence, United Kingdom, February 2010.

13 Thomas Fingar, “National intelligence assessment on the national security implications of global climate change to 2030,” statement for the record, house permanent select committee on intelligence and house select committee on energy independence and global warming, 25 June 2008.

14 “Obama announces plans to achieve energy independence,” *Washington Post*, 26 January 2009.

in the topic. In 2009, the Central Intelligence Agency launched the Center on Climate Change and National Security as a resource for the entire US intelligence community.¹⁵ The 2010 quadrennial defense review highlighted climate change as a critical planning factor, as did the first-ever quadrennial homeland security review.¹⁶ Furthermore, in a 2010 threat assessment, US Director of National Intelligence Dennis Blair observed that climate change would have “wide-ranging implications for US national security interests over the next 20 years.”¹⁷

In Australia, research entities and think tanks have been focusing on the security impacts of climate change for several years, as have intelligence and policing organizations. The current prime minister, Kevin Rudd, described climate change as “a most fundamental national security challenge” in a 2008 speech in the Australian parliament introducing that country’s first national security statement.¹⁸

At the multilateral level, the UN general assembly passed a nonbinding resolution in June 2009, expressing deep concern that the adverse impacts of climate change, including sea level rise, could have “possible security implications.”¹⁹ NATO Secretary-General Anders Fogh Rasmussen has been blunt about the potential impact of climate change on military operations. In a speech shortly after taking office in 2009, he told a London audience: “We may not yet know the precise effects, the exact costs or the definite dates of how climate change will affect security. But we already know enough to start taking action...either we start to pay now, or we will pay much more later.”²⁰ The climate change-security nexus also has traction within the

15 “CIA opens Center on Climate Change and National Security,” press release, Central Intelligence Agency, 25 September 2009.

16 “Quadrennial defense review,” Department of Defense, February 2010, and “Quadrennial homeland security review,” Department of Homeland Security, February 2010.

17 Dennis Blair, “Annual threat assessment of the US intelligence community for the senate select committee on intelligence,” office of the director of national intelligence, 2 February 2010, 39.

18 “The first national security statement to the Australian parliament,” address by the prime minister of Australia, 4 December 2008.

19 Claudia Parsons, “Small islands win UN vote on climate change security,” Reuters, 3 June 2009.

20 Anders Fogh Rasmussen, speech on emerging security risks to Lloyd’s of London, 1 October 2009.

Council of the European Union, as evidenced by a 2009 council conclusion that “more vulnerable parts of human society in developing countries and emerging economies will be adversely affected, and will need our support, but developed countries will also suffer.”²¹

By any measure, the list of non-scientific individuals and organizations taking the climate change-security linkage seriously is impressive. Also impressive is the degree of unanimity among them about the five most serious implications: population displacements and climate migrants; resource scarcity and water competition, possibly contributing to conflicts; state fragility and global instability; effects on human health, including the spread of diseases; and more frequent and severe natural disasters. Broad consensus also extends to conclusions relevant to policymaking and priority setting, notably the following: No country is fully prepared to deal with the consequences of climate change; however, poor, unstable countries are going to feel the brunt and they will be the least able to cope. Climate change will create problems on its own, but will also trigger, exacerbate, and multiply other sources of instability and insecurity. Many impacts are inevitable; mitigation efforts can only change their severity. Climate change will alter global governance, and will require a coordinated international response and strong political will. Downplaying the threat of climate change when it is competing with other items on a security agenda is dangerously shortsighted.

Despite this consensus, the 2009 climate change conference in Copenhagen managed only a brief mention of security-related issues within the context of side events. The focus of attention for the world leaders who assembled in Denmark—including Canadian Prime Minister Stephen Harper—was on salvaging some level of consensus after years of talking failed to generate a successor agreement to the Kyoto protocol.

ASSUMPTION 3: CLIMATE CHANGE SCENARIOS ARE NOT SERIOUS ENOUGH TO TRANSLATE INTO GENUINE SECURITY CONCERNS FOR CANADA.

Wrong. Two Canadian government reports—Natural Resources Canada’s “From impacts to adaptation” and Health Canada’s “Human health in a changing climate”—pointed to a myriad of security vulnerabilities, no matter how narrowly or broadly the term “security” is defined. These reports put Canadian research at the forefront internationally, in terms of

21 “Council conclusions on climate change and security,” press release, Council of the European Union, 8 December 2009.

providing a country-specific scientific foundation for policymaking and decision-making. Yet Canada's security players seem disconnected from—and disinterested in—the findings and insights of climate experts.

Canada spans seven climate zones—from temperate to arctic—as well as 40 degrees of latitude. Given its huge land mass and unique footprint, Canada will experience a broad range of climate change impacts—much broader than in most European countries, for example. And because climate change does not respect borders, Canada will also be affected by what happens in the rest of the world. The above-noted reports make clear that, as a result, Canada will face increased risks on three interrelated fronts: public safety, national security and international security. (For an explanation of these terms, see the box at the end of the article.)

Public safety

Changes in climate will have nationwide public safety consequences for Canada. Critical infrastructure—including water treatment and distribution, energy generation and transmission, and transportation—will be vulnerable to climate-induced changes. The increased frequency, intensity, or duration of extreme weather conditions will heighten risks for Canada's aging built environment, as well as for vulnerable populations and communities in areas exposed to natural hazards. Extreme weather will also put the health of Canadians at risk, as will more heat waves, smog episodes, and ecological changes that support the spread of vector-borne diseases. In addition to these nationwide concerns, the Natural Resources Canada report also provided detailed region-by-region assessments, noting among other effects that *Atlantic Canada* can expect more intense storm events, rising sea level, higher storm surges, coastal erosion, and flooding. *Québec* will see increased shoreline erosion in areas where social and economic activity is concentrated. In *Ontario*, water shortages are projected to become more frequent in the heavily populated southern regions, as summer temperatures and evaporation rates rise. On the *prairies*, water scarcity will be the most serious climate risk. In *British Columbia*, water shortages and competition among water uses will increase, with implications for transborder agreements with the US. At the same time, forests will be increasingly vulnerable to pest infestations and fire, and many areas will experience more frequent and sustained drought. In *northern and Arctic Canada*, increased navigability of Arctic waters, expansion of land-based transportation networks, and access to new oil and gas sources may generate tensions on many fronts.²²

22 Lemmen et al., "From impacts to adaptation," 6-7.

These projections point to varying types of challenges for Canadian entities with public safety responsibilities. With regard to emergency management, will current contingency plans, as well as current response and recovery arrangements, be adequate to deal with more frequent and serious natural disasters, including floods, landslides, forest fires, severe storms, drought and water scarcity situations? Where critical infrastructure is concerned, are critical facilities and systems (for example, nuclear power plants, hydroelectric dams, military installations, and transportation networks) vulnerable under any of the scenarios projected by scientists? Will public health, medical, food inspection, disease monitoring, and border services be able to deal with the arrival of pests and diseases currently thought to be rare in or exotic to Canada, as well as rising rates of illness and death due to more extreme and frequent heat waves? And in the area of law enforcement, will social unrest increase and, if so, will Canada's police forces be able to cope? Is the Royal Canadian Mounted Police prepared to deal with new criminal activities spurred by increased marine or land access and lifestyle/habitation changes in the Arctic?

National security

Turning to national security, climate change-motivated activities and events may translate into new or expanded workloads for Canada's intelligence, police, border security, and military institutions.

Climate change activists participate regularly—usually peacefully—in protests at major events (such as the G20 meeting in 2009) and around specific projects (such as coal-burning power plants). Some security experts expect that inaction on climate change, as well as economic disruption and losses linked to its impacts, could fuel a transition from nonviolent to radical protest movements, direct action, even eco-terrorism or anarchy. The eco-terrorism phenomenon is not new to Canada, although past events (such as tree spiking in logging areas) were not linked directly to climate change.²³

Other security analysts see a possible causal connection between climate change and international terrorism, cautioning that extremists could exploit climate change inequities to further their causes. A taped message reportedly from al Qaeda leader Osama bin Laden seemed to confirm this

23 Kate Neville and Leanne Smythe, "Environmental activism or national security threat? Policy options for addressing radical environmental targeting," working paper no. 49, Centre of International Relations, University of British Columbia, May 2009.

linkage in early 2010. In it, he blamed the US and developed countries for not halting climate change, referring to them as “the true terrorists.”²⁴ Many weak states rank high not only in terms of vulnerability to climate change, but also as breeding grounds for terrorist movements. The former chair of the US National Intelligence Council commented on this convergence in 2008: “Logic suggests the conditions exacerbated (by climate change) would increase the pool of potential recruits for terrorism.”²⁵ If these assessments are correct, Canada could experience a spillover effect in the form of an escalating terrorist threat to Canadian interests.

The displacement of people and the possibility of burgeoning numbers of climate migrants are among the most widely discussed implications of climate change. A UN-sponsored study concluded that climate change will “motivate or force millions of people to leave their homes in search of viable livelihoods and safety...the mass of people on the move will likely be staggering and surpass any historical precedent.”²⁶ Some of Canada’s largest diaspora communities are linked to regions expected to be among the most devastated by climate change. A significant flow of climate migrants to Canada could generate social or economic tensions, especially if the country is already experiencing climate-related or other serious challenges.

Finally, rising sea levels and melting ice caps in the Arctic raise the possibility of territorial disputes among major powers over the legal status of the Northwest Passage, independence and sovereignty, and oil and mineral access rights.

These national security-related projections raise many questions for Canadian security organizations, including the following: Is the intelligence community considering whether discontent and frustration relating to climate change could exacerbate extremist/terrorist threats to Canada? Are immigration and border services officials assessing whether and from where Canada might encounter movements of climate migrants, and how to handle them? Is the Department of National Defence considering the

24 Jack Healy, “Bin Laden adds climate change to list of grievances against US,” *New York Times*, 30 January 2010.

25 Pamela Hess, “Report: Climate change linked to US national security,” Associated Press, 25 June 2008.

26 Koko Warner, Charles Ehrhart, Alex deSherbinin, Susana Adamo, and Tricia Chai-Onn, “In search of shelter: Mapping the effects of climate change on human migration and displacement,” Columbia University, May 2009, 1.

likelihood of more situations in which civilian authorities in Canada will seek military assistance, including via the rarely used “aid of the civil power” authority?

International security

While climate change may not be the sole trigger for future international security crises, the phenomenon will worsen already dire situations. Jock Stirrup, former chief of the United Kingdom defence staff, told a London audience in 2007: “Just glance at a map showing the areas most likely to be affected and you are struck at once by the fact that they’re exactly those parts of the world where we see fragility, instability and weak governance. It seems to me rather like pouring petrol onto a burning fire.”²⁷

Any of the following international security scenarios could generate expectations and demands for Canada: Scarce supplies of water, food, and other resources could ignite or intensify conflict between or within states. Coastal flooding, natural disasters, and other phenomena could trigger population displacement internally or internationally, add to the overall numbers of climate migrants and, at the same time, worsen civil disorder and resource shortages in receiving locations. Weather-related disasters, such as tropical storms, floods, and drought, are projected to increase in number and intensity and could destroy critical infrastructure, trigger public health emergencies, and destabilize already-fragile states. Temperature increases could accelerate the spread of human and animal diseases. Energy concerns could spark a nuclear power renaissance, generating concerns about the adequacy of international nuclear safeguards and control mechanisms.

Taken together, these scenarios prompt questions about the coping capacity of international security institutions, the preparedness of humanitarian mechanisms, the protection of refugees, and the responses of countries such as Canada to catastrophic situations around the world at a time when specialized resources may be stretched as a result of climate change-induced situations at home. Canadian military, police, and international development agencies will be expected to participate in international security responses—including stabilization and peace-building missions—to regions of the world experiencing multiple layers of climate-related challenges.

27 Sir Jock Stirrup, “Climate change: Politics vs. economics,” speech by the chief of the defence staff, Chatham House, London, 25 June 2007.

ASSUMPTION 4: CANADA'S SECURITY ARRANGEMENTS ARE ADEQUATE TO HANDLE WHATEVER HAPPENS, AND THEREFORE IT IS OKAY TO WAIT AND SEE.

No. While Canada has a respectable record in dealing with public safety, national security, and international security challenges, climate change-induced events will not be security as usual and will stretch Canada's security apparatus in unprecedented ways. The effects of climate change are already being felt globally and across Canada, yet Canadian security organizations have not even assessed the risks in any comprehensive way or identified gaps in national resilience and readiness.

Overall, developed nations are expected to cope better with a changing climate than those in the developing world. But as a report by two American think tanks concluded, "[a] few countries may benefit from climate change in the short term, but there will be no 'winners'.... The new ecosystem is likely to be unstable and in continual flux for decades or longer. Today's 'winner' could be tomorrow's big-time loser."²⁸

Canadian public safety, national security, and international security organizations have considerable experience in responding to terrorism, organized crime, and natural disasters at home, and in deploying abroad to conflict zones and on humanitarian missions. Indeed, many past deployments (within and outside Canada) of military, humanitarian, and disaster response personnel had direct environmental links—hurricanes, tropical storms, floods, ice storms, or forest fires. While this track record will serve Canada well in dealing with climate change, several characteristics of the phenomenon will impose a new order of demands, expectations, and stresses.

First, the frequency, severity, and duration of climate change events will be unprecedented. Unlike Canada's experience to date with situations such as the 1998 ice storm, future events will not be abrupt, of short duration, or restricted to small geographic regions. Nor will they be once-in-a-lifetime events. Second, the concurrence and pervasiveness of climate change-induced events will exacerbate their impact. Even developed states will struggle to cope as multiple events occur simultaneously—at home

28 Kurt M. Campbell, Jay Gullede, J.R. McNeill, John Podesta, Peter Ogden, Leon Fuerth, R. James Woolsey, Alexander T.J. Lennon, Julianne Smith, Richard Weitz, and Derek Mix, "The age of consequences: The foreign policy and national security implications of global climate change," Center for Strategic and International Studies and Center for a New American Security, November 2007, 8.

and around the world—compounding crises and straining the resilience and capacity of governments, communities, and individuals. As a recent Brookings Institution report put it, “[n]o precedent exists for a disaster of this magnitude—one that affects entire civilizations in multiple ways simultaneously.”²⁹

Many Canadian climate change scenarios would likely overwhelm provincial and municipal capacities and would be bumped up to the federal level, where concerns about capabilities and readiness persist. In responding to a senate committee’s inquiry about how Canada would deal with a disaster on the scale of hurricane Katrina, Toronto’s emergency manager surmised that the level of preparedness demonstrated by the federal government would be “insufficient.”³⁰ Similarly, Health Canada warned in 2008 that Canadian public health and emergency management gaps could “significantly affect the ability of Canadians to plan for and respond to climate change.”³¹

Climate change gets only a passing mention in most public documents produced by Public Safety Canada, the RCMP, CSIS, and other federal departments and agencies with major security accountabilities. One exception is a 2009 National Defence-Canadian forces assessment of the security environment out to 2030, which concluded that climate change would necessitate changes to military systems, capabilities, and platforms and could lead to increased engagement in the Arctic region and on humanitarian relief and stability operations.³² In contrast, the 2008 “Canada first defence strategy” was silent on climate change.³³

The Canadian forces already have a significant record of responding to climate-related events at home and abroad. In 1988, for example, almost 16,000 military personnel were deployed following a destructive ice storm in eastern Canada. Today, the 62,000 regular personnel and 25,000 reserves are

29 Kurt M. Campbell, ed., *Climatic Cataclysm: The Foreign Policy and National Security Implications of Climate Change* (Washington, DC: Brookings Institution Press, 2008), 18.

30 “Emergency preparedness in Canada,” senate standing committee on national security and defence, 2 September 2008, executive summary and volume 4, 189.

31 Seguin, “Human health in a changing climate,” 1.

32 “The future security environment 2008-2030, part 1: Current and emerging trends,” chief of force development, Department of National Defence, 27 January 2009, 37.

33 “Canada first defence strategy,” Department of National Defence, May 2008.

stretched thin—both in terms of meeting a major Afghanistan commitment and in terms of physical presence in Canada. There is no significant military presence in most major Canadian cities, and no “national guard.”

Taking a wait-and-see attitude with respect to the full range of potential security implications of climate change is unacceptable. Too many questions and uncertainties surround the arrangements in place for managing public safety, national security, and international security consequences.

EXPLAINING CANADA'S INATTENTION

The following obstacles and attitudes seem to be preventing or discouraging more robust attention and concrete action.

No overarching impetus to act

Canada was one of the first countries to sign the Kyoto protocol in 1998, and the Canadian parliament ratified the accord in 2002. Yet Canada has one of the worst records of major signatories to the agreement, with emissions rising about 26 percent since 1990 and now registering about 34 percent above Canada's Kyoto targets.³⁴ In a recent book aptly entitled *Hot Air*, Jeffrey Simpson and two co-authors described the climate change records of successive federal governments—Liberal and Conservative—as “years of failure and fantasy.” They cited the failure to communicate clearly to Canadians, the lack of genuine commitment, and policy confusion and incoherence in Ottawa.³⁵

In 2009, the combination of a new, climate-savvy US president and the Copenhagen conference stimulated Ottawa to focus more intently on the details of climate change. But so long as Canada is a reluctant follower, not a leader, on the climate change file, the associated security consequences are unlikely to garner much attention among Canadian decision-makers—especially since none of the major agents of influence outside government are urging more attention. Unlike their counterparts in many other countries, Canadian academics, journalists, and think tank researchers are not studying, investigating, and reporting regularly on the potential security consequences of climate change. Only a few individuals appear interested in

34 Margaret Munro, “Canada's greenhouse emissions soaring: UN report,” *Vancouver Sun*, 20 April 2009.

35 Jeffrey Simpson, Mark Jaccard, and Nic Rivers, *Hot Air: Meeting Canada's Climate Change Challenges* (Toronto: McClelland & Stewart, 2008), 246-61.

the topic, and most of them focus almost exclusively on Arctic-related risks.³⁶ As a result, Canadians—including elected officials—are largely unaware of how a changing climate could affect Canada’s security interests at home and internationally.

No leadership

A 2008 British think tank report observed that “many of the policy and political actors in charge of responding to climate change are not used to dealing with large, existential threats to their nations’ prosperity and stability.”³⁷ This is certainly true in Canada, where the security implications of climate change—like the phenomenon itself—are complex and multifaceted, with local, national, and international dimensions. The list of accountabilities spans all levels of government, the private sector, and nongovernmental organizations. Only the federal government is positioned to galvanize attention and ensure adequate horizontal collaboration across the full spectrum of Canadian jurisdictions and players. Without strong, committed federal leadership, individual entities will be able to continue to ignore the issue, procrastinate, or slow down collective progress. To date, however, no department, agency, or official in Ottawa has taken ownership of the climate change-security file.

No consensus around the security “fit”

In sharp contrast to many countries, climate change simply does not resonate as a genuine security issue with Canadian security players, academics, journalists, and think tanks.

Why has climate change failed to gain traction as a Canadian security priority? Is it because security agencies are nervous about moving into territory now dominated by their counterparts in environmental and economic portfolios? Is it because the dominant arms of Canada’s security machinery—the military, the intelligence agencies, and law enforcement—view climate change as an distant, intractable challenge and are unsure what role they can play today? Is it because climate change demands a different

36 While the overall climate change-security nexus has received scant attention in Canada, a few academics and journalists have been focusing for some time on the climate-induced transformation of the Arctic security environment. See, for example, a set of papers issued in July 2009 by the Canadian International Council.

37 Nick Mabey, “Delivering climate security: International security responses to a climate-changed world,” Whitehall paper 69, Routledge, 2008, 12-13.

analytical approach—one less dependent on classified information from clandestine sources and investigations than on extensive mining of open sources and leveraging of outside expertise? While some of these reasons may be valid, so too is the evidence that climate change has the potential to cause or contribute to widespread death and misery, physical destruction, economic instability, a loss of public confidence in democratic governance, and geopolitical disruption.

No room for new tasks, new priorities

The agendas of Canada's security organizations are already crowded with here-and-now problems and higher political priorities—Afghanistan, growing cyber threats, organized crime gang activity, and securing major international events. Overtaxed organizations are likely to resist new responsibilities and the diversion of already-stretched effort. The Canadian forces, for example, have traditionally been reluctant to take on non-combat responsibilities, especially as doing so could affect procurement and capital budgets that are heavily oriented towards sustaining combat capabilities for foreign deployments. Pockets of public servants in a few federal departments and agencies are considering the security consequences of climate change, but their work has no discernible priority at more senior levels and no public visibility.

A problem for tomorrow, not today

Especially in minority government situations, decision-makers are firmly focused on the near term, the tactical, and initiatives that generate immediate results. In this scenario, it is tempting to minimize climate change as a down-the-road issue, a problem for tomorrow, not today. But, as the authors of "From impacts to adaptation" pointed out, the impacts of changing climate are already evident in every region of Canada. Regardless of the success of global emission reduction efforts, the world's climate will continue to change for decades, even centuries. Adaptation is essential to reduce vulnerabilities and planning is essential to prepare for consequences that cannot be avoided, including security-related consequences. Thanks to the work of the IPCC, Natural Resources Canada, Health Canada, and Canadian climate scientists, Canadian security officials have the knowledge necessary to start adapting and planning now.

Fear of publicizing the negative

Some analysts argue that public support for aggressive climate change policies would grow if governments highlighted the security consequences of unmitigated temperature, precipitation, sea level, and weather impacts. This is unlikely to happen in Canada, where the Conservative government has been silent and noncommittal on the possible security impacts while minimizing attention around major reports from two science-based departments that describe clearly what lies ahead for Canada. Ignoring or downplaying potential risks and vulnerabilities will not make them disappear.

Fixation on the Arctic

Mention the security implications of climate change to Canadians, and many will think first or only about the Arctic. Melting glaciers, thawing permafrost, increased accessibility, and high economic stakes will no doubt increase the range of security concerns in northern Canada—from smuggling to oil spills. But it's not just about the Arctic. All regions of the country—and all Canadians—will feel the security implications of temperature, precipitation, weather, and sea-level changes. Major population centres, coastal cities, transportation and trade hubs, and other infrastructure considered critical to Canada's functioning and economic prosperity will be affected—from coast to coast to coast.

RECOMMENDATIONS FOR ACTION

Accept climate change as a mainstream security concern

No more time should be wasted arguing over whether climate change fits within Canada's definition of a potential security risk. Climate change must move to the centre from the periphery of Canada's security agenda, and senior officials must give priority to understanding how it could affect Canada's public safety, national security, and international security interests. They must assign talented, fulltime staff to this task and support independent university research. They should also consider convening a major international conference, along the lines of the 1988 Toronto conference, involving scientists, academics, and security officials from around the world, and focused on security vulnerabilities associated with a changing climate.

Start now

In a letter released during the 2008 election campaign, more than 120 of Canada's top scientists urged immediate climate change action. "It seems

people have simply no idea how serious the issue is.... Any further delay will only increase the risks of damage and costs of action.”³⁸ In a 2009 update of its national security strategy, the UK government stressed the need to act on two fronts concurrently. “From a security perspective, it is important to act now to reduce the scale of climate change by mitigation, such as emissions reduction, and by being able to adapt to climate change that is now already unavoidable.”³⁹

So far in Canada, already-busy security officials have ignored or delayed paying serious and sustained attention to the climate change-security linkage. Particularly in a minority government situation, it is unlikely that this issue will appear automatically on the priority lists of ministers preoccupied with near-term matters. So the onus is on the permanent, nonpartisan public service in Ottawa—and on the media, think tanks, and academic specialists—to start focusing on this issue now, and to convince elected officials that it is in the national interest to do so.

Establish leadership

The complexity and breadth of the climate change-security issue calls for clear and robust leadership capable of imposing a horizontal approach, collaboration, and coordination on diverse—and sometimes reluctant—players. Assessing how climate change may affect Canada’s security requires the active engagement not only of governments at all levels, but also the owners and operators of critical infrastructure, organizations outside government that respond to natural and humanitarian disasters, experts in universities and research institutes, and many others. This issue will not receive the attention it deserves if it is simply added to the already onerous responsibilities of a single lead department or agency. Rather, leadership should be assigned to a stand-alone entity with the influence and expertise necessary to break down institutional silos and maintain attention over the longer term.

³⁸ “120 climate scientists criticize Tory policies, urge strategic voting,” *Globe and Mail*, 8 October 2008.

³⁹ “The national security strategy of the United Kingdom: Update 2009—security for the next generation,” Cabinet Office, June 2009.

Take a comprehensive approach

Many other countries are paying much more attention to climate change-security linkages than Canada, yet few are doing so in a genuinely coherent and thorough way. Three trends dominate most national approaches: First, they focus almost exclusively on what will happen *outside* their countries that may affect their security or geopolitical interests, thereby positioning themselves primarily as monitors, spectators, and international crisis responders. Second, they accord scant attention to public safety or homeland security impacts at the national level. Some cities and communities have taken the initiative to understand how climate change might endanger their infrastructure, services, and populations—and to develop adaptation strategies. While laudable, exclusively local approaches mean uneven preparedness and resilience at the national level. Third, they accord limited attention to how climate change could exacerbate high-priority national security threats such as extremism, terrorism, smuggling, and other dimensions of organized crime.

Canada is already late off the blocks with respect to figuring out the security implications of climate change, and therefore should not perpetuate these trends. Canada has a strong cadre of climate scientists and security analysts and the added advantage of a small, centralized, fairly cohesive security community. Accordingly, the country is well positioned to address the climate change-security nexus in an integrated and holistic way.

Start by assessing the risks

To the extent that discussions take place in Canada around the security consequences of climate change, they are anecdotal, vague, and nonspecific. More serious and systematic assessment is long overdue. Here again, Canada has a comparative advantage. Risk assessment, risk profiling, and risk management are well understood and practiced widely within the federal government. For its part, the security community regularly applies sophisticated methodologies to assess risks associated with foreign conflicts, terrorism, natural disasters, accidents, and other threats. Federal security officials should engage a cross-section of internal and external experts to examine a spectrum of credible scenarios—including worst cases—and to assess security vulnerabilities and consequences.

Take concrete action

Climate change should be incorporated in all aspects of Canada's security analysis and policymaking processes. Regular risk assessments should

serve as the prism through which all levels of government and individual communities, the private sector, and the NGO community determine whether their plans and capabilities are robust enough to deal with the most likely security impacts. Some commendable mitigation and adaptation work is already underway across Canada, not as part of a coherent national strategy, but rather as a result of local initiatives. Decision-makers should be prepared to take action to enhance national resilience, for example, by ensuring adequate surveillance for new diseases and pests; reviewing building codes and standards; identifying critical infrastructure located in areas vulnerable to sea level rise, storm surges, or severe weather; expanding forecasting, warning, and public alerting systems, and supporting local emergency preparedness organizations and capabilities. Canada should take a hard look at the United Kingdom's model, which includes statutory requirements for regular climate change risk assessments and reporting on adaptation plans and progress.

Engage internationally

Canada should look outward at the same time as it assesses how climate change will affect it directly. Canadian diplomats should be prepared to address climate change-security concerns bilaterally and multilaterally at every opportunity, including in the follow-on processes to the Copenhagen meetings. As host of the G8 and co-host of the G20 meetings in 2010, and in its campaign for a UN security council seat, Canada has the opportunity and responsibility to support and engage in assessments of countries most at risk, and how those risks could affect regional and global stability. At the same time, Canada should consider ways to help vulnerable states enhance their mitigation and adaptation capabilities and should work multilaterally on contentious issues, including the legal status of "climate refugees." Public safety, public health, police, and intelligence officials should urge the US and Mexico to join in assessing the range of shared security risks.

CONCLUSION

Twenty-two years ago, scientists, politicians, and policymakers meeting in Toronto concluded that unanticipated and unplanned climate change could become the major nonmilitary threat to international security and the future of the global economy. Today, many governments accept that climate change has the potential to stress domestic security capabilities and to destabilize the international arena—simultaneously. Some nations and multilateral institutions have developed strategies and action plans to guide security-

related preparations and responses. The media, universities, think tanks, and research institutions in the US, the UK, Australia, New Zealand, Asia, and Europe have stimulated public dialogue on the security dimensions of a changing climate.

In Canada, meanwhile, the climate change dialogue is focused firmly on economics, politics, and the near-term costs of dealing with causes. There is no excuse for Canada's lack of interest in the most serious potential security threat on the global horizon. Canada is uniquely placed to harness its world-class scientific and security expertise and to take innovative actions that could not only contribute to international security, but could also provide a more secure future for Canada and Canadians. But, in the words of the statement from the 1988 Canada-hosted conference, "[i]t is imperative to act now." Waiting is not an option.

Public safety threats originate with accidental, naturally occurring, or other unintended events, failures, or errors—including the dangers and hazards associated with severe weather and other natural disasters, serious accidents, and technological disruptions. Responsibility for monitoring, assessing, preparing for and responding to public safety occurrences falls primarily to emergency management organizations, as well as first responders, including firefighters, police, ambulance, and other medical and public health services. In Canada, municipal, provincial and territorial governments have primary public safety responsibilities. Public Safety Canada has the lead in coordinating federal government preparations and responses.

National security threats affect the stability of Canada, the functioning of national government institutions, and/or the overall health, personal safety, or economic wellbeing of Canadians. Most national security threats—such as terrorism, espionage, and major organized crime—are intentional, planned, and deliberate. These threats are typically beyond the ability of Canadian communities, provinces, or territories to address adequately and therefore require a coordinated national response. Responsibility for monitoring, assessing, preparing for, and responding to national security threats in Canada falls primarily to national-level organizations, including the Canadian Security Intelligence Service, the Royal Canadian Mounted Police, the Public Health Agency of Canada, Public Safety Canada, and the Canadian forces.

International security threats have the ability to destabilize the international community, cause the breakdown of international institutions, or seriously disrupt diplomatic and trading relationships. Responsibility for monitoring, assessing, preparing for, and responding to international security threats falls primarily to multilateral institutions such as the United Nations and to national governments. In Canada, the Department of Foreign Affairs and International Trade has the lead role, with the Canadian forces, the Canadian International Development Agency, and other federal organizations participating in response efforts.

Prashant Hosur

The Indo-US civilian nuclear agreement

What's the big deal?

The year 2008 saw a paradigm shift in US foreign policy. The US signed the “123” civilian nuclear agreement (referred to as the nuclear deal or simply the deal) with India, a country that is not a nuclear nonproliferation treaty signatory, has nuclear weapons, and until recently was a nuclear pariah. It is extremely surprising that even many scholars of US foreign policy, let alone the public, have given little attention to this rather historic paradigm shift in US policy on civilian nuclear trade. The US government, on the other hand, has passed the new Hyde act, which facilitates the implementation of the civilian nuclear agreement by exempting India from certain requirements of the atomic energy act of 1954.¹

The deal was signed between Indian and the US government on 1 October 2008 and cleared by the Nuclear Suppliers Group. It gives India access to civilian nuclear technology and is supposed to help the country

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¹ The Henry J. Hyde US-India peaceful atomic energy cooperation act, 2006, <http://frwebgate.access.gpo.gov>.