

Vol. 24, No. 1 | WINTER 2024

# CANADIAN MILITARY JOURNAL



National  
Défense

Défense  
nationale

Canada

# Guidelines for the Submission of Manuscripts

**The Canadian Military Journal is the independent flagship quarterly publication of the Profession of Arms in Canada. The Journal publishes professional and scholarly articles, commentaries, opinion pieces, book review essays, and book reviews, as well as select Letters to the Editor.**

It welcomes submission of manuscripts on topics of broad relevance to Canadian defence and the Defence Team, including, but not limited to, the profession of arms, security and defence policy, strategy, doctrine, operations, force generation, force employment and force structure, technology, procurement, military history, leadership, training and military ethics, institutional culture, recruitment, diversity, etc. Forward-looking pieces that present original concepts or ideas, new approaches to old problems and fresh interpretation are especially welcome.

The Journal welcomes submissions from members across all uniformed ranks. The Deputy Minister and Chief of the Defence Staff have delegated authority to approve manuscripts for publication in the Canadian Military Journal to the Journal's Editor-in-Chief, acting on recommendations of the Editorial Board. Serving members of the Canadian Armed Forces and civilian employees of the Department of National Defence need not and should not obtain prior clearance from their superior when submitting a manuscript.

In return, the Journal follows a rigorous double-blind peer review processes that draws on both uniformed and civilian expertise to ascertain suitability of submissions. Manuscripts will be assessed on originality and quality of the argument or discussion, relevance and timeliness of the topic, and quality of the writing style. Unless otherwise agreed upon, the Canadian Military Journal insists upon right of first publication of any given submission. Submissions should not be under review by any other publication while under consideration by the Journal.

Submission guidelines:

- Authors should submit two copies of their manuscript:
  - The first copy: A complete manuscript with a title, author name, author bio, author contact information, abstract, etc. Named and submitted as "Manuscript X Title-Author Name-Anonymized"
  - The second copy: An anonymized version with the author's name, contact information, and bio removed. Named and submitted as "Manuscript X Title-Anonymized"
- Manuscripts may be submitted in either of Canada's official languages;
- As a general rule, manuscripts should not exceed 5,000 words in length (but may be shorter), including endnotes.
- Manuscripts must be submitted in Word format (.docx or .doc) by email at [cmj.rmc@forces.gc.ca](mailto:cmj.rmc@forces.gc.ca);
- Since the Journal is a bilingual publication, manuscripts accompanied by graphics, tables, figures, charts, or maps which support the context of the article must be sent to us separately in a modifiable format to translate them in either official language. Acceptable formats include Word (.docx or .doc), PowerPoint (.pptx or .ppt), Excel (.xls or .xlsx), Vector file (.ai, .eps, .pdf) and any other format that allows the text to be modified. Any supporting photos must be provided in high resolution (minimum 300dpi) in .jpg or .tiff format for print quality and be followed with their appropriate caption and source.
- Manuscripts should conform to standard academic style, using Oxford English or Petit Robert spelling, with endnotes rather than footnotes.
- Endnotes should be embedded and not attached. Full bibliographic references are to be contained in the endnotes. Consult recent editions for examples of appropriate formatting.
- Acronyms and military abbreviations should be used sparingly, but, if unavoidable, they may be used in the body of the text provided that the term is written out in full the first time it is used, followed by the abbreviated form in brackets. Military jargon and slang terms should be avoided: all manuscripts should be readily intelligible to a general informed public readership.

Retraction Policy

The Canadian Military Journal is committed to integrity in publication. In consultation with the Editorial and Advisory boards, the Editor reserves the right to correct the record by publishing a subsequent correction or retraction. Retraction is based on the Committee on Publication Ethics (COPE) guidelines. That is, for an article to meet consideration for retraction, the article must have: unreliable findings (due to major error or falsification), plagiarism, copyright infringement, cases of redundant publication without full disclosure, failure to disclose competing or conflicting interests, substantiated reports of unethical research, or at the Editor's discretion should it turn out that content violates the Journal's ethical, professional, scholarly and other expectations.

# CANADIAN MILITARY JOURNAL



Commander of 5 Canadian Mechanized Brigade Group (5 CMBG), and Sergeant Major of 5 CMBG, fly over a burned area of forest with a member of the Société de protection des forêts contre le feu (SOPFEU) during Operation LENTUS 23-03 in Mistissini, Quebec, on 12 June 2023.

Image by: Corporal Marc-André Leclerc, Valcartier Imaging Section, Canadian Armed Forces



Photo details on page 3.



Photo details on page 5.

3 Note from the Editorial Team

## SPECIAL SECTION ON CLIMATE SECURITY

5 The Era of Climate Security  
*By Dr. Bruno Charbonneau*

11 Human Security, Climate Change, and the Role of the Canadian Armed Forces: British Columbia, 2021  
*By Dr. Wilfrid Greaves*

19 Climate Security and the French Armed Forces  
*By Dr. Adrien Estève*

25 Climate Security and the Indian Armed Forces  
*By Dr. Dhanasree Jayaram and Roja Rose Mathew*

33 Climate Security and the European Union: Concept, Challenges, and Recommendations  
*By Dr. Judith Nora Hardt*

42 Rethinking Firepower and Security Dilemmas in the Era of Climate Change  
*By Dr. Simon Dalby*

## METEOROLOGICAL INTELLIGENCE

48 Canadian military meteorology and the evolution of the corresponding military occupational group  
*By Chief Warrant Officer Marc Boucher*

## INCLUSION AND RESILIENCE

57 The First Partnership for Peace Consortium Workshop on Women, Peace and Security in Professional Military Education: Reflections, Considerations, and the Way Ahead  
*by Dr. Grazia Scoppio and Björn Lagerlöf*

67 Emotional Granularity and Antifragility: A Concept and Tool for Thriving in the Face of Adversity  
*By Dr. Mathieu Gagnon, Dr. Lobna Chérif and Justine Grob*

## BOOK REVIEW

74 Human Security  
*By Brigadier-General Jason Langelier*

Canadian Military Journal  
PO Box 17000, Station Forces  
Kingston, Ontario  
CANADA K7K 7B4  
E-mail: [cmj.rmc@forces.gc.ca](mailto:cmj.rmc@forces.gc.ca)



**CANADIAN  
MILITARY  
JOURNAL**

[www.Canada.ca/canadian-military-journal](http://www.Canada.ca/canadian-military-journal)

**Director and Editor-in-Chief**

Professor  
Christian Leuprecht

**Editors-in-Chief Emeritus**

Professor  
Michael A. Hennessy  
LCol (ret'd)  
John K. Marteinson†  
LCol (ret'd)  
David L. Bashow

**Translation**

Translation Bureau,  
Public Services and  
Procurement Canada

**Interim Administrative Officer**

Kelly Morrice

**Acting Administrative Assistant**

Deesha Kodai

**Digital Editor**

Alex Green

**Associate Editors**

Dr. Bruno Charbonneau

Dr. Matthew Kellett

Dr. Chantal Lavallée

Dr. Paul T. Mitchell

**Editorial Board**

**Co-chairs**

Irina Goldenberg, Ph.D. and  
Peter Kasurak, Ph.D.

Major (retired) Michael Boire

Vanessa Brown, Ph.D.

Stéphanie Chouinard, Ph.D.

Barbara J. Falk, Ph.D.

Major Tanya Grodzinski, Ph.D.

Michael Hennessy, Ph.D.

Hamish Ion, Ph.D.

Philippe Lagassé, Ph.D.

Lieutenant Colonel (retired)  
David Last, Ph.D.

Chris Madsen, Ph.D.

Sean Maloney, Ph.D.

Paul T. Mitchell, Ph.D.

Mulry Mondélice, Ph.D.

Alan Okros, Ph.D.

Huw Osborne, Ph.D.

André Simonyi, Ph.D.

Elinor Sloan, Ph.D.

Colonel (retired)  
Randall Wakelam, Ph.D.

James Boutilier, Ph.D.

Gaëlle Rivard Piché, Ph.D.

Rebecca Jensen, Ph.D.

Craig Mantle, Ph.D.

Adam Lajeunesse, Ph.D.

Colonel (retired)  
Bernd Horn, Ph.D.

Colonel Max Talbot,  
MD, FRCSC

Margaret BK Shepherd

Grazia (Grace) Scoppio, Ph.D.

Captain (retired)  
Nancy Taber, Ph.D.

Robert Fonberg

Major General (retired)  
Daniel Gosselin

Lieutenant-Commander  
Brent Lemon

Major General (retired)  
Craig Aitchison

Lieutenant-General (retired)  
Al Meinzinger

Lieutenant Colonel (retired)  
Michael A. Rostek, Ph.D.

Karen D. Davis, Ph.D.

Lieutenant-General (retired)  
Michael Hood

Lieutenant Colonel  
Andrew Godfrey, Ph.D.

Major-General (ret'd)  
David Fraser

Vice-Admiral (ret'd)  
Paul A. Maddison

**Advisory Board**

**Chairman**

Major-General Denis O'Reilly,  
Commander, Canadian  
Defence Academy (CDA)

**Members**

Colonel Marty Cournoyer,  
representing Chief of the  
Air Staff (CAS)

Dr. Jill Scott, Principal, Royal  
Military College (RMC)

Captain (N) J. Jeffrey  
Hutchinson, representing  
Chief of the Naval  
Staff (CNS)

Brigadier-General Pascal  
Godbout, Commandant  
Royal Military College (RMC)

Major Chris Young,  
representing Chief of  
Staff Army Strategy

Lieutenant-Colonel Eric J.  
Weaver, Director Canadian  
Forces Military Law Centre  
(CFMLC), Canadian Defence  
Academy (CDA)

Ms. Hanya Soliman,  
representing Chief of the  
Defence Intelligence (CDI)

**NOTE TO READERS**

As a bilingual journal, where citations are translated from their original language, the abbreviation [TOQ] at the end of the note, which stands for "translation of original quote," indicates to the readers that the original citation can be found in the published version of the Journal in the other official language.



A CC-130J Hercules aircraft and its crew provide support for Operation LENTUS by transporting vehicles and their drivers from Fort St. John to Kamloops, British Columbia, to participate in firefighting efforts in the region on 11 August 2021.

Image by: Sergeant Amy Martin, Canadian Armed Forces Photo

## NOTE FROM THE EDITORIAL TEAM

**This issue of CMJ introduces a new feature that will run periodically: a special section, which consists of a set of self-contained topical articles curated by a guest editor. This issue's special section on climate security curated by CMJ's Associate Editor, RMC St. Jean Professor Bruno Charbonneau. Climate security is of tactical, operational, and strategic importance to the Canadian Armed Forces, and the Government of Canada recently committed to hosting NATO's Climate Change and Security Centre of Excellence.**

This special section is CMJ's latest effort to publish pieces that reflect the breadth of challenges that confront the profession of arms in Canada. The aim is to expand the topics to which CMJ exposes its defence audience, to inform CAF priorities such as transformation, and, in the process, broaden CMJ's readership and authorship. To this end, the special section includes authors from Canada, France, India, and Germany. Its six articles are preceded by a detailed introduction authored by Professor Charbonneau.

The issue concludes with two contributions from one of CMJ's institutional partners, the Dallaire Centre of Excellence for Peace and Security. They are meant to whet the reader's appetite for a forthcoming special issue on human security.

CMJ continues its transformation. It has just launched its new online electronic submission portal for prospective contributors, which will allow us to manage peer review and the publication process more efficiently and effectively. Readers will see additional changes in the near future, especially with regard to the digital delivery of the journal, including a new website to support a more systematic approach to managing the knowledge and information generated by CMJ and its diverse set of contributors.

Canadian  
Military Journal **CMJ/RMC** Revue militaire  
canadienne





A CH-146 Griffon helicopter flies by the Hudson Bay Range while in support of Operation LENTUS 18-5, Smithers, British Columbia, August 26, 2018.

Image by: Cpl Jeffrey Clement, 19 Wing Imaging  
CX05-2018-0390-119



Panoramic aerial landscape of the ongoing Tremont Creek Wildfire during Operation (OP) LENTUS 21-04 in Kamloops British Columbia, 11 August 2021.

Image by: Lieutenant-Commander Tony Wright, MARPAC/JTFP

## The Era of Climate Security

### BRUNO CHARBONNEAU

*Bruno Charbonneau is Professor and Director of the Centre for Security and Crisis Governance (CRITIC) at the Royal Military College Saint-Jean, founding President of the Climate Security Association of Canada, founding Director of Centre FrancoPaix of the Raoul-Dandurand Chair at UQAM, and Chair of the NATO Research Task Group SAS-182 on the effects of climate change on security.*

### Introduction

**What is climate change? Climate is the statistical average of weather over long time scales. It involves the behaviour of all the Earth's systems (atmosphere, biosphere, cryosphere/ice sheets, and hydrosphere/oceans). The Earth's climate system evolves naturally, but natural change occurs over tens of millions of years. Today, when one speaks of climate change, one is referring to the consequences of human activity on the climate system—to the way in which, over the past century or so, human production of greenhouse gases (GHGs) has very rapidly warmed the climate and continues to drastically transform the Earth's systems. There is nothing "natural" about the speed at which our climate system is currently changing.**

Climate change is inevitably here to stay. Indeed, even if we were to halt the flow of GHG emissions, the stock of GHGs already present in the atmosphere would remain, guaranteeing a certain degree of global warming well into the coming decades and century. Despite the certainty of climate change, there are numerous deep uncertainties regarding its timeline, tipping points, feedback loops, or cascading or compounding effects. On the one hand, the complexity and interconnectedness of earth systems

# There is no scenario in which security, defence, and military policy and actors can avoid the climate crisis

make precise predictions about the long-term impact of climate change extremely difficult, although there is no denying that it dangerously affects and will continue to affect all sectors of human activity and every ecosystem. On the other hand, the scale and nature of climate risks are partly determined by human responses to climate change, both in how responses can reduce risk and impact and in how responses can create other risks. Complex interactions between climate change and socioeconomic and sociopolitical conditions produce increasingly salient and deep uncertainties for strategic planning and decision-making. Put another way, “attempts to anticipate the impact of climate change, especially beyond the short term, face an ‘immense cascading of huge uncertainties’ of ‘truly stupendous’ scale and scope.”<sup>1</sup>

The magnitude, inevitability, and uncertainty that climate change brings should be the starting point of any assessment of its impact on security and defence. There is no scenario in which security, defence, and military policy and actors can avoid the climate crisis. And yet, how and why is climate change important for security and defence? What are the effects of climate change on security and defence activities? Climate change brings about the rapid transformation of the biosphere and geophysical world, and as such transforms the material context of human affairs—a context that most of us still take for granted. Indeed, the “environment” (or nature) is the normalized baseline or the historical background that goes unquestioned in narratives and analyses of human systems and affairs. It is upon this baseline that risk and threat assessments, strategic planning and analysis, platform development, training, war gaming, and so on are made. Climate science tells us that the baseline is shifting at an unprecedented pace and comes with both predictable and uncertain consequences. What happens when the baseline becomes unstable or uncertain?

That climate change is and will continue to be important for security is not—and should no longer be—a controversial claim. The US government has taken several steps to address climate change and its impact on national security, including President Joe Biden’s National Climate Task Force.<sup>2</sup> The US Department of Defense is also producing a Climate Risk Analysis focused on the strategic risks of climate change, which provides a starting point for a shared understanding of these risks and lays out a

path forward. NATO also recognizes that climate change “is a threat multiplier that impacts Alliance security” and it aims “to become the leading international organisation when it comes to understanding and adapting to the impact of climate change on security.”<sup>3</sup> In the summer of 2023, it published its second Climate Change and Security Impact Assessment, a Compendium of Best Practice, and the Greenhouse Gas Emissions Mapping and Analytical Methodology.<sup>4</sup> NATO’s Climate Change and Security Centre of Excellence, based in Montréal, started its work in the fall of 2023. The UN Security Council also acknowledges that climate change can act as a “threat multiplier,” aggravating certain stresses that are often at the heart of conflicts such as poverty, weak institutions, inadequate access to resources, and high unemployment.

Despite the acknowledgment that climate change has significant security consequences and impacts on defence activities, the institutionalization of climate security remains slow and difficult.<sup>5</sup> Moreover, there is no agreement or consensus on what climate security means or implies in practice. What to do about climate change and security is far from clear or settled.<sup>6</sup> What is climate security? Whose security should we talk about or prioritize under climate change conditions? What are the consequences for military organizations or the NATO alliance?

This special issue of the *Canadian Military Journal* seeks to provide some answers and avenues for further research and discussion. Our articles examine how military organizations have tackled or should tackle climate change, what they should consider or reconsider, and how climate change alters security considerations and conceptualizations. The following is a short overview of some of the key issues to consider when thinking about security and military matters under climate change conditions.

## Operational matters

Climate change has numerous consequences for force readiness and the projection of force. Climate hazards and extreme weather events like heat, drought, wildfire, storms, coastal or inland flooding, land degradation, ocean anomalies, and sea ice retreat are increasing in number and intensity. Warming of the atmosphere changes wind patterns and air density, the latter affecting airlift capacity. Warming oceans bring changes in salinity and viscosity, impacting sonar. Rising waters threaten coastal military installations. Extreme temperatures strain electrical grids, damage transportation infrastructure, limit training days, and affect human physical and mental health.

As a RAND study demonstrates, climate change has immediate, long-term, and significant impact on readiness. Climate-related health effects will negatively impact recruitment, retention, and warfighter availability. Climate hazards and extreme events will interrupt training cycles. Both in the





Members from 41 Canadian Brigade Group (CBG) alongside The Alberta Wildfire and the local firefighters, participate in fire prevention operations in Drayton Valley, Alberta, on May 16, 2023, in support of Operation LENTUS 23.

Image by: MCpl Genevieve Lapointe, Canadian Forces Combat Camera, Canadian Armed Forces photo

short and long term, climate change requires logistical functions and deployment capacity to be adapted, transformed, and made more resilient. Equipment will deteriorate faster or be rendered inoperable. Terrain degradation and habitat destruction have consequences for training, infrastructure, and deployment capacity. More importantly, the military and security consequences of climate change must be considered as a whole: "While minor hazards in isolation may be easily overcome, a confluence of multiple pathways could quickly aggregate to mission-level impacts."<sup>7</sup>

The question of the impact of climate change on readiness or military operations is usually approached from a technical or technological perspective. It is largely conceived on a different time scale and scope than the study of how climate change

transforms or impacts the international system of states. Since the geophysical effects of climate change partly depend on their complex interactions with human responses to the climate crisis,<sup>8</sup> the integration of climate science and security/military studies is urgently needed. On top of creating old and new risks, climate change challenges many assumptions about the human ability and capacity to effect social and environmental transformation. The capacity to adapt to climate change has limits, as do human responses, which will fluctuate and be impacted by climate change.

## Climate change and the future of international relations

The international environment in which military organizations are called upon to operate is continuously evolving. In recent years, debates on the future, the crisis, or the death of the international 'rules-based order' suggest an acceleration of change. Academics and pundits alike point to the multiplication of recent and significant crises or fiascos, including the 2008–09 global financial crisis, the failures of Western-led wars in Iraq, Afghanistan, Syria, Libya, and the Sahel,<sup>9</sup> the Russian invasion of Ukraine, the rise of authoritarian regimes, the internal and external challenges to US hegemony, global inflation, trade tensions, the return of some form of economic nationalism, and more.<sup>10</sup> The COVID-19 pandemic and the climate crisis bring underlying environmental strains and constraints to the fore. The concept of *polycrisis* has emerged and even become mainstream to express this entanglement of deeply complex, intertwined, and transformative social, political, economic, and military crises.<sup>11</sup>

In this context, climate change represents the geophysical forces behind this polycrisis moment. Not everything is about climate change, but it is analogous to a tsunami whose waters infiltrate and affect everything. In this sense, it is unprecedented, affecting every sector of human activity and carrying with it the possibility of radical international change or the collapse of civilization. For the purposes of this introductory article and this special issue, two items are worth highlighting.

The first set of challenges is related to the energy transition and its geopolitical consequences. As the world transitions and moves away from fossil fuels, economic, technological, and political centres of power may shift in significant ways. As climate adaptation and mitigation gain urgency, adaptive technologies will become a new global currency. Struggles over the control of energy resources and technology, and the decentralizing potential of green alternatives (like solar), will fundamentally change the power that states (or corporations) derive from controlling energy resources and related technology—both in terms of internal political cohesion and of international relations.

## In Canada, for fiscal year 2020–2021, the Department of National Defence was responsible for 46 percent of all “greenhouse gas emissions from facilities and conventional fleet operations by federal organizations”

Multiple forms of energy supply and systems will dominate the international political economy of energy for decades to come, and thus introduce new risks and uncertainty. Supplies of raw materials and the creation of new economies or supply chains will strain trade relations and likely generate friction and uncertainty.

The second set of challenges, closely intertwined with the first, concerns the way in which the compound risks of climate change and the energy transition will alter state power. On the one hand, the political and economic power of petro-states will gradually decline, creating the possibility of internal and regional instability. New dynamics of competition or cooperation will emerge at the intersection of the energy transition, the rise of new technology, and the changing demands for transition-critical minerals and materials. On the other hand, the same compound risks will increase the likelihood of state collapse. Island countries like Vanuatu face the existential threat of rising oceans, but all states will face a multitude of social, economic, and political challenges as climate change affect human health, food production, water quality and supply, energy production, and infrastructure. The sudden impact of climate-related extreme events coupled with the slow-onset transformation of earth systems will stress and test social resilience and state capacity and power. This issue is relevant to all states, not only “fragile states.” As Will Greaves argues, Canada needs to prepare for climate-related internal turmoil.<sup>12</sup> Even powerful states such as the United States,<sup>13</sup> Russia,<sup>14</sup> and China<sup>15</sup> will face enormous difficulties in the medium to long term, which will most likely impact their internal coherence and capacity to project their strength abroad.

## The military mission of the future

Ultimately, military organizations can do little about climate change per se, which is not to say that they do not bear some responsibility or that they should not adapt and prepare for the consequences. Military organizations often insist that any transformation demanded of them in response to climate change must not affect their operational capacity and their core combat mission. In the next decade or so, the military core mission is unlikely to change, but no future scenario can avoid the question and challenges that climate change and decarbonization pose to the military’s mission *and* organization.

Research has shown that military organizations exert “a substantial influence on the production and consumption patterns of economies, and the environmental demands required to support their evolving infrastructure.”<sup>16</sup> Militaries and wars have a significant impact on greenhouse gas emissions and hence on climate change, requiring that national military organizations confront mitigation challenges in the coming decades. While the world’s militaries are largely spared from GHG emissions reporting, it is estimated that they contribute to anywhere between 1 and 5 percent of global GHG emissions.<sup>17</sup> The Pentagon is by far the biggest emitter, often compared to countries like Portugal. United States military emissions are responsible for 1 to 2 percent of total US emissions, but the US Department of Defense accounted, in 2020, “for 76 percent of all federal energy consumption and 75 percent of all federal greenhouse gas emissions.”<sup>18</sup> In Canada, for fiscal year 2020–2021, the Department of National Defence was responsible for 46 percent of all “greenhouse gas emissions from facilities and conventional fleet operations by federal organizations”<sup>19</sup> As national governments seek to reduce emissions and move toward net zero or carbon-neutral emissions targets, and as the pressure and urgency to decarbonize mounts, national armed forces will be called upon, and will need, to do their part.

The technical challenge is immense when it comes to weapons platforms such as aircraft and navy ships, but it is not unsurmountable. The uncertainty comes from how this will affect the battlefield, the projection and use of force, and even the decision to go to war within the constraints of a net-zero world. As Duncan Depledge argues, “the pursuit of low-carbon warfare will not be easy owing to the practical challenges of transitioning militaries away from fossil fuels.” Furthermore, this transition “will not mitigate all the ethical and environmental concerns associated with military deployments up to and including war,” but it does point to the inevitability for conceptualizing how militaries need to manage their “carbon bootprints.”<sup>20</sup>

At a conceptual level, security and risk assessments will evolve—and indeed will have to evolve—in the face of the deep uncertainties surrounding the security consequences of climate change. Current security risks and threat assessments are grounded in sets of beliefs and assumptions—embedded in military doctrines, organizational interests and practices, social relationships, think-tank reports, and more—that remain linear and limited to the claim that increased warming will “simply” lead to more threats. While this might be the case, understanding the geophysical impacts of climate change on security should include assessments of the transformation of the contemporary beliefs and assumptions that sustain the practices of national and international security. As Neta Crawford<sup>21</sup> and Simon Dalby<sup>22</sup> argue, military power is intrinsically tied to the current fossil-fuel mode of economic and energy production. The whole military “ecosystem” is founded on fossil fuels, from the tactical (vehicles and various weapon platforms), to the strategic (chains of supply, logistic functions), to state interests and war objectives (access to and control of oil fields and markets, for instance). The evolution of energy production, of our understanding of the human impact on the climate and the environment, and of human institutions and organizations under climate change conditions, has the potential to radically transform our understanding and practices of power, military force, and security. If there is one certainty about climate change, it is that future conditions are not well represented by past experiences or assumptions. To give but one example hinted at in the previous section, climate change is a medium- to long-term threat to the very legitimacy, coherence, or existence of several states, given the gravity and scope of the disruptions predicted by climate science.

## This special issue

On the following pages, five articles cover different aspects and case studies of the challenges and attempts to achieve climate security. Will Greaves, in his article “Human Security, Climate Change, and the Role of the Canadian Armed Forces: British Columbia, 2021,” explores the role of the Canadian Armed Forces in protecting Canadians from the effects of climate change. For Greaves, in the mid to long term, climate change is the greatest threat to Canadian security. The CAF might not be the panacea, but they will be called upon to support increasing demands for disaster responses. Most importantly, Greaves argues that a broader conception of human security, that goes beyond one concerned solely by physical violence, is needed to prepare for a climate-changed future.

Adrien Estève analyses the French case. In his article entitled “Climate Security and the French Armed Forces,” he follows the evolution of the integration of climate change into French security and defence thinking and strategic documents.

As he shows, while the French armed forces recognize the security implications of climate change, they understand them in a limited and politically charged manner. The French military focuses on regions where its forces are often deployed or involved, like the Sahel or the Indo-Pacific, and on how the climate-related turmoil generated in these regions might affect continental France.

In turn, Dhanasree Jayaram and Roja Rose Mathew, in “Climate Security and the Indian Armed Forces,” examine how India’s military has managed environmental degradation and disruptions, and engaged in humanitarian assistance and disaster relief, while gradually integrating climate security risks. They argue that India is a distinct case given its “developing country” status (which comes with a different narrative and geopolitical position on global climate governance), the size of its armed forces, and the regional power dynamics it faces. Despite years of experience responding to environmental disruptions, the authors show that integrating climate change into Indian military strategy still encounters resistance due to discord between civilians and the military or competition between services and bureaucracies.

Judith Hardt, in her “Climate Security and the European Union: Concept, Challenges, and Recommendations,” examines how the European Union sees climate security and how it integrates this concept into its policy tools, concepts, and actions. The EU has incorporated climate security into several of its foreign affairs, defence, and strategic documents, but Hardt argues that the EU’s approach is limited in purpose and impact. Climate security is defined within the boundaries of a traditional understanding of security, instead of provoking a foundational rethinking of security, and is thus reduced to considerations of the impact of climate change on regions outside the EU, such as the Sahel or in fragile states. For Hardt, climate change calls for more drastic measures given the existential challenge that it forces us to confront.

Simon Dalby concludes our special issue with a discussion on the need for a fundamental reconceptualization of the ideas of security and security dilemmas. In “Rethinking Firepower and Security Dilemmas in the Era of Climate Change,” he compares the threat and use of firepower—in the sense of the destructive capacity of weapons or a military force—with the threat and use of firepower, in the sense of the use of fossil fuels. Both of these involve the mastery of fire and natural elements, but it is the combustion of fossil fuels that is radically transforming modern societies and the ecological future of the planet and its inhabitants. The comparison between these two understandings of firepower allows him to show how they can both constitute an existential threat, but more importantly how constraining both types of firepower is key to formulating a new security paradigm for the era of climate change.

## Conclusion

If there is one message that this article and this special issue want to convey, it is that climate change is not just another variable to be added to an expanding security agenda or definition. It is not another “thing” or the newest buzzword that security and military actors will have to do or tackle. Of course, it has practical and operational effects—like preventing airplanes from taking off on a hot and melting tarmac<sup>23</sup>—but its significance goes much deeper. Climate change affects the structural and historical conditions of human societies, systems, and relations. It changes and challenges everything as it reconfigures the physical world and, as such, it will affect every sector of human activity and increasingly impose itself on policy priorities, agendas, and practices. Rising seas, food production failures, decreasing water availability and quality,

energy crises, health impacts, and extreme weather disruptions will require and increasingly press upon human communities to rethink and adapt their cities, food supply chains and agricultural practices, water distribution systems, energy supply and needs, transport systems, health care access, search-and-rescue operations, and even, arguably, their value systems. All these challenges hold the potential for structural transformation, cooperation, and progress, but also for competition and conflict, both within and between states. Climate change is forcing us to question our assumptions about almost everything. It demands new ways of thinking and acting. It requires thought and decision-making with a long-term perspective. In the domains of security and defence, it demands new tools for decision-making under conditions of deep uncertainties.<sup>24</sup> And there is no time to waste.

## Notes

- 1 Geoff Mann, 2023. “Treading Thin Air: on Uncertainty and Climate Change,” *London Review of Books*, 45(17), <https://www.lrb.co.uk/the-paper/v45/n17/geoff-mann/treading-thin-air>
- 2 On the practice of climate security, see Joshua W. Busby, 2022. *States and Nature. The Effects of Climate Change on Security*, Cambridge and New York, Cambridge University Press, pp. 222-243.
- 3 North Atlantic Treaty Organization (NATO), “Climate Change and Security Action Plan,” 2021, [online], URL: [https://www.nato.int/cps/en/natohq/official\\_texts\\_185174.htm](https://www.nato.int/cps/en/natohq/official_texts_185174.htm)
- 4 North Atlantic Treaty Organization (NATO), “NATO steps up work on climate change and security,” 2023, [online], URL: [https://www.nato.int/cps/en/natohq/news\\_217212.htm?selectedLocale=en](https://www.nato.int/cps/en/natohq/news_217212.htm?selectedLocale=en)
- 5 Matt McDonald, 2023. “Immovable objects? Impediments to a UN Security Council resolution on climate change,” *International Affairs* 99(4): 1635-1651. <https://doi.org/10.1093/ia/iad064> Also: Anselm Vogler, 2023. “Barking up the tree wrongly? How national security strategies frame climate and other environmental change as security issues,” *Political Geography* 105 (August 102893), <https://doi.org/10.1016/j.polgeo.2023.102893>
- 6 Sharon Burke, 2023. *Achieving Climate Security*, Discussion paper 23-006, Washington, DC, United States Institute of Peace.
- 7 Best, Katharina Ley, Scott R. Stephenson, Susan A. Resetar, Paul W. Mayberry, Emmi Yonekura, Rahim Ali, Joshua Klimas, Stephanie Stewart, Jessica Arana, Inez Khan, and Vanessa Wolf, 2023. *Climate and Readiness: Understanding Climate Vulnerability of U.S. Joint Force Readiness*. Santa Monica, CA: RAND Corporation.
- 8 O'Neill, B., M. van Aalst, Z. Zaiton Ibrahim, L. Berrang Ford, S. Bhadwal, H. Buhaug, D. Diaz, K. Frieler, M. Garschagen, A. Magnan, G. Midgley, A. Mirzabaev, A. Thomas, and R. Warren, 2022. *Key Risks Across Sectors and Regions*. In: *Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge, Cambridge University Press, p. 2416.
- 9 Paul Rogers, 2021. *Losing Control. Global Security in the Twenty-first Century*, fourth edition, London, Pluto Press.
- 10 Helen Thompson, 2022. *Disorder. Hard Times in the Twenty-first Century*, Oxford, Oxford University Press.
- 11 A term popularized by Adam Tooze, 2022. “Welcome to the world of the polycrisis.” *Financial Times*, 28 October. <https://www.ft.com/content/498398e7-11b1-494b-9cd3-6d669dc3de33>  
See also the work of the Cascade Institute: Michael Lawrence, Thomas Homer-Dixon, Scott Janzwood, Johan Rockström, Ortwin Renn, and Jonathan F. Donges, 2023. “Global polycrisis: The causal mechanisms of crisis entanglement,” Version 1.0. Pre-print. Cascade Institute. <https://cascadeinstitute.org/technical-paper/global-polycrisis-the-causal-mechanisms-of-crisis-entanglement/>
- 12 Wilfrid Greaves, 2021. “Climate Change and Security in Canada,” *International Journal* 76, no. 2: 183-203.
- 13 Michael T. Klare, 2019. *All Heal Breaking Loose: The Pentagon's Perspective on Climate Change*, New York, Metropolitan Books.
- 14 Thane Gustafson, 2021. *Klimat. Russia in the Age of Climate Change*, Cambridge and London, Harvard University Press.
- 15 Erin Sikorsky, 2022. *China's Climate Security Vulnerabilities*, Washington, DC, The Center for Climate and Security, an institute of The Council on Strategic Risks.
- 16 Jorgenson, A. K., Clark, B., Thombs, R. P., Kentor, J., Givens, J. E., Huang, X., El Tinay, H., Auerbach, D., & Mahutga, M. C., 2023. “Guns versus Climate: How Militarization Amplifies the Effect of Economic Growth on Carbon Emissions,” *American Sociological Review*, 88(3), 418-453. <https://doi.org/10.1177/00031224231169790>
- 17 Mohammad Ali Rajaeifar, Oliver Belcher, Stuart Parkinson, Benjamin Neimark, Doug Weir, Kirsti Ashworth, Reuben Larbi, and Oliver Heidrich, 2022. “Decarbonize the military—mandate emissions reporting,” *Nature* 611, pp. 29-32, <https://doi.org/10.1038/d41586-022-03444-7>. See also: Ellie Kinney, 2023. “NATO's GHG emissions tracking methodology — a small step forward?” *Conflict and Environment Observatory*, <https://ceobs.org/natos-ghg-emissions-tracking-methodology-a-small-step-forward/>
- 18 Nita Crawford, 2022. *The Pentagon, Climate Change, and War: Charting the Rise and Fall of U.S. Military Emissions*, Cambridge and London: The MIT Press, p. 7.
- 19 Government of Canada, 2022. “Government of Canada's Greenhouse Gas Emissions Inventory,” online, URL: <https://www.canada.ca/en/treasury-board-secretariat/services/innovation/greening-government/government-canada-greenhouse-gas-emissions-inventory.html>
- 20 Duncan Depledge, 2023. “Low-carbon warfare: climate change, net zero and military operations,” *International Affairs*, Volume 99, Issue 2, pp. 667-685, <https://doi.org/10.1093/ia/iad001>
- 21 Crawford, *The Pentagon, Climate Change, and War*.
- 22 Simon Dalby, 2023. “Rethinking Firepower and Security Dilemmas in the Era of Climate Change,” *Canadian Military Journal*, this issue.
- 23 Reuters, 2022. “UK Royal Air Force halts flights at Brize Norton base due to heatwave,” 18 July, <https://www.reuters.com/world/uk/uk-royal-air-force-halts-flights-base-heatwave-melts-runway-sky-2022-07-18/>
- 24 Bruno Charbonneau, Alexandre Giguère, and Pauline Baudu, “Uncertainty, AI, and Decision-making under Climate Change Conditions,” paper presented at the Climate Security Conference of the Centre for Maritime Research and Experimentation, Lercini, Italy, 3-5 November 2023.





A Canadian Armed Forces member conducts a visual recce from a CH-147F Chinook helicopter during Operation LENTUS 21-03, in the British Columbia Interior on July 24, 2021.

Image by: Corporal Jay Naples,  
MARPAAC Imaging Services,  
Canadian Armed Forces photo

# Human Security, Climate Change, and the Role of the Canadian Armed Forces: British Columbia, 2021

## WILFRID GREAVES

*Wilfrid Greaves is Associate Professor of International Relations at the University of Victoria, British Columbia, where his research examines climate change and security and Arctic geopolitics. He has written more than thirty refereed articles and book chapters and is co-editor of *Breaking Through: Understanding Sovereignty and Security in the Circumpolar Arctic* (2021) and *One Arctic: The Arctic Council and Circumpolar Governance* (2017).*

## Introduction

Since its inception in the early post-Cold War period, human security has provided an alternative conceptual and policy framework to guide foreign, defence, and security policies, primarily for international organizations and states in the Global North. Through its human security foreign policy agenda from the mid-1990s to the early-2000s, Canada has advocated for a specific conception of human security that emphasized the protection of civilian populations from violence, criminal prosecution of war crimes and crimes against humanity, and use of military force to prevent mass humanitarian atrocities. This agenda contributed to several significant international policy achievements, including a ban on anti-personnel landmines, prohibition on the use of child soldiers, establishment of a permanent International Criminal Court, promulgation of the Responsibility to Protect doctrine by the UN General Assembly, and contributions to multilateral military interventions in Kosovo, Afghanistan, and Libya.

However, Canada's approach to human security is characterized by certain limitations, namely a narrow emphasis on preventing violent conflict through the coercive use of international law and military force. Although broader definitions of human security have been employed by other state and international actors, Canada, many of its allies, and the North Atlantic Treaty Organization (NATO) have preferred conceptions of human security that limit its utility in domestic contexts and in cases of non-combat military operations related to environmental disasters or extreme weather events. As climate change increasingly threatens people and communities at home and abroad, the Canadian Armed Forces' (CAF) role in providing emergency response and humanitarian assistance necessarily broadens our understanding of the military with respect to human security beyond the framework employed by Canada.

This article examines the CAF's role in protecting the human security of Canadians from climate-related threats. It begins by looking at Canada's approach to human security, before describing the growing impact of extreme weather events on the human security of Canadians, and the role of the CAF. It then examines the case of British Columbia (B.C.) in 2021 to identify gaps in Canada's conceptualization of human security with respect to the non-combat role of the CAF in response to climate-related threats. I argue that by fulfilling tasks related to search and rescue, humanitarian assistance, and disaster response, the CAF is critical for protecting the human security of Canadians from climate-related threats. However, Canada's narrow conception of human security fails to accurately assess such threats or anticipate the growing non-combat role of the military in response to climate change. The article concludes with the need to increase the CAF's capabilities and resources to protect against climate-related threats, and to adopt a widened policy framework for human security in Canada.

## Human Security: Canada's Narrowed Approach

Human security emerged in response to the policy and conceptual opportunities provided by the end of the Cold War. Building on earlier discussions of how to redefine security,<sup>1</sup> it offered a radical turn away from the long-dominant national security preoccupation with strategic rivalry between the American and Soviet superpowers and relations with other nuclear-armed states. The original human security concept associated with the United Nations Development Program's (UNDP) 1994 *Human Development Report* sought to change the meaning of security from focusing on the survival and interests of states to the survival and well-being of people. Defined as "safety from such chronic threats as hunger, disease, and repression [...] and protection from sudden and hurtful

disruptions in the patterns of daily life,"<sup>2</sup> human security sought to broaden the analytical framework of security to include threats besides armed violence and military force and deepen it to include protection of communities above and below the nation-state.

The UNDP listed seven dimensions of human security—economic, food, health, environmental, personal, community, and political—encompassing both "freedom from fear" (acute violence and repression) and "freedom from want" (chronic suffering and privation). This broad and deep UNDP approach was widely adopted within the UN system and in the foreign policies of other international actors including Japan and the European Union. Since 2012, the UN definition has included a third pillar, "freedom from indignity," which stresses that all peoples should enjoy "an equal opportunity to enjoy all their rights and fully develop their human potential."<sup>3</sup>

Critics of the UNDP approach have claimed that it incorporated too many elements to usefully guide post-Cold War security priorities. Among these critics was Lloyd Axworthy, Canada's foreign minister from 1996 to 2000, who became a prominent advocate of human security after the term was introduced to Canadian foreign policy under his predecessor.<sup>4</sup> Axworthy argued that "the very breadth of the UNDP approach [...] made it unwieldy as a policy instrument."<sup>5</sup> He directed his department to focus on four specific policy areas: peacebuilding; anti-personnel landmines; protecting the rights of children; and promoting an international system of rules-based trade.<sup>6</sup> Thus narrowed down, Canada's human security foreign policy agenda produced several concrete foreign policy achievements, including the *Ottawa Convention to Ban Anti-Personnel Landmines*; the *Rome Statute* of the International Criminal Court; the Child Soldiers Protocol to the *Convention on the Rights of the Child*; and participation in the 1999 Kosovo War. It also fostered new international norms, notably through Canada's establishment of the International Commission on Intervention and State Sovereignty (ICISS), whose final report introduced a new doctrine for humanitarian intervention into global politics: the responsibility to protect (R2P).

Canada's approach to human security in the early 2000s was narrowed further to define it explicitly in terms of violence.<sup>7</sup> Whereas Axworthy once identified human security as "security against economic privation, an acceptable quality of life, and a guarantee of fundamental human rights,"<sup>8</sup> and a 1999 concept paper specified its focus on "safety for people from both violent and non-violent threats,"<sup>9</sup> Canada's 2002 policy, *Freedom from Fear*, omitted freedom from want entirely. Instead, it reiterated the five priorities of civilian protection: peace support operations, conflict prevention, governance and accountability, and public safety.<sup>10</sup> In 2006, Canada's newly elected Conservative government explicitly redefined human security as "freedom from *violent* threats to people's rights, safety, or lives,"<sup>11</sup> and



A technician with 443 Maritime Helicopter Squadron gives the all clear signal while practicing hoisting drills with a CH-124 Sea King in Smithers, British Columbia on August 31, 2018 in support of Operation LENTUS 18-05.

Image by: Sergeant Andrew Davis, 19 Wing Comox  
CX03-2018-0390-056

listed its policy priorities as peace operations, children in conflict, organized crime, public safety, and terrorism.

Human security language in Canadian foreign policy waned over the following decade under the Conservative government, but the core principles of its narrowed approach remained reflected in Canadian foreign policy and rhetoric throughout the early 2000s as part of an agenda that prioritized legal and military means of protecting civilians in conflict zones, including in the context of the US-led NATO war in Afghanistan.<sup>12</sup> The UNDP's freedom from want vanished entirely, while the freedom from indignity was never incorporated into Canadian policy. Moreover, despite some anticipation that the Trudeau Liberals might return to a human security-focused foreign policy following their election in autumn 2015,<sup>13</sup> this did not occur. Instead, the Liberal government adopted a "feminist foreign policy" which echoed much of the human security agenda, pursuing similar outcomes through a newly gendered discourse.<sup>14</sup> Still narrow in its understanding of threats to human life and well-being, this policy reproduces Canada's approach of applying human security to international rather than domestic challenges,<sup>15</sup> and thus also fails to adequately prepare for climate-related threats to human security at home.

## Extreme Weather and Human Security in Canada

Recent trends show the limitations of both a narrow and a foreign-oriented conception of human security. While earlier research focused on climate-related human security challenges particularly affecting rural, Indigenous, and Northern communities,<sup>16</sup> more recent analyses find no part of Canada to be

immune to climate-related human insecurity.<sup>17</sup> Canada's vast geography and diverse regional communities encompass a wide range of ecological changes, extreme weather events, and environmental disasters across the country, including wildfires, increased precipitation, flooding, drought, blizzards, heatwaves, hurricanes, tornadoes, coastal erosion, and permafrost thaw.<sup>18</sup>

Extreme weather events have become more frequent and destructive. Whereas "in the 1960s and 1970s, loss and damage from extreme weather events in Canada were so low that the insurance industry did not measure or actively manage this peril. In the 1980s, the industry paid less than \$0.1 billion a year, on average, in severe weather damage claims [...] Recent losses are 20 times that of the early 1980s."<sup>19</sup> In fact, eight of the ten most expensive weather-related insurance years on record have occurred since 2011, and the \$2.1 billion in insured losses in 2021 represents a nearly fivefold increase in the annual average from 1983 to 2008, and just above the new annual average of \$1.8 billion since 2009.<sup>20</sup> When accounting for real costs, which far exceed insured losses, these numbers are conservative estimates. Moreover, unlike the top three insurance loss years of 2016, 2013, and 1998, damages in 2017–2021 were not driven by a single extreme weather event. Instead, the costs of numerous smaller events across the country accumulated to produce a large total of insurance costs. These data suggest a "new normal" of multi-billion-dollar annual weather-related losses, punctuated by even more expensive and destructive extreme weather events fuelled by climate change.

As a result of climate-related extreme weather, the CAF have increased their domestic operational tempo, providing humanitarian assistance and emergency response to environmental disasters. Militaries are good at mounting large logistical operations on short notice, making them an indispensable tool for government to respond to emergencies. Operation LENTUS, the standing framework through which civilian authorities request CAF assistance in response to natural disasters, was activated at least 38 times with increasing frequency between 2010 and 2022.<sup>21</sup> For instance, there were 12 deployments between 2010 and 2016, compared to 26 between 2018 and 2022, with seven deployments in four provinces and two territories in 2021 alone. In that year, hundreds of military personnel were deployed to help prepare for and assist with flooding in Yukon and B.C., wildfires in B.C., Ontario, and Manitoba, and flooding in Newfoundland, and to provide potable water for Iqaluit, Nunavut after thawing permafrost caused diesel contamination of the municipal water system. Meanwhile, hundreds more CAF members supported the federal government's response to COVID-19 by distributing vaccines and assisting with the implementation of other public health support through Operations LASER and VECTOR.

While some LENTUS deployments are relatively small or have straightforward tasks, others are large operations





A CH-149 Cormorant helicopter and its crew from 442 Search and Rescue Squadron provide support for Operation LENTUS, evacuating people out of Merritt, British Columbia (BC), after heavy rain triggered mudslides along a BC highway on 15 November 2021.

Image by: Corporal Parker Salustro, Canadian Armed Forces Photo

responding to the most destructive environmental disasters in Canadian history. Floods in 2013 displaced more than 100,000 people in southern Alberta. The 2016 Fort McMurray wildfire displaced nearly 90,000 people. In 2021, the combination of wildfires and flooding in British Columbia, discussed below, displaced more than 50,000 people and overland access was temporarily cut off between the west coast of Canada and the rest of the country. Each of these disasters was successively the costliest in Canadian history. Whereas the 2013 Alberta floods caused approximately \$5 billion in damage, the Fort McMurray wildfire caused nearly \$10 billion in total damage, and the total costs associated with extreme weather in 2021 in B.C. are estimated as high as \$17 billion, or five per cent of the province's GDP.<sup>22</sup>

Such threats to human security domestically are increasingly common as climate change interacts with other transnational phenomena to undermine human well-being, state capacity, and socio-economic development across Canada.<sup>23</sup> Climate change produces or reinforces interrelated threats to people's lives, livelihoods, and well-being. Extreme weather events that threaten people's lives, homes, and communities invariably inflict economic costs, and people requiring humanitarian assistance for the necessities of life clearly have their human security affected. In such circumstances, the Canadian Armed Forces have a vital non-combat role to play in protecting human security in Canada, which goes beyond the understanding of human security that Canada has historically championed and continues to implicitly employ.

## British Columbia, 2021

The case of British Columbia in 2021 demonstrates the non-combat role the CAF can play in protecting Canadians during climate-related environmental disasters. In that year, B.C. experienced three extreme weather events—unprecedented heat, record-setting wildfires, and catastrophic floods—that threatened human security across the province and required separate CAF deployments under Op LENTUS. As noted, these events contributed to one of the most expensive insurance loss years in Canadian history and to the busiest deployment year for LENTUS on record. They are also directly attributable to human-caused climate change,<sup>24</sup> which makes these not so much exceptional events as harbingers of an increasingly “ghastly” climate-disrupted future.<sup>25</sup> In fact, since 2017, B.C. has experienced its four worst wildfire seasons, and at the time of writing, in 2023, both B.C. and Canada are experiencing their worst ever wildfire season, with approximately five per cent of Canada's total forested area burned.<sup>26</sup>

In 2021, environmental conditions across the southern and eastern parts of B.C. contributed to an exceptionally challenging wildfire season. Below average winter and spring precipitation contributed to widespread drought conditions and dangerous levels of natural wildfire fuels such as trees and dried brush. The province experienced more than 1600 fires during the year, including more than 300 concurrent active fires at the height of the season and 67 separate wildfires of note.<sup>27</sup> Fire conditions were directly worsened by extreme heat experienced in



the early summer. High temperatures continued throughout the month of June, culminating in a fatal, record-breaking heatwave across much of the province. On June 29, the town of Lytton set a new record for highest recorded temperature in Canada at 49.6 degrees Celsius. On June 30, two people died and 90% of built structures in Lytton were destroyed by wildfire. In total, the 2021 wildfires triggered 181 evacuation orders and displaced more than 32,000 people across B.C. While only two fatalities were reported directly from wildfires, 619 extreme heat-related excess deaths were identified between late June and mid-July, with 93% (576) occurring during the so-called heat dome between June 25 and July 1.<sup>28</sup> The high temperatures were not treated as particularly serious by public authorities until after the heat dome, but a provincial state of emergency in response to the wildfires was declared on July 21 and stayed in effect for 56 days.

The severe wildfire season paved the way for further damage from heavy autumn flooding. In November, extreme weather phenomena called “atmospheric rivers” produced record rainfall, tornadoes, flooding, and mudslides across southern B.C. Five people were killed, 18,000 were displaced or ordered to evacuate their homes, including the entire town of Merritt, and thousands of properties were seriously damaged. Many communities were temporarily cut off from overland access, and severe damage to major highways resulted in the Lower Mainland—home to approximately two thirds of B.C.’s population, the bulk of its economy, and the busiest deep-water port in Canada—being cut off from the province’s interior and the rest of the country. Flooding destroyed road, water, sewage, electricity, and agricultural systems across numerous communities, with the cleanup and emergency reconstruction efforts lasting for weeks once floodwaters receded.

The wildfire and flooding disasters both led to the deployment of hundreds of Canadian Armed Forces personnel to provide humanitarian assistance and emergency response. In the midst of ongoing high temperatures, the CAF deployed more than 625 personnel to help combat the wildfires, in addition to out-of-province firefighting support from Alberta, Ontario, Quebec, New Brunswick, Newfoundland, Nova Scotia, the Northwest Territories, Yukon, Australia, and Mexico.<sup>29</sup> Military personnel supported local and provincial wildfire response, including fire suppression, construction, and airlift. In particular, the CAF provided additional capabilities that supported air mobility for firefighters, transportation of supplies and equipment, and emergency rescue, including Chinook and Griffon helicopters that evacuated dozens of people from communities in the Anahim Lake area between July 13 and 15.<sup>30</sup>

On November 17, Op LENTUS was activated again, and the CAF redeployed to B.C. following the province’s state of emergency in response to widespread flooding. Already contributing to a whole-of government effort, more than 500 CAF personnel

The wildfire and flooding disasters both led to the deployment of hundreds of Canadian Armed Forces personnel to provide humanitarian assistance and emergency response. In the midst of ongoing high temperatures, the CAF deployed more than 625 personnel to help combat the wildfires, in addition to out-of-province firefighting support from Alberta, Ontario, Quebec, New Brunswick, Newfoundland, Nova Scotia, the Northwest Territories, Yukon, Australia, and Mexico

delivered food, supplies, and over 20,000 lb of flood response equipment; conducted reconnaissance and damage assessments; constructed flood defences; and helped evacuate people, pets, and livestock.<sup>31</sup> The CAF was once again pivotal in emergency rescue operations, with Cormorant helicopters rescuing nearly 300 people whose vehicles were trapped by landslides on Highway 7 near Agassiz. This exemplifies the capabilities that only the CAF currently possesses, and which will be increasingly required as the climate crisis deepens.

Events in British Columbia in 2021 demonstrate the vital non-combat role played by the Canadian Armed Forces in protecting human security during environmental disasters. They also demonstrate the uneven distribution of human security threats according to sociological factors such as age, affluence, geography, gender, and socio-political marginalization.<sup>32</sup> McBean et al. argued that groups in Canada particularly vulnerable to human insecurity include “the elderly, infants and children [...] the poor, unemployed, homeless, recent immigrants, resource-dependent Aboriginal communities and those with pre-existing health conditions.”<sup>33</sup> Unsurprisingly, the B.C. Coroners Service found that victims of the 2021 heat dome were disproportionately elderly, low income, socially isolated, disabled or in poor health, and women.<sup>34</sup> The locations of fatalities correlated with limited urban green space which produced heat



A CH-146 Griffon helicopter from 417 Combat Support Squadron heads out for local training while on Operation LENTUS 18-05 in Smithers, British Columbia on September 2, 2018.

Image by: Sergeant Andrew Davis, 19 Wing Comox  
CX03-2018-0390-113

islands during the intense summer temperatures.<sup>35</sup> Meanwhile, communities and properties most damaged by the November flooding were located in low-lying rural areas, including lower-income housing types such as mobile homes whose owners are also less likely to be insured.<sup>36</sup>

First Nations in B.C. experience particularly high risk of wildfires and floods, and in 2021 some of them experienced both. The Ulkatcho First Nation issued an evacuation order due to wildfires on July 13 and had a dozen community members evacuated by RCAF helicopter, a decade after the same community was also cut off and threatened by flooding.<sup>37</sup> The five bands of the Scw'exmx people (Nicola Tribes) had dozens of communities flooded or threatened and placed under evacuation order.<sup>38</sup> Fifty members of the Lytton First Nation forced to relocate after their homes were destroyed by wildfires in June were displaced for a second time in six months when the town of Merritt was evacuated in November due to flooding.<sup>39</sup> More than six months after floodwaters receded, First Nations remained among the communities most affected by damage to critical infrastructure, displacement from their homes, and

uncertainty about the costs and viability of reconstruction given the likelihood of future fires and floods.<sup>40</sup> For members of rural and Indigenous communities, in particular, the deployment of the CAF was nonetheless vital to protect their immediate human security during the multiple disasters British Columbians experienced in 2021.

However, the limits of the CAF's role in responding to climate-related threats are also clear. Though the military has increasingly been used as "a force of first resort" in responding to domestic humanitarian emergencies, it is not necessarily best suited to fulfill such a role indefinitely.<sup>41</sup> Given the predicted increase in extreme weather events due to climate change, relying on the CAF to respond to environmental disasters will likely detract from their operational readiness and capabilities to perform other tasks. What is more, the emergency response function of the armed forces is necessarily reactive; the CAF cannot help most communities adapt or prepare for climate-related extreme weather, and can only play a limited role in addressing the source of climate-related insecurity: the human-caused release of greenhouse gas emissions into the atmosphere.<sup>42</sup> Moreover, extreme weather events manifest different kinds of crises, not all of which are within military capabilities to address. While the CAF rescued hundreds of people from potential harm during the wildfires and floods, it could not do so for the hundreds of people who died in their homes during the heat dome; that threat to human security was not within the military's capacity to defend against. So, while the CAF is increasingly vital for dealing with human security emergencies and climate-related environmental disasters, it is not a panacea for the gaps in Canada's disaster management regime.<sup>43</sup> Indeed, Canada's 2023 climate adaptation strategy prioritizes improved disaster resilience and notes that "the increasing rate, severity and unpredictability of climate-related natural disasters are straining Canada's emergency response systems," but makes no specific mention of Op LENTUS or the role of the Canadian Armed Forces in providing critical emergency response capabilities in the face of climate-related emergencies.<sup>44</sup>

## Conclusion

Three conclusions can be drawn from this analysis of human security as a concept within Canadian public policy and as an object threatened by climate-related extreme weather events, as in British Columbia in 2021. First, climate change poses the greatest medium- and long-term threat to security in Canada. While not a novel assessment, this is an increasingly urgent consensus among scholars and experts and is reflected in the growth of new climate security institutions and programs, including the new NATO Climate Change and Security Centre of Excellence sponsored by the Government of Canada. As a growing security threat, climate-related extreme weather will

increase demands on the domestic deployments of the Canadian Armed Forces and thus strain CAF resources since, in the words of the commander of the Canadian Army, “If this becomes of a larger scale, more frequent basis, it will start to affect our readiness” for combat operations.<sup>45</sup> This resource strain will be all the greater as climate change not only increases the frequency and severity of extreme weather events across Canada, but also makes them less predictable and more likely to occur over longer seasons each year.

Second, and as a result, governments across Canada will require more capabilities to protect their citizens, be it more CAF capabilities or services provided by a civilian body.<sup>46</sup> Such an increase in emergency preparedness and response capabilities will be all the more necessary because of the increased likelihood of multiple, overlapping events causing acute human security crises. In this respect, B.C. in 2021 foreshadows a future in which one environmental disaster weakens resilience and preparedness for the next. People and communities in vulnerable locations, or those belonging to structurally disadvantaged groups, will experience compounding challenges that undermine their ability to sustain the necessities of life and require external assistance to survive, salvage what they can, and rebuild. However, provinces and territories draw from the same pool of resources to respond to emergencies, and more frequent and severe extreme weather events globally increase the likelihood that crises will occur at the same time. As jurisdictions confront their own environmental and humanitarian challenges, established practices of resource-sharing and transnational cooperation will be strained due to concurrent demands on finite emergency resources, such as when firefighting capabilities from other Canadian provinces, California, or Mexico are increasingly unavailable because they are required at home. Reduced availability of civilian resources from other jurisdictions will exacerbate the CAF’s role as a “force of first resort” and deepen its role in humanitarian assistance and disaster response. As such, Canada must not just expand its emergency response capacity, it must develop surplus capacity to gain the flexibility to respond to multiple or compounding emergencies domestically and internationally.

Third, this analysis demonstrates the need to assess human security threats within the specific contexts in which they

occur. It underscores the limited utility of a narrow conception of human security in situations where physical violence is limited and political violence low. While the CAF will continue to perform tasks in support of human security, it is clear that “the problem of human security [...] cannot by its very constitution be approached in a narrow manner.”<sup>47</sup> In this sense, the limitations of the Canadian, and later NATO, approach to human security is evident when considering climate-related insecurities. Freedom from acute violence and repression is clearly necessary for human security, but freedom from want, defined as absence of chronic suffering and privation, and freedom from indignity, understood as respect for individual agency and autonomy, are more relevant in the face of climate change.<sup>48</sup> This is particularly the case where states retain high levels of capacity that sustain their monopoly on the legitimate use of force within its borders, as in Canada. British Columbia in 2021 shows that extreme weather events can threaten all seven of the UNDP’s dimensions of broad or holistic human security (economic, food, health, environmental, personal, community, and political) in various configurations. In this sense, there is a clear analytical difference in climate-related human insecurity across spatial and social contexts between wealthy and poor and between stable and fragile states across the global North-South divide.

As Canada belatedly readies itself for a climate changed future, a broad array of tasks related to emergency preparedness, humanitarian assistance and disaster relief, and search and rescue will remain vital contributions of the Canadian Armed Forces towards protecting human security domestically.<sup>49</sup> These tasks need not be military, but until such time as sufficient civilian capabilities for emergency response to environmental disaster are developed by the provinces or federal government, they will remain a key function of Canada’s military. Climate change and its related insecurities are increasingly prevalent features of both international and domestic security politics. They cannot be avoided entirely, but foresight and strategic planning can enhance the structures and capabilities required for the CAF to support government, protect communities, and help protect the human security of Canadians.

## Notes

- Jessica Tuchman Mathews, “Redefining Security,” *Foreign Affairs* 68, no. 2 (1989): 162–177; Richard H. Ullman, “Redefining Security,” *International Security* 8, no. 1 (1983): 129–153.
- United Nations Development Program, “Human development report 1994: New dimensions of human security,” (New York: UNDP, 1994), 23.
- General Assembly, Resolution A/RES/66/290 (September 10, 2012). <https://www.un.org/humansecurity/wp-content/uploads/2022/06/N1147622.pdf>.
- Heather A. Smith and Tari Ajadi, “Canada’s feminist foreign policy and human security compared,” *International Journal* 75, no. 3 (2020): 369.
- Department of Foreign Affairs and International Trade (DFAIT), “Human Security: Safety for people in a changing world,” (Ottawa: Government of Canada, 1999). See also “Notes for an address by the Honourable Lloyd Axworthy, Minister of Foreign Affairs, to the 51st General Assembly of the United Nations,” (New York: United Nations, 1996).
- Lloyd Axworthy, “Canada and human security: The need for leadership,” *International Journal* 52, no. 2 (1997): 185.
- Wilfrid Greaves, “For Whom, From What? Canada’s Arctic Policy and the Narrowing of Human Security,” *International Journal* 67, no. 1 (2012): 219–240.
- Axworthy, “Canada and human security,” 184.
- DFAIT, “Human Security: Safety for people in a changing world,” 5.

- 10 Department of Foreign Affairs and International Trade (DFAIT), *Freedom from Fear: Canada's Foreign Policy for Human Security* (Ottawa: Government of Canada, 2000), 3.
- 11 Department of Foreign Affairs and International Trade Canada, "Human security > Cities: Freedom from fear in urban spaces," (Ottawa: Government of Canada, 2006). Italics added.
- 12 Wilfrid Greaves, "The Failure to Protect: Human Security and Canadian Foreign Policy in Afghanistan," *Journal of Military and Strategic Studies* 10, no. 4 (2008): 1-34.
- 13 Michael Small, "Should Canada Revisit the Human Security Agenda?" (Calgary: Canadian Global Affairs Institute, 2016). [https://www.cgai.ca/should\\_canada\\_revisit\\_the\\_human\\_security\\_agenda](https://www.cgai.ca/should_canada_revisit_the_human_security_agenda) (accessed December 6, 2022).
- 14 Heather A. Smith and Tari Ajadi, "Canada's feminist foreign policy and human security compared."
- 15 Greaves, "For Whom, From What? Canada's Arctic Policy and the Narrowing of Human Security."
- 16 Connie Deiter and Darlene Rude, *Human security and aboriginal women in Canada* (Ottawa: Status of Women Canada, 2005); Wilfrid Greaves, "Insecurities of Non-Dominance: Re-Theorizing Human Security and Environmental Change in Developed States," in *Natural Resources and Social Conflict: Towards Critical Environmental Security*, eds. Matthew A. Schnurr and Larry A. Swatuk, 63-82 (New York: Palgrave, 2012); Heather A. Smith, "Diminishing Human Security: The Canadian Case," in *A Decade of Human Security: Global Governance and the New Multilateralisms*, eds. Sandra J. MacLean, David R. Black, and Timothy M. Shaw, 63-72 (Burlington: Ashgate, 2006).
- 17 Simon Dalby and Leah Lawrence, *Climate Change Impacts on Canadian National Security*. Reimagining a Canadian National Security Strategy No. 2 (Waterloo: Centre for International Governance Innovation, 2021); Wilfrid Greaves, "Climate Change and Security in Canada," *International Journal* 76, no. 2 (2021): 183-203; Gordon McBean et al., *The Security of Canada and Canadians: Implications of Climate Change* (London, ON: The University of Western Ontario, 2012); Margaret Purdy and Leanne Smythe, "From obscurity to action: Why Canada must tackle the security dimensions of climate change," *International Journal* 65, no. 2 (2010): 411-420.
- 18 E. Bush and D. S. Lemmen, eds., *Canada's Changing Climate Report* (Ottawa: Environment and Climate Change Canada, 2019).
- 19 Paul Kovacs, *Climate Risks: Implications for the Insurance Industry in Canada* (The Insurance Institute of Canada, 2020), 53.
- 20 Insurance Bureau of Canada (IBC), "Severe Weather in 2021 Caused \$2.1 Billion in Insured Damage," (January 21, 2020). <http://www.ibt.ca/ns/resources/media-centre/media-releases/severe-weather-in-2021-caused-2-1-billion-in-insured-damage> (accessed June 6, 2022).
- 21 Department of National Defence, "Operation LENTUS" (n.d.) <https://www.canada.ca/en/department-national-defence/services/operations/military-operations/current-operations/operation-lentus.html> (accessed June 6, 2022).
- 22 Marc Lee and Ben Parfitt, *A Climate Reckoning: The economic costs of BC's extreme weather in 2021* (Vancouver: Canadian Centre for Policy Alternatives, 2022).
- 23 Wilfrid Greaves, "Climate Change and Security in Canada."
- 24 Nathan P. Gillet et al., "Human influence on the 2021 British Columbia floods," *Weather and Climate Extremes* 36 (2022): 100441; Stefan Labbé, "Climate change made B.C. heat wave more likely, researchers say," *The Times-Colonist* (July 8, 2021). <https://www.timescolonist.com/bc-news/climate-change-made-bc-heat-wave-more-likely-researchers-say-4690559> (accessed June 7, 2022).
- 25 Corey Bradshaw et al. "Underestimating the Challenges of Avoiding a Ghastly Future," *Frontiers in Conservation Science* 1 (2021): 1-10.
- 26 Brenna Owen, "B.C.'s wildfire crisis arrived decades earlier than experts forecast," *CBC News* (September 20, 2023). <https://www.cbc.ca/news/canada/british-columbia/bc-wildfires-climate-2023-1.6962307> (accessed September 15, 2023).
- 27 British Columbia, "Wildfire Season Summary, 2021." <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-history/wildfire-season-summary#won> (accessed March 4, 2022).
- 28 B.C. Coroners Service, *Extreme Heat and Human Mortality: A Review of Heat-Related Deaths in B.C. in Summer 2021*. Report to the Chief Coroner of British Columbia (June 7, 2022), 13. [https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/death-review-panel/extreme\\_heat\\_death\\_review\\_panel\\_report.pdf](https://www2.gov.bc.ca/assets/gov/birth-adoption-death-marriage-and-divorce/deaths/coroners-service/death-review-panel/extreme_heat_death_review_panel_report.pdf) (accessed June 7, 2022).
- 29 "Wildfire Season Summary." <https://www2.gov.bc.ca/gov/content/safety/wildfire-status/about-bcws/wildfire-history/wildfire-season-summary> (accessed June 6, 2022).
- 30 Chris Thatcher, "CAF Air Task Force on fighting B.C.'s wildfires," *Skies Magazine* (September 3, 2021). <https://skiesmag.com/news/caf-air-task-force-fighting-bc-wildfires/> (accessed June 6, 2022).
- 31 Department of National Defence, "Operation LENTUS." <https://www.canada.ca/en/department-national-defence/services/operations/military-operations/current-operations/operation-lentus.html> (accessed March 14, 2022).
- 32 Idowu Ajubade, "Climate Security and Vulnerable Populations in Canada: Making a Case for Ambitious Policies," in Gordon McBean et al., *The Security of Canada and Canadians: Implications of Climate Change* (London, ON: The University of Western Ontario, 2012): 20-24; Wilfrid Greaves, "Insecurities of Non-Dominance: Re-Theorizing Human Security and Environmental Change in Developed States."
- 33 McBean et al., "The Security of Canada and Canadians," viii.
- 34 B.C. Coroners Service, *Extreme Heat and Human Mortality*.
- 35 Susan Lazaruk, "The 434 in Metro Vancouver who died in heat dome mostly elderly, poor, isolated, and female," *The Vancouver Sun* (February 26, 2022). <https://vancouversun.com/health/local-health/the-434-in-metro-vancouver-who-died-in-heat-dome-mostly-elderly-poor-isolated-female> (accessed June 6, 2022).
- 36 Kerry Gold, "After a year that saw catastrophic fires and floods, B.C. homebuyers face a new reality," (November 26, 2021). <https://www.theglobeandmail.com/real-estate/vancouver/article-fire-and-floods-bc-home-buyers-face-new-reality/> (accessed June 6, 2022).
- 37 Robyn Chambers, "Flooding affecting local economy: Ulkatcho First Nation," *The Williams Lake Tribune* (June 2, 2021). <https://www.wltribune.com/news/flooding-affecting-local-economy-ulkatcho-first-nation/> (June 7, 2022); Rebecca Dyock, "Uktatcho First Nation at Anahim Lake praying for rain," *Coast Mountain News* (July 14, 2021). <https://www.coastmountainnews.com/news/ulkatcho-first-nation-at-anahim-lake-praying-for-rain/> (accessed June 7, 2022).
- 38 NS News, "First Nation community cut off by landslides still hasn't heard from government." <https://www.nsnews.com/bc-news/first-nation-community-cut-off-by-landslides-still-hasnt-heard-from-government-4797536> (accessed April 29, 2024).
- 39 Wendy Stueck, "With climate disasters on the rise, B.C.'s Indigenous communities find themselves at high risk of displacement," *The Globe and Mail* (November 20, 2021). <https://www.theglobeandmail.com/canada/british-columbia/article-with-climate-disasters-on-the-rise-bcs-indigenous-communities-find/> (accessed June 7, 2022).
- 40 PostMedia News, "Fire & Flood, Facing two Extremes: read our 7-part B.C. investigation," *The Vancouver Sun* (May 5-22, 2022). <https://vancouversun.com/news/local-news/fire-and-flood-bc-facing-two-extremes> (accessed June 7, 2022); Amy Smart, "After the flood: First Nations along B.C.'s Highway 8 work on recovery from disaster and trauma," *CBC News* (April 13, 2022). <https://www.cbc.ca/news/canada/british-columbia/shackan-first-nation-highway-8-communities-1.6418296> (accessed June 7, 2022).
- 41 Christian Leuprecht and Peter Kasurak, "The Canadian Armed Forces and Humanitarian Assistance and Disaster Relief: Defining a Role," *CIGI Online* (August 24, 2020). <https://www.cigionline.org/articles/canadian-armed-forces-and-humanitarian-assistance-and-disaster-relief-defining-role/> (accessed June 7, 2022).
- 42 Wilfrid Greaves, "What would it mean to treat climate change like a security threat?" *CIGI Online* (August 4, 2021). <https://www.cigionline.org/articles/what-would-it-mean-to-treat-climate-as-a-security-risk/> (accessed June 7, 2022); Leuprecht and Kasurak, "The Canadian Armed Forces and Humanitarian Assistance and Disaster Relief".
- 43 Peter Kikkert, "To cope with natural disasters, we need a Canadian Resilience Corps," *The Ottawa Citizen* (November 25, 2021). <https://ottawacitizen.com/opinion/kikkert-to-cope-with-natural-disasters-we-need-a-canadian-resilience-corps> (accessed June 7, 2022).
- 44 *Canada's National Adaptation Strategy: Building Resilient Communities and a Strong Economy* (Ottawa: Government of Canada, 2023). <https://www.canada.ca/en/services/environment/weather/climatechange/climate-plan/national-adaptation-strategy.html> (accessed September 15, 2023).
- 45 Lee Berthiaume, "Disaster relief a threat to the Canadian army's fighting edge, commander says," *The National Post* (January 20, 2022). <https://nationalpost.com/news/canada/disaster-relief-threatens-to-hinder-canadian-armys-readiness-for-combat-commander> (accessed June 7, 2022).
- 46 Peter Kikkert, "Creating a Non-Military Disaster Workforce Must be Part of Canada's Climate Change Response," *NAADSN Policy Brief*. North American and Arctic Defence and Security Network (December 8, 2021).
- 47 David Roberts, *Human Insecurity: Global Structures of Violence* (London: Zed Books, 2008), 16.
- 48 UNDP, *New Threats to Human Security in the Anthropocene: Demanding greater solidarity* (New York: United Nations, 2022). <https://www.undp.org/somalia/publications/new-threats-human-security-anthropocene-demanding-greater-solidarity> (accessed December 6, 2022).
- 49 For discussion of the CAF's role in search and rescue operations, see Peter Kikkert and P. Whitney Lackenbauer, "'That Others May Live': Search and Rescue," in *Evolving Human Security: Frameworks and Considerations for Canada's Military*, eds. Shannon Lewis-Simpson and Sarah Jane Meharg, 143-147 (Kingston: Canadian Defence Academy, 2023).





A member of The French Army holds the France Flag during Exercise TRADEWINDS' closing ceremony at Arthur Chung Conference Centre in Georgetown, Guyana, on 27 July 2023.

Image by: MCpl Genevieve Lapointe, Canadian Forces Combat Camera, Canadian Armed Forces Photo

## Climate Security and the French Armed Forces

### ADRIEN ESTÈVE

*Dr. Adrien Estève is an Associate Professor of International Relations at Sciences Po Strasbourg. His current research focuses on the evolution of security practices in the Anthropocene, the recent transformations in international environmental governance, and the changes in conflictuality (lawfare and ecocide). He recently published *Guerre et écologie. L'environnement et le climat dans les politiques de défense (France et Etats-Unis) (2022)* and co-edited the volume *Climate Security in the Anthropocene. Exploring the Approaches of the United Nations Security Council Member States (2023)*.*

On December 13, 2021, the failure of the United Nations Security Council (UNSC) to adopt a resolution on the security implications of climate change and on the need to develop conflict prevention strategies, with one veto (Russia), one vote against (India), and one abstention (China), shows how climate security remains a controversial topic in international security debates. Indeed, this vote reveals a political divide between countries that clearly recognize climate change as a legitimate security issue and those that tend to contest its relevance. China and India, for instance, state that climate change is mainly a sustainable development issue and, if there were a connection between climate change and international security, it should be discussed in the dedicated international environmental forums (namely, the United Nations Climate Change Conferences [COP] organized under the United Nations Framework Convention on Climate Change [UNFCCC]). However, considering the global degradation of ecosystems due to climate imbalances, and the strong and regular acknowledgements of the security implications of climate change made during UN Security Council debates since 2007, this appears as a setback.

Beyond the UNSC, a new grammar of climate security is beginning to emerge in international relations. In his 2021 book, Matt McDonald identifies three perspectives on climate security<sup>1</sup>. In the first one, climate security is constructed as a national security issue, with a particular focus on territorial integrity and border control. The main threats are climate migrations and climate-induced conflicts, and the legitimate actors to handle them are the military and national security forces. In the second one, climate change is conceived as an international security issue, with a particular interest in the geopolitical or global governance implications of climate change. Climate change is viewed in terms of its potential to undermine international norms and institutions. International security responses must hence come from international organizations, especially under the UNFCCC. The third perspective emphasizes human security and the impacts of climate change on the livelihood of people. The focus is on climate vulnerability, which involves a multitude of actors in the prevention or



Members of 430 Tactical Helicopter Squadron conduct a flight in the Pyrenees during Exercise FAUCON GAULOIS in Cazaux, France on 30 September 2021

Image by: Corporal Genevieve Beaulieu, Canadian Armed Forces photo

responses to climate crises (international organizations, businesses, NGOs...), notably in context-specific locales.

Starting in the 1990s, from a national security perspective, some of the most prominent defence officials from (among others) the United States, the United Kingdom, Canada, and New Zealand acknowledged the importance of climate change for the military<sup>2</sup>. In the early 2000s, the expression “threat multiplier” was mainstreamed in the United States to underline how climate change should not be understood as causing wars or armed conflicts, but as a condition that could fuel existing political, economic, social, or religious tensions. More recently, regional security organizations have developed climate security doctrines and work plans to address the strategic and operational implications of climate change. In 2020, the European Union issued its first “Defence and Climate Roadmap” where it stated that “the EU CSDP missions and operations will increasingly have to operate in an environment affected or influenced by climate change [...]. The EU has long recognized that climate change acts as a threat multiplier with serious implications for peace and security across the globe.”<sup>3</sup> In 2021, NATO published its “Climate Change and Security Action Plan” where climate change is presented as “one of the defining challenges of our times. It is a threat multiplier that impacts Allied security, both in the Euro-Atlantic area and in the Alliance’s broader neighborhood.”<sup>4</sup> In its 2022 Strategic Concept, the Alliance also highlighted climate change as a defining challenge of our time, with a profound impact on Allied security. Finally, at the 2023 NATO Summit in Vilnius, Allies welcomed the establishment of a NATO Centre of Excellence for Climate Change and Security in Montréal, Canada.

In parallel, in the last decade or so, a growing grey literature produced by think tanks and security organizations has emerged on the implications of climate change for the armed forces. This production ranges from the acknowledgement of the rapid evolution of combat theatres in several regions of the world due to climate change, such as the Arctic or the Sahel, to more global assessments of the role of climate change in wars and security crises, and to the need to adapt weapon platforms and other operational requirements.

What follows is an analysis of the “climatization” of security narratives within the French Ministry of the Armed Forces since 2015—of how climate change has been integrated into security assessments and strategic documents. The 2015 United Nations Climate Change Conference (COP21) in Paris was a pivotal moment that led to institutional and doctrinal changes within the Ministry, and thus a long-lasting recognition of climate change as a legitimate security issue. The study of this evolution and integration into France’s contemporary strategic doctrine and discussions also shows that the French military

now tends to present itself as a legitimate institution in the management of climate-related crises.

### **Climatization as an analytical framework**

From an analytical standpoint, the emergence of a climate security discourse within the military has traditionally been considered as a process of “securitization” of climate change by scholars; a sort of takeover of climate change by security actors and institutions<sup>5</sup>. However, there is little evidence that climate change is being “securitized” or “militarized,” given that the armed forces, despite some activities, are not in the midst of monopolizing or taking exceptional measures to tackle the causes and impacts of climate change. No military organization seems to consider climate change as an immediate and existential threat.<sup>6</sup> Yet, for Julia Maria Trombetta, the securitization of climate change focuses less on survival and exceptional measures and more on preventive practices.<sup>7</sup> No matter the emphasis of analysts, climate change is still not dominating military strategies and doctrines in 2023, even in leading countries such as France and the United States where climate security has been discussed for decades.

Instead, it is more accurate to speak of the “climatization” of security—that is how climate change is being integrated into and arguably transforming security assessments and institutions. The concept originates from the study of international climate negotiations and is useful to show how climate change has become a dominant topic in global politics, leading to the reframing of various narratives through a climate-change lens. Indeed, “the process of climatization relies on the definition of a given issue as being relevant to climate policies.”<sup>8</sup> As shown by Angela Oels, different policy areas are affected by this new trend, including development and health, but also security<sup>9</sup>. Climatization is also leading to the growing involvement of new security actors in climate governance, who bring their own perspective and understanding of the issue to both national and international debates. In the case of the French Armed Forces, the process of climatization began with COP21 in 2015 and led to the reframing of security concerns in climate terms.

In France, the government has clearly been among the proponents of climate security, along with other European countries like Germany, having championed the idea of a UN climate security envoy at the beginning of 2021 and having supported the creation of the Climate Security Mechanism<sup>10</sup>. The first generation of French reports emerged after 2008 and the acknowledgement of the security implications of climate change found a way in the highest doctrinal document, the 2008 White Paper on Defence and Security<sup>11</sup>. The document used the expressions “global warming” and “climate change” for the first time and many security issues were reframed according to a new climate security narrative: “water scarcity,” “environmental

## The 2015 United Nations Climate Change Conference (COP21) in Paris was a pivotal moment that led to institutional and doctrinal changes within the Ministry, and thus a long-lasting recognition of climate change as a legitimate security issue.

disasters,” “food security,” and “epidemics.” These issues were, however, all connected to a particular perception of an emerging climate-related threat: climate-induced human migrations. Through its focus on Africa, and in a context where the Nicolas Sarkozy presidency made illegal migration one of its core concerns, the White Paper stated that climate change could indirectly trigger “strong migratory boosts” towards Europe and impact France’s security and strategic interests. However, the disappearance of climate security in the 2013 White Paper showed that its status remained fragile in French military doctrine.

In early 2015, the Minister’s cabinet charged the newly created Directorate General for International Relations and Strategy (DGRIS) to organize a special event before COP21. The Ministry organized a conference named “The Implications of Climate Change for Defence,” on October 14, 2015, before the summit meeting. The organizers invited mostly defence officials from Central and North African countries, but also senior officials from the African Union. In addition to this regional focus, they decided to focus on two security phenomena: migration and armed conflicts. France’s Ministry of Defence Jean-Yves Le Drian incorporated these concerns into his final speech in which he underlined the connection between food security and migration. Integrating West African ministers within a panel dedicated to “Pressure on Natural Resources and Food Security” and another on “Extreme Climate Events and Climate Security,” the French focused a substantial part of the conference on a study of the impact of climate change on natural resources management and, ultimately, on armed conflicts in Africa. General De Villiers, Chief of Defence Staff, underlined the “destabilizing impact” of global warming, and its responsibility in the “international security crisis.”<sup>12</sup>



Another important issue that comes out of the French climate security assessments, and that is found in French strategic doctrine, is terrorism. In the context of France's military operations in the Sahel since 2012, there has been a growing interest in the security implications of climate change in the region

### **A new climate security expertise for the defence sector**

The first institutional impact of the climatization of security was the need for the French military to develop its own climate expertise to anticipate the implications of climate change for its missions and more generally for France's security. Global and complex, climate change is also a long-term process. The armed forces expect indicators and guidance to organize and prioritize lines of work and issues. Although the prediction of extreme weather events and meteorological forecasts were always a substantial part of the work of military planners, there was no clear authority on climate change matters until recently. The French Ministry of the Armed Forces lacked expertise on the security implications of climate change before COP21. The discussions that took place during the "Defence and Climate" conference and the cautionary remarks of some of the participants shed light on the absence of scientific studies on the military aspects of the phenomenon in France. Consequently, in the aftermath of COP21, the DGRIS launched a call for projects to create the Defence and Climate Observatory and investigate the implications of climate change for the armed forces.

The winner of the call was a think tank named IRIS (French Institute for International and Strategic Affairs) that began a three-year contract in 2016. The organizers of the 2015 "Defence

and Climate" conference, all civil servants from the DGRIS, were to supervise the Observatory and its team of civilian researchers and to organize regular meetings with the other departments of the Ministry. The Observatory's team is composed of social scientists, specialized in the analysis of climate migrations and environmental security. While the researchers are not civil servants of the Ministry, the regular supervision of the reports by defence officials, the endorsement of the DGRIS, and the clear orientation of the research leads us to consider the work of the Observatory as an example of scientific coproduction. Indeed, the expertise it produced represents an accurate expression of the concerns and the agenda of the Ministry of the Armed Forces, including its growing need for indicators. Between 2016 and 2020, the Observatory raised awareness on the security implications of climate change among both the civil and military components of the Ministry. It also informed the position of the French Armed Forces on climate security through a series of publications addressing new challenges in some regions of the world, such as the Sahel and the Indo-Pacific.

### **Migration and terrorism**

In line with the emergence of the concept of "threat multiplier," and based on the work of the Observatory, French military doctrine does not consider that climate change generates new security issues, but that it can exacerbate existing political, economic, and social tensions. In the 2017 Defence and National Security Strategic Review, a paragraph presents the "most fragile regions in the world," with a specific focus on the Sahel (Niger, Mauritania, Mali, and Chad) and South Asia (Bangladesh), where extreme weather events are likely to have an impact on "migratory movements." Thus, despite the post-2015 work on climate security, the emphasis on migration presents a remarkable continuity with the 2008 White Paper.

Another important issue that comes out of the French climate security assessments, and that is found in French strategic doctrine, is terrorism. In the context of France's military operations in the Sahel since 2012, there has been a growing interest in the security implications of climate change in the region.<sup>13</sup> In the aftermath of France's largest military operation, Operation Barkhane, launched in 2014 in the Sahel region, the Ministry of the Armed Forces showed an interest in prospective work on how climate change may fuel existing local tensions. In the context of an extraordinary summit of the G5 Sahel Joint Force in 2017, the Observatory's Fourth Bulletin mentions the need for more development initiatives to prevent climate-induced poverty, which could in turn lead to

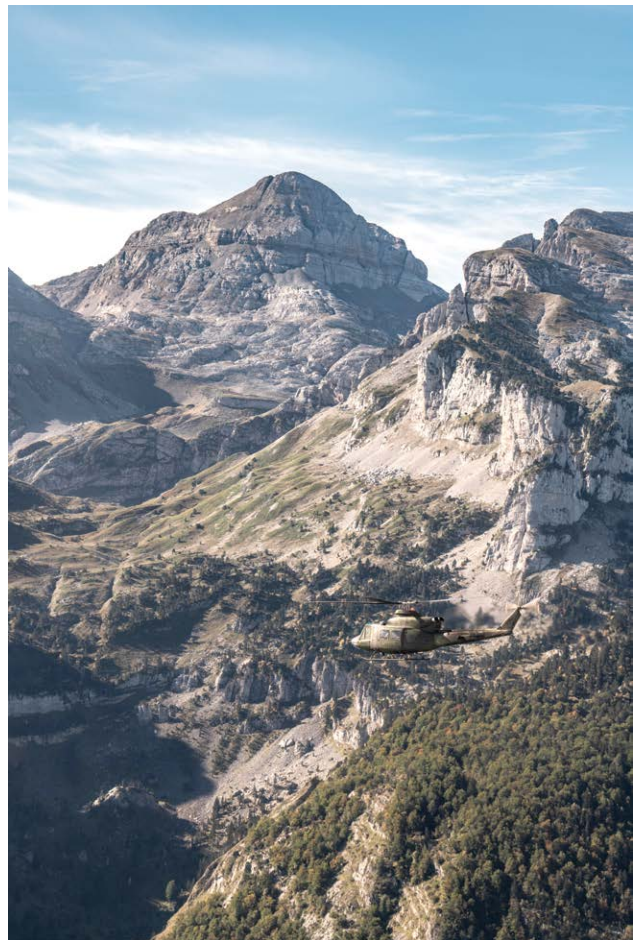


a reinforcement of terrorist groups. The 13<sup>th</sup> report also highlights the relationship between climate change and terrorism in the Sahel region, particularly in Mali and Burkina Faso. The climatization of issues such as illegal fisheries and terrorism comes from the ability to present them as climate risks through the identification of a clear causal chain. A 2018 prospective scenario on the Sahel also identifies a probable rise of “Islamic terrorism” by 2030. In 2022, the end of Operation Barkhane did not put an end to France’s interest for climate security in the Sahel and, in its action plan for the Sahel, climate change remains one of the pillars of security intervention, together with the fight against terrorist groups<sup>14</sup>.

## Towards a more integrated strategy

In 2021 and 2022, the French Ministry of the Armed Forces accelerated its climate agenda. On November 12, 2021, in the context of the 2021 United Nations Climate Change Conference (COP26) in Glasgow, the Minister of the Armed Forces Florence Parly declared at the Paris Peace Forum that “the military must be committed to the fight against climate change” and launched a new ministerial initiative called “The Armed Forces Against Climate Change.” Around twenty countries<sup>15</sup> agreed to be part of the initiative and to cooperate in adapting to climate change and reducing the carbon footprint of military activities. Like the conference organized prior to COP21 in 2015, it presents a more Western picture in terms of the countries involved in the initiative. Whereas mostly African countries attended the 2015 conference, the Paris Peace Forum and the Initiative gathered mostly European countries (Belgium, Lithuania, Spain, Denmark, Ireland, Luxembourg, the Netherlands, Portugal, Slovenia, Norway, and Albania). This also shows the alignment of this initiative with existing EU- and NATO-led initiatives listed in the introduction to this article.

Another pivotal moment was the launch of the first ministerial roadmap entirely dedicated to climate security. On May 3, 2022, the Ministry published its “Climate and Defence” strategy in which it identified three main ways the defence sector will have to work on climate change<sup>16</sup>. First, it will develop “knowledge and anticipation,” meaning that climate expertise remains a strong aspect of climate security governance within the Ministry. The Observatory was thus renewed for an additional four years, during which it will have to share its studies with the highest levels of command (including the Ministry’s cabinet). Second, it will need to stimulate a “global dynamic in terms of adaptation,” and focus more specifically on the operational dimensions of climate change (more hostile theatre of operations, issues with water and energy supplies), the adaptation of military infrastructure (against sea-level rise or desertification), and the role of the military in rescue missions and post-disaster relief. Finally, it will highlight the importance



Members of 430 Tactical Helicopter Squadron conduct a flight in the Pyrenees during Exercise FAUCON GAULOIS in Cazaux, France on 30 September 2021.

Image by: Corporal Genevieve Beaulieu, Canadian Armed Forces photo

of mitigation and more sustainable energy models to improve the ability of the military to operate beyond oil. This integrated strategy therefore presents a complete picture of the implications of climate change for the armed forces and could potentially pave the way for more inclusion of climate concerns within the Ministry.

## Conclusion

The study of the French Armed Forces sheds light on the political aspects of climate security and the challenges of institutionalizing climate change in defence activities. Indeed, the French military establishes a link between climate change and security mostly in regions where its armed forces are traditionally involved, such as the Sahel or the Indo-Pacific. This is a very limited, not to say politically charged, understanding of the effects of climate change on security. If France wants to grasp the reality of climate security, it must go beyond the idea that only the regions that it perceives as security hotspots can

be analyzed. Climate change also tends to be almost exclusively associated with security phenomena that are perceived to be among the most salient in France, such as terrorism and migration, instead of calling into question the very security and risk assessments that climate change demands. Recent examples of extreme weather in the Mediterranean, with the dramatic and unanticipated case of the floods in Libya, show that a more global and stricter mapping of the climate risks posed by climate change remains crucial for a better understanding of France's security environment. The recent Climate and Defence strategy also shows how climate change remains

a concern for the French Armed Forces six years after the 2015 UN Climate Change Conference (COP21) in Paris, where the organization of a "defence and climate" event before the conference stimulated the emergence of the issue within the Ministry and the armed forces. In the coming years, particular attention should be given to the connections between France's national climate security strategy, the EU's, and NATO's, to better monitor the evolution of the national security community's perception of climate change and its potential implications for international relations.

## Notes

- 1 Matt McDonald, *Ecological Security: Climate Change and the Construction of Security*, Cambridge, Cambridge University Press, 2021, 240 pages
- 2 Brzoska Michael (2012), "Climate change and the military in China, Russia, the United Kingdom, and the United States," *Bulletin of the Atomic Scientists*, vol. 68, n° 2: 43-54; Dalby Simon (2020), *Anthropocene Geopolitics. Globalization, Security, Sustainability*, Ottawa, University of Ottawa Press.
- 3 European External Action Service (EEAS), "Climate Change and Defence Roadmap," 2020 [online] URL: <https://data.consilium.europa.eu/doc/document/ST-12741-2020-INIT/en/pdf>
- 4 North Atlantic Treaty Organization (NATO), "Climate Change and Security Action Plan," 2021, [online], URL: [https://www.nato.int/cps/en/natohq/official\\_texts\\_185174.htm](https://www.nato.int/cps/en/natohq/official_texts_185174.htm)
- 5 Critics take for the example what happened in the United States in the 2000s and 2010s. Rita Floyd, *Security and the environment: securitization theory and US environmental policy*, Cambridge (NY), Cambridge University Press, 2010; Rita Floyd and Richard Matthew, *Environmental security*, London: Routledge, 2013.
- 6 Chad Michael Briggs, "Climate Security, Risk Assessment and Military Planning." *International affairs*, vol. 88, n° 5, 2012: 1049-1064.
- 7 Maria Julia Trombetta, "Environmental Security and Climate Change: Analysing the Discourse." *Cambridge Review of International Affairs* 21 (4), 2008: 585-602.
- 8 Lucile Maertens and Alice Baillat, "The partial climatisation of migration, security and conflict" in S. C. Aykut, J. Foyer and E. Morena (eds.), *Globalising the Climate: COP21 and the Climatisation of Global Governance*, London: Routledge, 2017: 117
- 9 Angela Oels, "From 'securitization' of Climate Change to 'climatisation' of the Security Field: Comparing Three Theoretical Perspectives" in J. Schefran, M. Brzoska, H.G. Brauch, P.M. Link, and J. Schilling (eds.), *Climate Change, Human Security and Violent Conflict: Challenges for Societal Stability*, Berlin, Springer, 2012:185-205.
- 10 For a general view of UNSC countries' perspective on climate security, see Hardt, Harrington, von Lucke, Simpson and Estève, *Climate security at the UNSC*, London, Routledge (forthcoming).
- 11 Ministry of Defence, "Défense et Sécurité nationale : le Livre blanc," 2008, [online], URL: <https://www.vie-publique.fr/rapport/29834-defense-et-securite-nationale-le-livre-blanc> For an example of these reports, see Bastien Alex and Alain Coldefy, "Conséquences du dérèglement climatique pour le ministère de la défense," Centre interarmées de concepts, de doctrines et d'expérimentations, 2014, pp. 39-43.
- 12 Etat-major des Armées (EMA), "Les armées, l'environnement et le climat," October 16, 2015, available at <https://archives.defense.gouv.fr/ema/chef-d-etat-major-des-armees/actualite/les-armees-l-environnement-et-le-climat.html>
- 13 Bruno Charbonneau, 2022 The Climate of Counterinsurgency and the Future of Security in the Sahel. *Environmental Science and Policy*, vol. 138, December, pp. 97-104. <https://doi.org/10.1016/j.envsci.2022.09.021>
- 14 Permanent mission of France to the United Nations in New York, "5 Things to Know about France and the Sahel region," available at <https://onu.delegfrance.org/5-choses-a-savoir-sur-l-action-de-la-france-au-sahel>
- 15 Albania, Austria, Belgium, Canada, Côte d'Ivoire, Cyprus, Denmark, Estonia, Finland, France, Greece, Hungary, Ireland, Japan, South Korea, Lithuania, Luxembourg, Malta, the Netherlands, New Zealand, Norway, Portugal, Senegal, Slovenia, Spain, and the United States
- 16 Ministry of the Armed Forces, "Stratégie Climat & Défense," April 2022 [online], URL: [https://www.defense.gouv.fr/sites/default/files/tronc\\_commun/28.04.2022%20Le%20minist%C3%A8re%20des%20Arm%C3%A9es%20se%20dote%20d%27une%20strat%C3%A9gie%20climat%20%26%20d%C3%A9fense.pdf](https://www.defense.gouv.fr/sites/default/files/tronc_commun/28.04.2022%20Le%20minist%C3%A8re%20des%20Arm%C3%A9es%20se%20dote%20d%27une%20strat%C3%A9gie%20climat%20%26%20d%C3%A9fense.pdf)



This handout photograph taken on April 8, 2012, released by Pakistan's Inter Services Public Relations (ISPR) shows Pakistani Army Chief General Ashfaq Parvez Kayani (C) visits the site of avalanches where some 135 including 11 civilians are trapped on the Siachen Glacier mountains in northern Pakistan. Pakistan Army Chief General Ashfaq Parvez Kayani visited Siachen Sunday to personally see the rescue operation, the army said.

Image by: Imago/Alamy Stock Photo

## Climate Security and the Indian Armed Forces

**DHANASREE JAYARAM AND ROJA ROSE MATHEW**

*Dhanasree Jayaram is an Assistant Professor, Department of Geopolitics and International Relations, and Co-coordinator, Centre for Climate Studies, Manipal Academy of Higher Education (MAHE), Karnataka, India. She is also a Research Fellow, Earth System Governance; and Non-resident Fellow, Finnish Institute of International Affairs, Helsinki.*

*Roja Rose Mathew is an analyst at Max Security. She is an alumna of the Department of Geopolitics and International Relations, Manipal Academy of Higher Education (MAHE), Karnataka, India. Her research interests lie at the intersection of climate change, security, and migration.*



## Introduction

**Climate change is increasingly being recognized as a security concern in India, particularly by the Indian Armed Forces. The impacts of glacial recession, variability in precipitation patterns, droughts, floods, wildfires, heatwaves, tropical cyclones, and sea-level rise, among others, have a range of security implications. India is one of the most climate-vulnerable countries in the world. It is located in one of the world's most geopolitically volatile regions. In the Hindu Kush Himalaya (HKH) and the Indian Ocean, climate vulnerabilities have multiplied in recent years, with implications for military strategy. These changes have gradually led to initiatives dealing with climate change-related impacts as well as the promotion of climate-friendly measures within the military despite the apparent lack of institutional and policy mechanisms targeted at climate security challenges within the Indian Government.**

The Indian military's encounter with environmental and climate security challenges is nothing new. For instance, it has played a leading role in disaster management activities not only within the country, but also in the broader South Asian or Indian Ocean Region (IOR). In fact, the Indian military's engagement in Humanitarian Assistance and Disaster Relief (HADR) predates even action-oriented discussions on climate change. However, this role came to the limelight in the aftermath of the 2004 Indian Ocean Tsunami, when it also donned the role of a robust regional HADR player<sup>1</sup>. Similarly, India is known for setting up one of the world's first ecological battalions for the restoration of ecologically degraded regions. More recently, with the worsening effects of climate change and the gaining momentum of climate change narratives and policies, the Indian armed forces have gradually integrated climate concerns into planning and strategy. Very often, these steps are not necessarily tied to climate goals alone but are more seriously targeted at a broader gamut of security objectives, including enhancing resilience in military readiness and preparedness.

Countries such as the United States, the United Kingdom, Australia, France, Sweden, and many others are often cited for their active role in formalizing and institutionalizing climate action in military strategies and structures<sup>2</sup>. What makes the Indian case distinct is its "developing country" status (with implications for narratives on development and equity), while possessing the world's fourth strongest military<sup>3</sup>. The Defence Ministry is the largest landowner in the country, with many areas characterized as inaccessible, inhospitable terrain.<sup>4</sup> Furthermore, Indian troops are deployed in some of the most ecologically fragile areas of the country—tackling traditional military and security threats emanating primarily from neighbouring countries such as Pakistan and China.

At the same time, there are many contradictions in India's approach to climate security, which also influence military perspectives. While on the international stage India has been reluctant to recognize climate change as a security issue (such as in the United Nations Security Council)<sup>5</sup>, at the domestic level, there is growing awareness about the security

implications of climate change, despite there being no formal or institutional processes to act upon climate security. Despite the absence of a formal national security strategy, the Joint Doctrine of the Indian Armed Forces (JDIAF) released by the Integrated Defence Staff (IDS) in 2017 recognized the security implications of environmental disasters and climate change. This in a way stems from the military's operational experience of dealing with such disruptions on the ground and the consequent strategic thinking on "non-traditional security threats."<sup>6</sup>

In this context, this article analyzes the climate-sensitive and responsive policies and activities of the Indian military in view of the growing climate vulnerabilities and changing geopolitical realities of South Asia, and the broader IOR. It examines the drivers of climate-related initiatives and the processes involved as well as the resistance to such moves within the armed forces, especially since the fear of "militarization" and organizational and political/bureaucratic constraints hamper climate action. The article argues that there is greater recognition of climate security challenges by the Indian armed forces, especially in view of the risks posed by climate change to their readiness, operations, and strategy in a geopolitically volatile region. The Indian military has put in place many climate action measures. Yet, like most militaries in the world, there is still a huge gap in terms of the integration of climate change and other ecological variables into its military strategy. The prioritization of security challenges, traditional perceptions of security, bureaucratic politics (involving civil-military relations), budgetary constraints, and many other factors have come in the way of institutionalization of existing practices and adoption of new and urgent measures to deal with climate change.

## Climate Change and India's Military Strategy

We identify four areas in which the Indian military has adopted climate-sensitive and responsive policies and activities: HADR, ecological restoration, sustainability and operational efficiency, and adaptation and resilience. Some activities are





The backside of the Taj Mahal in Agra, India on overcast day with smog.

Image by: Robert Ruidl / Alamy Stock Photo

symbolic, arguably easy incremental steps to implement and demonstrate commitment to greening and sustainability efforts, but often regarded as “greenwashing.” Some activities can be considered more strategic as they materialize through doctrinal, institutional, and policy changes that are customarily initiated in civil-military joint domains, with implications for civil-military relations, budgeting, worldviews, etc. The military is also known for introducing precautionary measures to tackle the long-term impacts of climate change on its readiness, preparedness, and effectiveness, particularly with an eye on risks posed to military infrastructure and the emergence of newer security challenges such as climate change-related conflicts. Furthermore, the military may also implement transformative mitigation and adaptation measures to achieve climate targets, although this is rare.

### **Humanitarian Assistance and Disaster Relief**

One of the most important strategic activities of the Indian military was to recognize environmental disruption as a threat to national security in the JDIAF. While this may also not have major policy implications, the recognition of the environment as “a critical area of the security paradigm”<sup>7</sup> in a doctrinal document is a paradigm shift for a country that had until then never released a formal document stating its national security strategy. Furthermore, the strategic aspects become clearer as the armed forces stress their role beyond the responsibility to protect India’s territorial integrity and national interest—such as to supplement India’s foreign policy<sup>8</sup> and national security objectives. This is evidenced by the uptick in the number of HADR-related exercises that the Indian military has participated in or initiated, thereby promoting cooperation, particularly at the regional level.

The HADR activities of the Indian military are viewed as a crucial diplomatic and strategic component of India’s soft

or smart power<sup>9</sup>. Closer coordination with countries of the broader Indo-Pacific region and the provision of relief and support through HADR activities have been identified as a way of managing, mitigating, and preparing for the impacts of climate change. These efforts, categorized as defence diplomacy, are also considered integral to the projection of India’s reputation as a “responsible power.”<sup>10</sup> For example, India’s Indian Ocean vision is often described through SAGAR (Security and Growth for All in the Region), which includes “deepening economic and security cooperation in the littorals, enhancing capacities to safeguard land and maritime territories, working towards sustainable regional development, Blue Economy, and promoting collective action to deal with non-traditional threats like natural disasters, piracy, terrorism, etc.”<sup>11</sup> Similarly, the Indian Army’s HADR efforts in the region, including in the aftermath of the 2005 Kashmir earthquake<sup>12</sup> and 2015 Nepal earthquake<sup>13</sup>, have played a crucial role in India’s defence diplomacy.

This vision is supported by the Indian Navy. It has proactively coordinated with other IOR navies to strengthen HADR coordination and capacities, which includes conducting exercises and assuming the responsibility of the chair of the Indian Ocean Naval Symposium Working Group on HADR<sup>14</sup>. In addition, it has been a “first responder”<sup>15</sup> on many occasions, when a disaster strikes the Indian coastline or IOR littorals such as the Maldives, Mozambique, and Réunion.

The Indian military derives its mandate to conduct HADR operations under the purview of “aid to civil authorities.”<sup>16</sup> In one of the HADR operations conducted by the Indian Navy in 2014, Indian naval vessels ensured the provision of safe drinking water to the people of Maldives using desalination plants<sup>17</sup>. The unique capabilities of the Indian Navy demonstrated in this case points towards strategic action. At the same time, it also reflects the military’s precautionary logic as it prepares itself to deal with the worst impacts of climate change, such as water stress or scarcity. The increasing frequency and intensity of extreme weather events in India and the broader IOR area have led to increased interest in HADR exercises. The Indian Navy’s role since the 2004 Indian Ocean Tsunami is notable. On several occasions, the navy has rescued fishermen—not only Indian<sup>18</sup>, but also Bangladeshi<sup>19</sup>—when cyclones have struck in the IOR.

The HADR capacities and capabilities of the Indian military are superior to those of civilian agencies, including the National Disaster Response Force (NDRF). The NDRF was specifically created for disaster response, but it is inadequately equipped to deal with large-scale disasters<sup>20</sup>. The military’s strength in HADR was demonstrated during the rescue operations conducted during the 2018 Kerala floods<sup>21</sup>. Indian Air Force (IAF) helicopters were deployed for rescue operations and to drop food and other necessities to people trapped in inaccessible areas. Similarly,

## The Indian military's steps to usher in energy efficiency and clean energy goals are largely aimed at improving operational and cost efficiency, ensuring reliable energy supplies, and building resilience. They are not driven by the need for cutting greenhouse gas (GHG) emissions.

IAF operations in Assam in June 2022 to help and evacuate flood-affected people substantiate the military's preparedness in managing the impacts of climate change<sup>22</sup>. Recurring disasters in the Himalayan region, especially in states such as Uttarakhand<sup>23</sup> and Himachal Pradesh<sup>24</sup>, have also led the military, particularly the Indian Army, to become a first responder due to the difficult terrain and the scale of the disasters.

### **Ecological Restoration**

The Ecological Task Force (ETF) of the Indian Territorial Army is a unit that has been involved in afforestation/land restoration practices in areas facing environmental degradation. The successes of some of these units, especially those deployed in Uttarakhand, Delhi, Himachal Pradesh, and Rajasthan, are attributed to military discipline and work culture that enable them to combat, and even reverse environmental degradation in a fast-paced manner. While not all ETFs are successful in their missions, their adaptiveness to adverse, inhospitable geographical conditions, and knowledge of the terrain (owing to deployment procedures in these parts of the country) give them an edge in terms of ecological restoration, compared to civilian agencies such as the Forest Department and non-governmental organizations (NGOs). This is the reason why the Indian Government decided to deploy these units in the early 1980s, as the need for urgent intervention in the limestone mining-affected hill tracts of Mussoorie was felt<sup>25</sup>. The ETF battalions were successful in restoring large tracts of land

through afforestation, watershed management, soil conservation, sand dune stabilization, and so on. The ETF battalions are managed and financed by civilian agencies, mainly the Ministry of Environment, Forest and Climate Change (MoEF&CC) in conjunction with the Ministry of Defence and at times, by the respective state governments<sup>25</sup>.

Paramilitary units such as the Indo-Tibetan Border Police (ITBP) Force (meant for patrol along the border with the Tibet Autonomous Region) also engage in such activities at the local level, where they are deployed. In 2021, the ITBP in collaboration with the Khadi and Village Industries Commission launched a green initiative<sup>26</sup> to plant bamboo samplings in the barren lands of the Ladakh region to create a sustainable development model that provides employment and business opportunities for the locals. These measures can be seen as transformative activities as military and paramilitary forces transform their roles by engaging in activities with socio-ecological benefits—signifying civil-military coordination and a deeper understanding of ecological security. They may also be perceived as symbolic as civil-military relations in conflict settings have traditionally been fraught with allegations of suppression and violation of human rights as well as ecological destruction caused by the military's activities. For instance, in Assam, an insurgency-affected state, the ETF has met with resistance as conservation by the military is regarded as “soft militarization” and is seen through the prism of counterinsurgency operations, even when the ETF's mandate does not include these operations<sup>27</sup>.

### **Sustainability and Operational Efficiency**

The Indian military's steps to usher in energy efficiency and clean energy goals are largely aimed at improving operational and cost efficiency, ensuring reliable energy supplies, and building resilience. They are not driven by the need for cutting greenhouse gas (GHG) emissions. Geopolitical considerations also influence India's energy transition strategies, with implications for the military. Security considerations seem to be driving military-led innovation to reduce the impacts of climate change on their operations along the Chinese border. For instance, the Indian Army is installing a “Green Hydrogen based Micro Grid Power Plant project in the forward areas along the Northern borders” (shared with China). The project is expected to reduce the military's dependence on fossil fuels—which usually involves transportation across high altitudes, difficult terrain, as well as higher costs—and simultaneously reduce GHG emissions and contribute to the country's National Green Hydrogen Mission<sup>28</sup>.

Similarly, in Sikkim (border state), the Indian Army inaugurated its “first solar energy harnessing plant of 56 kVA”

(using vanadium-based battery technology) at an altitude of 16,000 feet (in harsh conditions)<sup>29</sup>. More than climate action, it is the motivation to assist troops deployed in such forward areas that provides impetus to such projects. On the one hand, it indicates a precautionary measure to build resilience and manage risks associated with energy security. On the other hand, it presents the military as an indispensable actor and driver of energy transition in many contexts, especially in conflict settings as these technologies are developed indigenously.

Other similar sustainability measures are also guided by these rationales. For instance, the Indian Army, to improve supply chain management and logistics support to isolated locations (usually viable only through road transport), has been looking into solutions such as uninterrupted electricity supply and sustainable food production through organic means by tapping into solar and wind energy, available in abundance at high altitudes<sup>30</sup>. This initiative is showcased as a means of reducing the adverse impacts of regular vehicular transport on the fragile ecosystems of the region. Moreover, alongside facilitating a sustainable food supply chain, such initiatives are also expected to promote ecologically safer organic farming practices among residents, thereby also providing sustainable business opportunities. The strategic nature of such an initiative could also be treated as a gesture to win hearts and minds by compensating for the social, economic, and ecological consequences of fossil fuel-intensive and heavy-handed military deployment operations in some of the border regions.

The Indian Navy has also spearheaded several “green” initiatives. It established a “Green Cell” in 2016 to coordinate, monitor, and implement various green initiatives. In 2020, under the Indian Navy Environment Conservation Roadmap (INECR), the Indian Navy commissioned its largest solar power plant (3 MW) at the Indian Naval Academy in Ezhimala, Kerala<sup>31</sup>. Similarly, the navy commissioned a 2 MW solar power plant at Naval Station Karanja, Uran<sup>32</sup> and INS Kalinga, Visakhapatnam<sup>33</sup>, using completely indigenously developed materials. The INECR is a specific action plan to be deployed in all operational platforms, units, and establishments of the Indian Navy—aimed at establishing norms to reduce its environmental footprint, reduce marine pollution, and enhance energy efficiency by shifting to alternative energy options. Some of the notable “green” solutions offered by the Indian Navy include waste segregation and recycling, sewage treatment plants, organic waste converters, afforestation, and plantation drives. Furthermore, the Naval Material Research Laboratory has indigenously developed an eco-friendly marine remedial agent to combat oil spills<sup>34</sup> that could prevent contamination of marine ecosystems.

The military’s investments in biofuel and electric vehicles have also risen in the past decade. In 2022, indigenously developed bio-jet fuel technology (developed by the Indian Institute of Petroleum) received military certification for deployment in the Indian Air Force<sup>35</sup>. The move to invest in cleaner fuels is also tied to India’s net-zero emissions target and steps to reduce air pollution<sup>36</sup>. The Indian Navy along with the Indian Oil Corporation Ltd has launched a new fuel—HFHSD IN 512 (High Flash High-Speed Diesel)—that is expected to reduce the navy’s carbon footprint without compromising operational capabilities<sup>37</sup>. Furthermore, the Indian Army<sup>38</sup> and Navy<sup>39</sup> have launched e-vehicles on some of their bases to facilitate the transport of personnel and materials, reduce air pollution, and increase energy efficiency. While the strategic purposes of reducing dependence on fossil fuel imports and spurring technological innovation are major drivers, these projects illustrate the partially transformative nature of the military’s efforts to collaborate with civilian (research) agencies, introduce incremental structural changes, and contribute to national climate action targets.

### ***Adaptation and Resilience***

One of the biggest drivers for climate-related action in the Indian military is the need to adapt to the effects of climate change itself. For example, glacial retreat has direct implications for military deployment. The Siachen Glacier is melting at an accelerated pace due to increasing temperatures as well as the environmental and resource pressures of military deployment in the region<sup>40</sup>. This glacier is a climate and geopolitical hotspot, owing to the territorial dispute between India and Pakistan. Hence, Indian troops are stationed to safeguard territorial integrity. While several lives were lost at the Siachen Glacier due to ice avalanches (attributed to rising temperatures), the Indian Army is also being forced to “rethink deployment procedures.” It is now closely monitoring the rate of climate change and its impacts with the help of scientific research institutions such as the Snow and Avalanche Study Establishment<sup>41</sup>.

The Siachen Glacier also contributes to the flow of the Indus Basin, a shared transboundary river system between India and Pakistan. Hence, the ecological health of this glacier is of utmost importance to the stability of the river system itself. This augments its strategic importance, particularly to Pakistan, whose major water requirements are met by the Indus River<sup>42</sup>, with implications for India-Pakistan tensions linked to the sharing of river water.

Climate change-related disasters have affected military assets and installations in several parts of the country.

One such example is that of the Eastern Naval Command at Vishakhapatnam, damaged by Cyclone Hudhud in 2014<sup>43</sup>. Apart from disasters, the Indian Navy is also increasingly aware of the various impacts of climate change. Vice Admiral Pradeep Chauhan (Retired), Director General of the National Maritime Foundation, observes<sup>44</sup>,

*“The Indian Navy is increasingly vulnerable to the impacts of climate change. For instance, each of the several naval bases and installations that have been established along India’s coastline and in its island-territories face an inordinately high exposure to climate risks such as rising sea level, cyclones, and storm-surges. These pose major threats to the billions of dollars-worth of infrastructure and personnel. In addition, climate change will indirectly hamper the ability of the navy to carry out its operations due to rising air and ocean temperatures, changes in salinity, and also oceanic oxygen depletion and the increase of bioluminescent algae blooms such as noctiluca scintillans, all of which affect underwater operations, ocean acidification and changes in ambient underwater noise.”*

In the future, compounding risks could multiply as climate change interacts with existing geopolitical rivalries. For instance, with increasing temperatures and the consequent melting of ice and snow in the HKH region, the likelihood of border patrols by the Chinese People’s Liberation Army and the Pakistan Army could increase—thereby escalating tensions and the possibility of military clashes and conflicts along the border.<sup>45</sup> Similarly, former naval officers have highlighted the risks posed by climate migration and potential maritime disputes in the IOR, especially due to conflicts over “Exclusive Economic Zones (EEZs) and seabed resources” as rising sea levels threaten low-lying islands.<sup>46</sup> Although the destabilizing effects of climate change are fleetingly emphasized in some circles (primarily think tanks), the defence policy domain is not entirely attuned to these realities. These impacts remain the least studied in the Indian context, and mitigating or coping strategies are awfully inadequate according to several experts from the military domain.

## Resistance to Climatization of India’s Military Strategy

Despite the above-mentioned changes, there is still resistance to integrating climate change into Indian military strategy. While the projected scale and degree of the impacts of climate change call for meaningful engagement and pooling of the military’s resources (as a part of the whole-of-government approach), there is criticism of the “militarization” of climate change, and potential disempowerment of civilian agencies, especially when it comes to HADR-related activities. This is the reason why many policymakers and scholars believe that the role of the military should be minimal, as climate governance is a decision-making domain for the civilian establishment, with the military’s role being restricted to an “as-needed basis.” Instead, the focus should be on strengthening civilian capabilities by empowering the NDRF and other civilian agencies to mitigate and adapt to climate change<sup>47</sup>.

It’s also worth noting the extent of civil-military discordance when it comes to HADR, considering the different operational frameworks deployed by various agencies at the scene of an emergency or crisis. The divergence in approaches between civilian and military agencies can result in delays in emergency response, as was the case during the 2015 Chennai floods<sup>48</sup>. Furthermore, controversies surrounding the Indian military’s huge presence in many conflict-affected areas of the country have put the armed forces under scrutiny, thereby hindering civil-military coordination. For example, in heavily militarized areas such as Ladakh, the military has established itself as the sole legitimate actor due to its sheer numbers, and the lack of strong governance structures owing to the persistence of the conflict itself<sup>49</sup>.

Besides, many military officials stress that environmental and climate measure efforts must be in consonance with the military’s responsibility to defend the nation’s territorial integrity and sovereignty, particularly in light of the territorial disputes with Pakistan and China, two countries that are considered by the Indian security/defence establishment as bigger threats than climate change<sup>50</sup>. The lack of acknowledgement of the strategic nature of climate security risks is still widespread in the military due to other priorities and a narrow understanding of security.



There is also the issue of rivalry between armed services and competition among bureaucracies. Questions such as whether integration of the three services (army, navy, and air force) could transform security narratives and practices need to be examined, considering that India instituted the position of the Chief of Defence Staff of the Indian Armed Forces in 2019. Among other issues, budgetary constraints, parochialism, bureaucratic obstacles, and turf wars also impede major reforms within the military, even if the three services express urgency<sup>51</sup>. Importantly, given the resistance to acknowledging the security implications of climate change by some government agencies such as the Ministry of External Affairs (as evidenced by India's positions in the UNSC<sup>52</sup>), and despite greater recognition of these risks at the domestic level, the armed forces may face general bureaucratic opposition to their efforts in tackling the security implications of climate change in the region.

## Conclusion

The Indian military's decades of experience in dealing with environmental degradation and disruptions provide it with a head start on climate action. Now that it is gradually integrating climate security risks into its planning and strategy, it could set an example for the rest of the world with a more coordinated and institutionalized response. The Global North's militaries are gradually reforming existing policies with implications for the environment and climate, often calling for "a fundamental transformation" in the way militaries approach "defence and security."<sup>53</sup> The need for a transformative approach within the Indian military is further reinforced by not only the progressively worsening impacts of climate change on its own preparedness and operations and the need for showcasing stewardship as a responsible actor, but also the changing nature of security risks manifesting in South Asia and the IOR. The growing demand for frequent engagement in post-disaster HADR, coupled with pre-disaster exercises, is just one among several factors that demand a shift in the military's approach.

The need for a transformative approach within the Indian military is further reinforced by not only the progressively worsening impacts of climate change on its own preparedness and operations and the need for showcasing stewardship as a responsible actor, but also the changing nature of security risks manifesting in South Asia and the IOR.

In addition, the world's militaries account for a major proportion of GHG emissions. As conflict areas become more and more vulnerable to climate change, as seen in the case of the HKH region, the military would have to introduce climate-sensitive and sustainable measures to maintain their presence with minimal ecological and social damage. While downsizing the military might be an ideal solution for the climate crisis, the South Asian context, and various other conventional conflicts across the world, show that this might not be feasible or reasonable. And yet, militaries must be a part of the solution by adopting more sustainable practices, designing tools and methods for climate risk management, and creating a more peaceful and stable security environment.

Canadian Military Journal **CMJ** **RM** Revue militaire canadienne

## Notes

- 1 Deon Canyon, "India Leading International HADR Cooperation in South Asia," *Daniel K. Inouye Asia-Pacific Center for Security Studies*, 2021. [https://apcss.org/nexus\\_articles/india-leading-international-hadr-cooperation-in-south-asia/](https://apcss.org/nexus_articles/india-leading-international-hadr-cooperation-in-south-asia/)
- 2 Dhanasree Jayaram, "Climatizing' military strategy? A case study of the Indian armed forces," *International Politics* 58 (2021), pp. 619-639. <https://doi.org/10.1057/s41311-020-00247-3>
- 3 PTI, "India has world's fourth strongest military, finds Military Direct's study," *The Hindu*, March 21, 2021. <https://www.thehindu.com/news/national/india-has-worlds-fourth-strongest-military-finds-military-directs-study/article34122775.ece>
- 4 Snehes Alex Philip, "Defence ministry's 'mammoth' digital survey of 17.78 lakh acres of land-how, why & what next," *The Print* January 10, 2022. <https://theprint.in/defence/defence-ministrys-mammoth-digital-survey-of-17-78-lakh-acres-of-land-how-why-what-next/799318/>
- 5 Suhasini Haidar, "Explained | Why did India reject UNSC draft on climate?," *The Hindu*, December 19, 2021. <https://www.thehindu.com/sci-tech/energy-and-environment/explained-why-did-india-reject-unscc-draft-on-climate/article37988088.ece>
- 6 Headquarters Integrated Defence Staff (HQ IDS), Joint Doctrine Indian Armed Forces, Ministry of Defence, 2017.
- 7 HQ IDS, p. 11
- 8 "Role of Navy – The Diplomatic Role," Indian Navy. <https://indiannavy.nic.in/content/role-navy>

- 9 Shrey Khanna and P. Moorthy, "Analysing India's Soft Power Functioning in the Twenty-first Century: Possibilities and Challenges." *India quarterly* 73, no. 3 (2017) p. 295. 097492841771622. 10.1177/0974928417716224.
- 10 Sarabjeet Parmar, "Humanitarian Assistance and Disaster Relief (HADR) in India's National Strategy Focus." *Journal of Defence Studies* 6, Issue: 91 (2012), p. 93.
- 11 Abhishek Mishra, "India's vision of SAGAR: Humanitarian assistance and disaster relief operations in the Indian Ocean Region." *Observer Research Foundation*, February 3, 2020. <https://www.orfonline.org/expert-speak/indias-vision-of-sagar-humanitarian-assistance-and-disaster-relief-operations-in-the-indian-ocean-region-61000/>
- 12 AFP/Reuters, "Indian soldiers cross border to aid quake victims," *ABC News*, October 12, 2005. <https://www.abc.net.au/news/2005-10-13/indian-soldiers-cross-border-to-aid-quake-victims/2123396>
- 13 PTL, "Nepal Earthquake: UN lauds India's relief operations in the country," *The Economic Times*, May 27, 2015. <https://economictimes.indiatimes.com/news/politics-and-nation/nepal-earthquake-un-lauds-indias-relief-operations-in-the-country/articleshow/47439670.cms?from=mdr>
- 14 "IONS Working Groups," Indian Ocean Naval Symposium, <http://www.ions.global/ions-working-groups>
- 15 Ministry of External Affairs, "Responding First as a Leading Power," p. 1, [https://www.mea.gov.in/Portal/IndiaArticleAll/636548965437648101\\_Responding\\_First\\_Leading\\_Pow.pdf](https://www.mea.gov.in/Portal/IndiaArticleAll/636548965437648101_Responding_First_Leading_Pow.pdf)
- 16 Dhanasree Jayaram, "The Indian military and environmental affairs: an analysis through the lens of military change." *Contemporary South Asia* 28, Issue: 2 (2020), pp. 288-303. DOI:10.1080/09584935.2020.1775178
- 17 Ministry of Defence, "Indian Navy the First to Respond in Maldivian Crisis," Press Release December 7, 2014. Retrieved from <https://pib.gov.in/newsite/PrintRelease.aspx?relid=112783>
- 18 Ravi Sharma, "Cyclone Tauktae: Indian seamen and fishermen rescued by Coast Guard and Navy," *Frontline*, May 17, 2021. <https://frontline.thehindu.com/dispatches/cyclone-tauktae-indian-seamen-and-fishermen-rescued-by-coast-guard-and-navy/article34581252.ece>
- 19 IANS, "Indian Navy continues relief work, rescues 33 Bangladeshi fishermen," *Business Standard*, June 1, 2017. [https://www.business-standard.com/article/news-ians/indian-navy-continues-relief-work-rescues-33-bangladeshi-fishermen-117060100983\\_1.html](https://www.business-standard.com/article/news-ians/indian-navy-continues-relief-work-rescues-33-bangladeshi-fishermen-117060100983_1.html)
- 20 "Parliamentary Panel Flags 'Huge Shortage' of Equipment for NDRF." *The New Indian Express*, April 4, 2022. <https://www.newindianexpress.com/nation/2022/apr/04/parliamentary-panel-flags-huge-shortage-of-equipment-for-ndrf-2437894.html>
- 21 Ministry of Defence, "Air Force Rescue Operations during Kerala Floods," Press Release, February 4, 2019. Retrieved from <https://pib.gov.in/Pressreleaseshare.aspx?PRID=1562584>
- 22 Indian Air Force Conducts Flood Relief Operations in Assam And Meghalaya. NDTV. 25 June 2022. <https://www.ndtv.com/india-news/indian-air-force-conducts-flood-relief-operations-in-assam-and-meghalaya-3099887>
- 23 "Armed Forces Move in to Provide Assistance in Uttarakhand," *The Hindu*, February 7, 2022. <https://www.thehindu.com/news/national/uttarakhand-flood-army-deploys-four-columns-medical-teams/article33775006.ece>
- 24 Naresh R. Thakur, "Himachal flood: IAF, army evacuate stranded villagers in Kangra district," *Hindustan Times*, August 16, 2023. <https://www.hindustantimes.com/cities/chandigarh-news/over-1000-rescued-as-pong-dam-floods-villages-in-kangra-rescue-operation-continues-10169217185967.html>
- 25 Dhanasree Jayaram, "Environmental Security, Land Restoration, and the Military: A Case Study of the Ecological Task Forces in India," In *Land Restoration: Reclaiming Landscapes for a Sustainable Future* (2016), pp. 163-181. <https://doi.org/10.1016/B978-0-12-801231-4.00015-X>
- 26 Ministry of Micro, Small & Medium Enterprises, "KVIC's Project BOLD Reaches Leh-Ladakh; to Protect Land Degradation & Support Local Economy," Press Release, August 18, 2021. <https://pib.gov.in/PressReleaseframePage.aspx?PRID=1746930>
- 27 Anwasha Dutta, "Forest becomes frontline: Conservation and counterinsurgency in a space of violent conflict in Assam, Northeast India." *Political Geography* 77 (March 2020). <https://doi.org/10.1016/j.polgeo.2019.102117>
- 28 Ministry of Defence, "Indian Army Takes Lead in Promoting the National Green Hydrogen Mission," Press Release, March 21, 2023. <https://pib.gov.in/PressReleaseframePage.aspx?PRID=1909140>
- 29 Bikash Singh, "Indian Army inaugurates first solar energy harnessing plant of 56 kVA in North Sikkim," *The Economic Times*, April 30, 2021. <https://economictimes.indiatimes.com/industry/renewables/indian-army-inaugurates-first-solar-energy-harnessing-plant-of-56-kva-in-north-sikkim/article-show/82331742.cms?from=mdr>
- 30 Nivedita Khandekar "Indian Army looks to passive solar heating in Ladakh." *The Third Pole*. March 1, 2018. <https://www.thethirdpole.net/en/energy/indian-army-looks-to-passive-solar-heating-in-ladakh/>
- 31 Ministry of Defence, "Largest Solar Power Plant of Navy Commissioned," Press Release, July 23, 2020. <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1640686>
- 32 Ministry of Defence, "Two Mega Watt Solar Power Plant Inaugurated at Naval Station Karanja, Uran," Press Release, July 21, 2020. <https://pib.gov.in/PressReleasePage.aspx?PRID=1640169>
- 33 Ministry of Defence, "2 MW Solar Power Plant Inaugurated at INS Kalinga," Press Release, May 29, 2020. <https://pib.gov.in/PressReleasePage.aspx?PRID=1627646>
- 34 Ministry of Defence, "Indian Navy – Blue Water Operations with a Green Footprint," Press Release, June 5, 2021. <https://pib.gov.in/PressReleasePage.aspx?PRID=1724637>
- 35 Ministry of Science & Technology, "Indian Bio-Jet Fuel Technology Receives Formal Military Certification," Press Release, November 29, 2021. <https://pib.gov.in/PressReleasePage.aspx?PRID=1776193>
- 36 *Ibid*
- 37 Ministry of Defence, "Indian Navy to Get Upgraded Fuel HFHSD – IN 512," Press Release, January 13, 2020. <https://pib.gov.in/newsite/PrintRelease.aspx?relid=197399>
- 38 Ministry of Defence, "Induction of Electric Vehicles in Army," Press Release, August 4, 2023. <https://pib.gov.in/PressReleaseframePage.aspx?PRID=1945708>
- 39 Express News Service, "Western Naval Command inducts 19 electric vehicles to curb air and sound pollution," *The Indian Express*, September 14, 2021. <https://indianexpress.com/article/cities/mumbai/western-naval-command-inducts-19-electric-vehicles-to-curb-air-and-sound-pollution-7505782/>
- 40 Philipus Wester, Arabinda Mishra, Aditi Mukherji, and Arun Bhakta Shrestha, *The Hindu Kush Himalaya Assessment: Mountains, Climate Change, Sustainability and People*. Springer, 2019.
- 41 Dinakar Peri, "Climate change forced Army to rethink Siachen deployment procedure," *The Hindu*. July 20, 2016. <https://www.thehindu.com/news/national/Climate-change-forces-Army-to-rethink-Siachen-deployment-procedures/article14499225.ece>
- 42 Syed Ata Hasnain, "Why Siachen glacier is vital to India's defence." *Asian Age*, October 26, 2019. <https://www.asianage.com/opinion/oped/261019/why-siachen-glacier-is-vital-to-indias-defence.html>
- 43 Cyclone Hudhud impact: Navy suffered Rs. 2,000 crore loss in Vizaq, *India Today*, October 14, 2014. <https://www.indiatoday.in/india/story/cyclone-hudhud-vizag-navy-rs-2000-crore-loss-chandrababu-naidu-andhra-223084-2014-10-14>
- 44 Dhanasree Jayaram and Caron Natasha Tauro, "Indian military begins adapting to climate-change challenges," September 21, 2021. <https://www.janes.com/defence-news/news-detail/indian-military-begins-adapting-to-climate-change-challenges>
- 45 Sarang Shidore, Alexandra Naeegele, Natalie Baillargeon, Rachel Fleishman, Madeleine Holland and Christopher Schwalm, "Climate Change and the India-China Rivalry: Melting Mountains, Mounting Tensions," *Council on Strategic Risks*, May 2021. [https://climateandsecurity.org/wp-content/uploads/2021/05/Melting-Mountains-Mounting-Tensions\\_Climate-Change-and-the-India-China-Rivalry\\_2021\\_05\\_13.pdf](https://climateandsecurity.org/wp-content/uploads/2021/05/Melting-Mountains-Mounting-Tensions_Climate-Change-and-the-India-China-Rivalry_2021_05_13.pdf)
- 46 Arijit Singh, "Climate Change and Maritime Security in the Indian Ocean Region," *Journal of Defence Studies* 9, Issue: 1 (2015), pp. 67-69.
- 47 Dhanasree Jayaram, "Climate Change and Maritime Security in the Indian Ocean Region," *Journal of Defence Studies* 9, Issue: 1 (2015), pp. 67-69.
- 48 Tejas Mehta, "Why 100 soldiers had to wait for 10 hours to help Chennai Flood Victims," *NDTV*, December 6, 2015. <https://www.ndtv.com/chennai-news/why-100-soldiers-waited-for-10-hours-to-help-chennai-flood-victims-1251590>
- 49 Jessica Field and Ilan Kelman, "The impact on disaster governance of the intersection of environmental hazards, border conflict and disaster responses in Ladakh, India," *International Journal of Disaster Risk Reduction* 31 (2018). <https://www.sciencedirect.com/science/article/abs/pii/S2212420918307866?via%3Dihub>
- 50 Dhanasree Jayaram, "Climate Change and Maritime Security in the Indian Ocean Region," *Journal of Defence Studies* 9, Issue: 1 (2015), pp. 67-69.
- 51 Dhanasree Jayaram, "The Indian military and environmental affairs."
- 52 Urmi Goswami, "India urges caution on 'actions' to tackle climate change from security perspective," *The Economic Times*, January 8, 2019. <https://economictimes.indiatimes.com/news/politics-and-nation/india-urges-caution-on-actions-to-tackle-climate-change-from-security-perspective/articleshow/67120559.cms?from=mdr>
- 53 North Atlantic Treaty Organization, "NATO releases its Climate Change and Security Impact Assessment," June 28, 2022. [https://www.nato.int/cps/en/natohq/news\\_197241.htm](https://www.nato.int/cps/en/natohq/news_197241.htm)



Waving European flag in front of a polluting factory chimney with smoke.

Image by: Martin Bergsma / Alamy Stock Photo

# Climate Security and the European Union: Concept, Challenges, and Recommendations

**JUDITH NORA HARDT**

*Dr. Judith Nora Hardt<sup>1</sup> is a researcher at the Centre Marc Bloch (An-Institute Humboldt University) in Berlin. She is also associated researcher at the Institute for Peace Research and Security Policy and the Climate and Security Research Group of the Hamburg University in Germany.*

## 1. Introduction

Climate security is a relatively contested concept that has been interpreted in various ways, usually dependent on threat perception and assessment.<sup>2</sup> The insertion of climate change into discussions of security is also often entangled with normative debates about the potential for global peace and collaboration or climate wars. Ever since climate change was first debated at the United Nations Security Council (UNSC) in 2007, several states have included, mentioned, or begun adapting their security strategies to the climate crisis.<sup>3</sup> Also, several international organizations<sup>4</sup>, such as the UN Environment Programme, the UN Department of Political and Peacebuilding Affairs, and the North Atlantic Treaty Organization (NATO) have followed suit. The 2018 creation of the UN Climate Security Mechanism marked another important moment for this rapidly evolving practice.



Figure 1. Rise of climate change and security in European Union official documents and programs (1998–2023). Source: elaborated by the author. The entries in light-green boxes indicate programs. The entries in yellow boxes are official primary documents. The entries in orange boxes are the documents analyzed in detail in this research.



This article focuses on the latest developments and showcases the increase of EU activities in relation to climate security, in a context in which the EU has struggled to respond to the multiple crises of climate change, the COVID-19 pandemic, and the Russian invasion of Ukraine. Nevertheless, EU member states have adopted the Climate Change and Defence Roadmap and the Strategic Compass for Security and Defence. In a June 2023 joint communication, NATO, the United States (US), and the EU agreed to intensify their cooperation on climate security and re-emphasized the growing importance of this topic.

Section 2 of this article describes the rise of climate security as an EU issue over the last two decades and outlines the main EU policy pillars. In section 3, Critical Environmental Security Studies is used as a framework for assessing the EU's climate security concept, which is otherwise difficult to access and relatively diffuse. Section 4 is dedicated to challenges and recommendations and is followed by our conclusions in Section 5.

## 2. The Rise of the Climate-Security Nexus in the EU: Chronological Overview and Key Policy Pillars

Several countries such as Germany, France, Belgium, the Netherlands, and Sweden, have advocated for the United Nations Security Council to recognize the links between climate change and security.<sup>5</sup> The EU has also proclaimed on several occasions that it is at the forefront of the fight against climate change<sup>6</sup> and has engaged in several claims concerning climate security. To assess how the EU has approached climate security, references to climate and security in selected official EU documents were analyzed. This analysis differs from previous research on the EU climate security agenda,<sup>7</sup> as it is based on a strict definition linked to the use of the related terms *climate change* and *security* (see Hardt and Perez, forthcoming). *Figure 1* presents the chronology of key official documents that refer to the nexus between climate change and security between 1998 and 2023.

Overall, the chronological assessment of the EU primary documents presented in *Figure 1* showcases an apparent increase in references connecting climate change to security. The first reference to these terms was in the *Global Monitoring for Environment and Security* program in 1998 (a European satellite observation system, renamed the *Copernicus* [*“Europe’s eyes on Earth”*] *Earth Observation Programme* in 2014). At first glance, this program might seem to be used for assessing mainly ecological phenomena. However, the Copernicus services<sup>8</sup> are in fact largely associated with traditional security concepts and geopolitical

interests as the data is mainly used to safeguard EU border surveillance and resource control.<sup>9</sup>

Apart from this program, a continuous rise of references to climate security can be detected after 2007. The year 2007 was a cornerstone for climate security practice and theory.<sup>10</sup> Important publications included the Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report—which proved for the first time that climate change is caused by human activities—and the German Advisory Council on Global Change report on climate security<sup>11</sup>. Relevant events that same year were the first UNSC debate on climate change and the awarding of the Nobel Peace Prize to Al Gore and the IPCC. In the case of the EU, the so-called Solana Report in 2008<sup>12</sup> was a key initiative that associated climate change to security as a threat multiplier. It also called for a clear increase in more specific activities on climate security from 2021 onwards.

In the following subsections, the latest developments in the EU's policy approach towards climate security through 2023 are described. These include security strategy documents, the EU's climate diplomacy, the Climate Change and Defence Roadmap, and the Concept for an Integrated Approach on Climate Change and Security. The last events in 2023, which specifically highlight the future ambitions and significance of climate security, also are of particular interest.

### **Security Strategy: EU in a Hostile Environment**

The 2003, 2008, and 2016 security strategy documents included mentions of global warming and environmental issues. The 2022 EU Strategic Compass for Security and Defence<sup>13</sup> underlined how climate change is as much a threat to European security as the war in Ukraine. The Council's response to the Russia's war of aggression against Ukraine used drastic language: “In this era of growing strategic competition, complex security threats and the direct attack on the European security order, the security of our citizens and our Union is at stake. [...] The spectrum of threats has grown more diverse and unpredictable. Climate change is a threat-multiplier that affects all of us.” In contrast to the 2016 Global Strategy, the focus was on the overall context of the Russian threat and the EU's position in a “hostile security environment” that “requires us to make a quantum leap forward and increase our capacity and willingness to act, strengthen our resilience and ensure solidarity and mutual assistance.”<sup>14</sup> While climate change is mentioned very often throughout the document, it plays a relatively minor role in a context where Russia's war of aggression dominates.



A Leopard A2 tank from Lord Strathcona's Horse (Royal Canadians) support 1<sup>st</sup> Battalion, Princess Patricia's Canadian Light Infantry [1PPCLI], Bravo Company, on a level 3 live fire training scenario during Exercise ORNERY RAM 2019 at 3rd Canadian Division Support Base Garrison training area in Wainwright, Alberta, April 9, 2019.

Image by: Master Corporal Julie Bélisle, Wainwright imaging section

### ***Climate Diplomacy: Cooperation and Paris Agreement***

The climate diplomacy approach goes back to 2003<sup>15</sup> and follows two main intertwined goals responding to the need to improve and work towards more effective international cooperation, to meet the goals agreed upon in the 2015 Paris Agreement, and to support the United Nations Framework Convention on Climate Change.<sup>16</sup> The execution of climate diplomacy is the responsibility of the External Action Service and can be observed in the actions and decisions of the European Commission and the EU Foreign Affairs Council. The objectives of the climate diplomacy approach are integrated into several EU policies, such as the Green Deal. It seeks to support partner countries in their efforts towards an energy transition and promote climate action via development, diplomacy, and scientific cooperation<sup>17</sup>. The Council concluded that “[B]olstering EU climate and energy diplomacy in a critical decade” should mainly emphasize cooperation, preventing conflicts related to climate change, and securing EU interests in other parts of the world (Council of the European Union, 2023).

### ***Climate Change and Defence Roadmap: Greening the Military***

Another landmark in the evolution of EU climate security policies is the Climate Change and Defence Roadmap. The Roadmap has been debated since 2020 and was finally adopted by the European Parliament in July 2022. It seeks to be a “wake-up call for the security and defence community to anticipate, prepare and prevent the security challenges of a warming planet and more extreme weather events.”<sup>18</sup> Its main focus is reducing the carbon footprint of military activities and training while streamlining the thinking and practices on

the links between climate change and security. In doing so, the EU aims to collaborate with the UN, NATO, and the OSCE to ensure the sector’s “operational effectiveness” in the context of the new geopolitical challenges of climate change and energy security.<sup>19</sup> As such, it seems to be an essential strategy to address climate security, mainly focused on conflict and military activities as well as the military greenhouse gas emissions mitigation efforts.

### ***Integrated Concept: Mainstreaming Climate Security***

The Concept for an Integrated Approach is the first description of the overall EU approach to climate and security. It was adopted in 2021 and aims to provide an integrated approach that can be mainstreamed throughout different policy areas in the EU’s external actions. This initiative aims to respond to the “complexity of the links between climate change, environmental degradation and peace and security, and the impact of these links on different EU policy fields, including crisis response and conflict management, development and humanitarian action.”<sup>20</sup> With a strong focus on conflict and peace, it is supposed to complement the “European Green Deal, particularly in the field of crisis and conflict management, and addresses actions set out in the Climate Change and Defence Roadmap.”<sup>21</sup> This suggests the importance of the climate-security nexus and the aims to foster and guide coherent policy responses in the future. However, the concept remains relatively vague as it references many kinds of activities and does not provide a clear definition of the core concerns that lie at the centre of the EU climate security policy.

### ***Recent Developments on Climate Security***

In June 2023, the European Commission together with the High Representative of the Union for Foreign Affairs and Security Policy addressed the European Council and Parliament. They declared that they will continue to bring forth the climate security nexus and “better integrate the climate, peace and security nexus in the EU’s external policies.”<sup>22</sup> The planned activities are similar to the Concept for an Integrated Approach on Climate Change and Security and include several defence training platforms and the deployment of environmental advisors with field missions. In the same month, the Joint Communication and Press Conference on the Climate-Security Nexus together with the US, NATO, and the EU “reiterated that climate change and environmental degradation are an existential threat to the planet, and also have immediate, direct, and growing negative implications for security and defence.”<sup>23</sup> The goal was to clearly strengthen the multilateral partnerships for climate security on the basis of the already existing programs of each of the partners (for example the NATO Climate Change and Security Action Plan).

One of the challenges encountered in the field of climate security is that the very concept of “climate security” can seemingly encompass everything that is broadly associated with either climate change or security, thus resulting in vague definitions, a range of interpretations, and difficulties in translating the concept into practice.

### 3. The Overall EU Climate Security Concept: Focus on Foreign Policy and Conflict

One of the challenges encountered in the field of climate security is that the very concept of “climate security” can seemingly encompass everything that is broadly associated with either climate change or security, thus resulting in vague definitions, a range of interpretations, and difficulties in translating the concept into practice. The EU approach presented above includes a broad list of climate security concerns, objectives, and activities that range from addressing existential threats, vulnerability, and loss of biodiversity, to preventing conflicts and securing military operations. This breadth leads to much criticism, skepticism, and general misunderstanding when it comes to climate security in theory and in practice. A prevalent example of this is the ongoing discussion to officially recognize the climate-security nexus at the UNSC.<sup>24</sup>

This section addresses the need for greater clarity. The Critical Environmental Security Studies framework informs the analysis<sup>25</sup> by combining, among others, the tools of securitization theory<sup>26</sup> and the critical lens of ecological approaches to the relation between human and nature and

the Anthropocene descriptions of science.<sup>27</sup> This allows for the assessment of EU climate security core concerns by differentiating between 1) the main object and values to secure, 2) the security threat, and 3) the security response. Equipped with this tool, six selected documents were analyzed (see orange boxes in Figure 1).

**Table 1. Overall EU Climate Security Concept.** Source: established by the author based on the analysis of the following documents: Council (2021), Council (2022a), Council (2022b), EEAS (2020), EEAS (2021), and Parliament (2022).

EU Climate Security Approach
<p><b>Object of Security</b></p> <ul style="list-style-type: none"> <li>▶ European Union</li> <li>▶ Security sector</li> <li>▶ International security, peace, stability, and state sovereignty</li> </ul>
<p><b>Security Threats</b></p> <ul style="list-style-type: none"> <li>▶ Climate-induced conflict and vulnerability</li> <li>▶ Green transition and the geopolitics of conflict</li> <li>▶ Climate change as a threat multiplier</li> <li>▶ Climate change as an existential threat</li> </ul>
<p><b>Security Responses</b></p> <ul style="list-style-type: none"> <li>▶ Climate diplomacy, multilateralism, partnership, climate policy, energy transition, and climate finance</li> <li>▶ Conflict prevention, crisis management, greening the military</li> <li>▶ Integrating, mainstreaming, and elevating the climate-security nexus</li> <li>▶ Foresight, early warning, and science</li> </ul>

#### **Security Object: European Union and Security Sector**

The fundamental value of the EU’s climate security lies in the “EU’s own resilience and competitiveness in a shifting security and geopolitical environment.”<sup>28</sup> The main object of security remains the “European security order, the security of our citizens and our Union.”<sup>29</sup> In addition, the security sector itself must be made secure and resilient. This is because climate change has an impact on Common Security and Defense Policy (CSDP) missions, operations, planning, and military capacity.<sup>30</sup> Furthermore, international security, peace, and

stability are listed as central security objectives. It is critical to “sovereignty, territorial integrity and independence within internationally recognized borders.”<sup>31</sup>

### **Security Threat: Climate Change as a Multiplier and Driver of Conflict and Vulnerability**

The links between climate change, conflict, and vulnerability are central to the EU’s climate security threat perception. Climate change is mainly conceived as a *threat or risk multiplier* by accelerating or deepening “ongoing or latent vulnerabilities and instability” or conflict or instability drivers.<sup>32</sup> Climate change catalyzes, for example, food and water scarcity, pandemics, displacement, and desertification.<sup>33</sup> Climate change intensifies underlying and root causes including “poverty, state fragility, the lack of public infrastructure and services, very limited access to basic goods, the lack of education, [and] corruption.”<sup>34</sup> Even the green transition can be considered a threat because it could geopolitically impact conflict areas.<sup>35</sup>

According to these EU documents, the amplifying effects of climate change on security threats impact mainly non-EU territories, especially Iraq, the Sahel, and the Arctic.<sup>36</sup> For example, the Climate Change and Defence Roadmap “[R]ecalls that in Africa, and, in particular, in the Sahel, the interaction of climate change and traditional conflict factors (inter alia, state failure, the lack of public services and deterioration in the security environment) is exacerbating the problems of violence and terrorism.”<sup>37</sup> Furthermore, as the Arctic becomes increasingly warm, the shift in its geopolitics is bringing up new challenges for the EU, “and calls for measures to avoid steps leading towards increased militarization.”<sup>38</sup>



A helicopter with the Société de protection des forêts contre le feu (SOPFEU) drops water to put out hot spots in a forest fire zone during Operation LENTUS 23-03 near Chapais, Quebec, on 19 June 2023.

Image by: Corporal Marc-André Leclerc, Valcartier Imaging Section, Canadian Armed Forces

### **Security Responses: Conflict Prevention, Climate Diplomacy, and Mainstreaming**

The EU climate security approach brings together four main types of responses. The first is the integration of climate and security into EU instruments and policies. External action areas have a strong focus on conflict prevention (e.g., early warning prevention assessments), crisis response (including climate change in mission, operation, and planning of CSDP missions, civilian or military missions), and conflict resolution, stabilization, and security strategies (EU peace mediation, disarmament, disaster risk management in conflict and crises).<sup>39</sup>

A second security response is climate diplomacy. Multilateralism, partnership, climate policy and the push for transition must now emphasize development and climate change mitigation and adaptation.<sup>40</sup> One of the goals of climate diplomacy is increased leadership in international and environmental policy and actions by the EU and EU member states.<sup>41</sup> It also aims to push the Green Deal goals alongside collective, decisive global action to “limit the temperature increase to 1.5 C [...] in response to climate emergency.”<sup>42</sup> An example of these efforts is the goal of transitioning towards carbon neutrality, which refers to the Paris Agreement, and working towards the “phasing out of unabated coal in energy production and—as a first step—an immediate end to all financing of new coal infrastructure in third countries.”<sup>43</sup> Multilateral frameworks, such as COP 27 are also “crucial to address the climate emergency.”<sup>44</sup> The role of the UNSC, such as the “joint work on these issues between the EU, UN system, OSCE and NATO”<sup>45</sup> and the Sendai Framework for Disaster Risk Reduction<sup>46</sup> is also important. Another priority is the “resilience against climate-related risks and human-made and natural disasters while striving towards a climate-neutral EU presence on the ground...” by strengthening the “... ability to rescue and evacuate our citizens when they are at risk beyond our borders.”<sup>47</sup> At the same time, the application of “a human rights-based approach to climate change and security,”<sup>48</sup> which means supporting youth and including gender,<sup>49</sup> is highlighted as a new necessary guide.

A third EU response to the security threats described lies in the armed forces of member states adapting to climate change<sup>50</sup> and “the Union’s security and defence sector and our CSDP’s engagements [to] increase energy and resource efficiency, including the environmental footprint of our CSDP missions and operations, in line with the Union’s goal of climate neutrality by 2050 under the European Green Deal, without reducing operational effectiveness.”<sup>51</sup>



The fourth EU response is to elevate the climate-security nexus and mainstream it. The main goal is to foster awareness, develop strategic foresight capabilities, strengthen early warning,<sup>52</sup> and increase knowledge<sup>53</sup> about the security consequences of climate change. In addition, climate and security are set out as “a new priority area for the UN-EU Strategic Partnership on Peace Operations and Crisis Management.”<sup>54</sup>

Overall, the EU approach to climate security mainly emphasizes conflict prevention and crisis management outside of Europe.<sup>55</sup>

#### 4. Challenges and Recommendations: Focusing More on the Existential Climate Crisis

Given the current state of study and practice in the field of climate security, several challenges lie ahead for the EU's future policies. First, the limited accessibility and transparency of EU climate security policies and approaches pose a challenge for furthering domestic and international cooperation. After all, it is possible that it faces misunderstandings and opposition.<sup>56</sup> Grouping the information on a website and outlining the core concerns of the EU climate security concept would make it more transparent and facilitate further dialogue. It might also provide a basis to rethink and readjust the focus of climate security.

Second, the current securitization of climate change within the EU relies on the traditional definition of security and focuses on a so-called security leap for defence, cooperation, and the energy transition. Moreover, the security responses focus on conflict prevention, climate diplomacy, and maintenance of the status quo in predetermined regions of instability. While the traditional security focus is important, there should be more emphasis on climate change in the EU, especially in the face of the multiple crises challenging it today. Within the context of these crises, the EU has not put climate change per se at the centre of its climate security concerns. It is only an add-on of sorts to common security threats and assessments. As such, it fails to adequately address and consider the global nature of climate change, the Union's exposure to climate change, and the impacts that climate change has already had on the EU. According to *Earth System Science* researchers, the “emergency response” required lies in Earth System Stewardship and entails, among other things, “drastic and system transformative measures, that cut and limit emissions to maintain the 1.5°C degrees.”<sup>57</sup> While this existential threat seems to be acknowledged in the EU discourse, as for example, “Climate change is an existential threat to humanity”<sup>58</sup> and through references to the 2015 Paris Agreement, the EU climate security responses are geographically limited and

Second, the current securitization of climate change within the EU relies on the traditional definition of security and focuses on a so-called security leap for defence, cooperation, and the energy transition. Moreover, the security responses focus on conflict prevention, climate diplomacy, and maintenance of the status quo in predetermined regions of instability.

constrained to foreign action in the Sahel and the Arctic and prioritize military emissions reduction. As the object of security (see Table 1) shows, the main focus does not lie in stabilizing the Earth system nor on securing the lives of present and future generations.

The avoidance of the existential threat attributed to climate change is important to highlight in the context of the EU's newfound priorities on war and defence. The Russian invasion of Ukraine dominates security and defence discussions. The overall goals of the Strategic Compass for Security lie in the critical terms of *act, secure, invest* and *partner*.<sup>59</sup> These goals are to establish, “a strong EU Rapid Deployment Capacity of up to 5000 troops for different types of crises.” They will also cement increased personnel and exercises, boosted military intelligence, enhanced defence expenditures from member states, and strengthened EU technological and industrial innovation.<sup>60</sup> None of these include climate change as a primary focus. Furthermore, the principal agencies in charge of the climate security response activities are the External Action Service and its missions, the military, and the cooperation among NATO, OSEC, UNSC, and other partners. Other agents, such as society, social movements, and local groups, have a

minor role in achieving security for the EU. Refocusing the core priorities around these concerns would be a necessary step towards fulfilling the objectives of the EU's climate security policies.

Another challenge is that the current EU approach makes no reference to climate sciences, Earth System Science, or the literature on the links between climate change and security.<sup>61</sup> This lack of acknowledgement of independent scientific research is surprising.<sup>62</sup> The expertise informing and influencing EU climate security policies is neither accessible nor clear.<sup>63</sup> In the absence of transparency, it is likely that military intelligence<sup>64</sup> and think tanks play an important role in these questions.<sup>65</sup> This leaves the EU climate approach vulnerable to criticism that it serves political agendas and lacks a scientific basis. To correct this, the EU could support independent scientific research that better integrates the interdisciplinary collaboration between the climate and Earth System Science and literature on climate security.<sup>66</sup> Important future steps that would "support more systematic and extensive exchanges and cross-fertilization between the scientific communities working on the climate-security nexus"<sup>67</sup> would include the promotion and integration of independent research.

## 5. Conclusions

This article assessed the evolution of the EU's approach to climate security and provided a critical analysis. Overall, this evolution shows that the nexus between climate and security has expanded throughout different EU policy levels and issues. Especially after 2021, the EU has increasingly engaged in institutionalizing climate security and making it a priority for future international cooperation. The analysis described the main policy areas, the core concerns of the

EU's climate security concept, and main challenges. The three main intertwined challenges are a relatively inaccessible and broad approach; lack of communication and transparency; and skepticism given the convoluted nature of the very concept of EU climate security.

The EU's climate security concept is currently defined around a traditional understanding of security that limits it to focusing on conflict, instability, and vulnerability in some regions. While these issues are legitimate objects of policy, the narrow focus eclipses the existential threat of climate change.<sup>68</sup> A crucial conceptual readjustment would put the fight against climate change at the very centre of the EU's climate security concept. Narrowing in on climate politics and GHG emissions reduction are not enough to address the imminent consequences of climate change. Justice and well-being for future generations and the Earth system need to be integrated into the object of security. The EU and other actors should learn from these insights. As Simon Dalby argues (in this issue), there is an urgent need to rethink conceptions of security, policy, and governance. Especially in the context of multiple crises and in light of the increasing militarization caused by Russia's war against Ukraine, the existential concerns of climate change need to be tackled with an integrated focus.

Lastly, the EU's climate security approach must place greater emphasis on the role of science and on being transparent in the way it defines and institutionalizes climate security policy. This is especially crucial—given the context of multiple crises and states of emergency—for the EU's responsible mission to ensure climate security, by acknowledging the scale of the Earth system and having a vision for the future.

Canadian  
Military Journal **CMJ/RMC** Revue militaire  
canadienne

## Notes

- 1 I would like to thank Bruno Charbonneau for his constructive criticism, and Léa B and Friedemann Melcher for their editing support. This research was carried out in the context of the research project "Multiple Crises. Covid-19 and the Entanglements of Public Health, Security and Ecology in Europe (2021–2024)" associated with the CMB and funded by the German Federal Ministry of Education and Research.
- 2 Trombetta, J. (2008). Environmental security and climate change: Analysing the discourse. *Cambridge Review of International Affairs*, 21(4), 585–602; Diez, T., von Lucke, F., Wellmann, Z. (2016). *The Securitisation of Climate Change: Actors, Processes and Consequences*. (London, Routledge); von Lucke, F. (2020). *The Securitisation of Climate Change and the Governmentalisation of Security*. Houndmills Basingstoke, Palgrave Macmillan Cham.
- 3 Brauch, H.G. (2011). Concepts of Security Threats, Challenges, Vulnerabilities and Risks. In *Coping with Global Environmental Change in the Anthropocene*, 61–106. Berlin, Heidelberg, New York: Springer-Verlag; Hardt, J. N., Harrington, C., von Lucke, F., Estève, A., & Simpson, N. (eds.) (2023). *Climate Security in the Anthropocene—Exploring the Approaches of United Nations Security Council Member-States*. Springer Nature Switzerland, Cham.
- 4 Trombetta, J. M. (ed.) (forthcoming in 2023). *Handbook on Climate Security*. Edward Elgar Publishing, Cheltenham.
- 5 Hardt et al. (2023).
- 6 The European Parliament declares climate emergency Press Releases (29.11.2019). At: <https://www.europarl.europa.eu/news/en/press-room/20191121IPR67110/the-european-parliament-declares-climate-emergency> (14.09.23).
- 7 Bremberg, N., Sonnsjö, H., & Mobjörk, M. (2018). The EU and Climate-Related Security Risks: A Community of Practice in the Making? *Journal of European Integration*, 41(2), 1–17; Bunse, S., Remling, E., et al. (2022). Mapping European Union Member States' Responses to Climate-Related Security Risks. *SIPRI Research Policy Paper*. SIPRI, Stockholm, at: [https://www.sipri.org/sites/default/files/2022-09/rpr\\_eu\\_mapping\\_member\\_states\\_crsr.pdf](https://www.sipri.org/sites/default/files/2022-09/rpr_eu_mapping_member_states_crsr.pdf); Dupont, C. (2019). The EU's collective securitization of climate change. *West European Politics*, 42(2), 369–390; Pérez De Las Heras, B. (2020). Climate security in the European Union's foreign policy: addressing the responsibility to prepare for conflict prevention. *Journal of Contemporary European Studies*, 28(3), 335–347; Proedrou, F. (2020). Anthropocene Geopolitics and Foreign Policy: Exploring the Link in the EU Case. *Alternatives: Global, Local, Political*, 45(2), 83–101; Remling, E., & Barnhoorn, A. (2021). A Reassessment of the European Union's Response to Climate-Related Security Risks. *SIPRI Insights on Peace and Security*, 2021/2. SIPRI, Stockholm, at: [https://www.sipri.org/sites/default/files/2021-03/sipriinsight2102\\_ccr\\_eu.pdf](https://www.sipri.org/sites/default/files/2021-03/sipriinsight2102_ccr_eu.pdf).

- 8 At: <https://www.copernicus.eu/en> (14.09.23).
- 9 Rothe, D. (2017) Seeing like a satellite: Remote sensing and the ontological politics of environmental security. *Security Dialogue*, 48(4), 334-53.
- 10 Brauch, H.G. (2011) Concepts of Security Threats, Challenges, Vulnerabilities and Risks. In *Coping with Global Environmental Change in the Anthropocene*, 61-106. Berlin, Heidelberg, New York: Springer-Verlag.
- 11 At: [https://www.wbgu.de/fileadmin/user\\_upload/wbgu/publikationen/hauptgutachten/hg2007/pdf/wbgu\\_jg2007\\_kurz\\_engl.pdf](https://www.wbgu.de/fileadmin/user_upload/wbgu/publikationen/hauptgutachten/hg2007/pdf/wbgu_jg2007_kurz_engl.pdf) (13.09.23).
- 12 At: [https://www.consilium.europa.eu/uedocs/cms\\_data/docs/pressdata/en/reports/99387.pdf](https://www.consilium.europa.eu/uedocs/cms_data/docs/pressdata/en/reports/99387.pdf) (13.09.23).
- 13 Council-Council of the European Union (2022a). *A Strategic Compass for Security and Defence—For a European Union that protects its citizens, values and interests and contributes to international peace and security*. 21 Mar 2022, p. 5, at: <https://data.consilium.europa.eu/doc/document/ST-7371-2022-INIT/en/pdf>
- 14 Council (2022a: 2).
- 15 Hardt, J. N., & Pérez de Armino, K. (forthcoming in 2023). Climate Security and the European Union. In *Handbook on Climate Security*. Edward Elgar Publishing, Cheltenham.
- 16 Council-Council of the European Union (2022b). *Council conclusions on EU Climate Diplomacy: accelerating the implementation of Glasgow outcomes*. 21 Feb 2022, at: <https://data.consilium.europa.eu/doc/document/ST-6120-2022-INIT/en/pdf>
- 17 At: <https://www.consilium.europa.eu/media/48057/st05263-en21.pdf> (14.09.23).
- 18 At: [https://www.eeas.europa.eu/eeas/towards-climate-proof-security-and-defence-policy-roadmap-eu-action\\_en](https://www.eeas.europa.eu/eeas/towards-climate-proof-security-and-defence-policy-roadmap-eu-action_en) (14.09.23).
- 19 Council (2022a: 26).
- 20 EEAS - European External Action Service (2021). Concept for an Integrated Approach on Climate Change and Security. *Working document of the EEAS 770*, p. 1; at: <https://data.consilium.europa.eu/doc/document/ST-12537-2021-INIT/en/pdf>.
- 21 EEAS (2021:2).
- 22 At: [https://ec.europa.eu/commission/presscorner/detail/en/ip\\_23\\_3492](https://ec.europa.eu/commission/presscorner/detail/en/ip_23_3492) (bold removed from the original) (14.09.23).
- 23 EU, US & NATO (2023). *Press Statement on Climate and Security*. 21 Jun 2023, at: [https://www.eeas.europa.eu/eeas/climate-and-security-joint-press-release-following-meeting-between-eu-us-and-nato\\_en](https://www.eeas.europa.eu/eeas/climate-and-security-joint-press-release-following-meeting-between-eu-us-and-nato_en).
- 24 Hardt & Pérez de Armino (forthcoming in 2023).
- 25 Hardt, J.N. (2018a). *Environmental Security in the Anthropocene*. Routledge, London; Hardt, J.N. (2018b). Security Studies and the Discourse on the Anthropocene: Shortcomings, Challenges and Opportunities. In *The Anthropocene Debate and Political Sciences* (pp. 85-102). Routledge, London.
- 26 Buzan, B., Wæver O., & De Wilde, J. (1998). *Security: A new framework for analysis*. Linnie Rienner Publishers, London/Boulder, CO.
- 27 See Proedrou (2020), who also criticizes the Geopolitics of the EU in the sense of Anthropocene, whereby the author only focused on foreign policy and geopolitics and less on security.
- 28 Council-Council of the EU (2021). *European Council conclusions on Climate and Energy Diplomacy – Delivering on the external dimension of the European Green Deal*. 25 Jan 2021, p. 2, at: <https://www.consilium.europa.eu/media/48057/st05263-en21.pdf>
- 29 Council (2022a:5).
- 30 EEAS- European External Action Service (2020). Climate Change and Defence Roadmap. *Working document of the EEAS 1251*, p. 4; at: <https://data.consilium.europa.eu/doc/document/ST-12741-2020-INIT/en/pdf>; Council (2022a:26; 4).
- 31 Council (2022a:2).
- 32 EEAS (2021:1); Council (2022a:12); EEAS (2020:3).
- 33 EEAS (2020:5).
- 34 European Parliament (2022). *European Parliament resolution of 7 June 2022 on the EEAS's Climate Change and Defence Roadmap (2021/2102(INI))*. 07 Jun 2022, p. 7, at: [https://www.europarl.europa.eu/doceo/document/TA-9-2022-0223\\_EN.pdf](https://www.europarl.europa.eu/doceo/document/TA-9-2022-0223_EN.pdf)
- 35 Council (2022a:26); EEAS (2020:3).
- 36 Council (2022a:12).
- 37 European Parliament (2022:7).
- 38 European Parliament (2022:8).
- 39 EEAS (2021).
- 40 EEAS (2021).
- 41 EEAS (2020:9).
- 42 Council (2021); Council (2022b:3).
- 43 Council (2022b:2).
- 44 Council (2022b:3).
- 45 Council (2022b:5).
- 46 Council (2022b:10).
- 47 Council (2022a:27).
- 48 EEAS (2021:11).
- 49 Council (2022b:5).
- 50 EEAS (2020:11).
- 51 Council (2022a:26).
- 52 EEAS (2020:5).
- 53 EEAS (2020).
- 54 European Parliament (2022:16).
- 55 Hardt & Pérez de Armino (forthcoming in 2023).
- 56 Trombetta (2008); Hardt, J.N. (2021). The United Nations Security Council at the Edge of Climate Change. *Journal Politics and Governance*, 9, 5-15. ; Hardt et al. (2023).
- 57 Lenton, T. M., Rockström, J., et al. (2019). Climate Tipping Points—Too Risky to Bet Against. *Nature*, 575, 592-595.
- 58 Council (2021); Council (2022b:3).
- 59 At: <https://www.consilium.europa.eu/en/press/press-releases/2022/03/21/a-strategic-compass-for-a-stronger-eu-security-and-defence-in-the-next-decade/> (14.09.23).
- 60 At: <https://www.consilium.europa.eu/en/press/press-releases/2022/03/21/a-strategic-compass-for-a-stronger-eu-security-and-defence-in-the-next-decade/> (14.09.23).
- 61 Floyd, R. & Matthew, R. A. (eds.) (2013) *Environmental Security. Approaches and Issues*, Oxon, New York: Routledge; Dalby, S. (2020). *Anthropocene geopolitics: Globalization, security, sustainability*. University of Ottawa Press; Diez et al. (2016); von Lucke (2020); Trombetta (forthcoming in 2023).
- 62 As an exception, the latest document from the European Commission and the High Representative of the Union for Foreign Affairs and Security Policy (2023) includes several references to the IPCC and to some think tank references. It furthermore calls attention that none of the EU research programs include calls on climate security specifically.
- 63 One example is that the EU website Science 4 Peace and the Global Conflict Risk Index are not accessible to the broader public. At: <https://science4peace.jrc.ec.europa.eu/mapping/> (12.09.23)
- 64 Council (2022a:27).
- 65 See Hardt, J. N. & Scheffran, J. (2020): "L'(in)sécurité planétaire vue par le réseau de la Planetary Security Initiative : une approche critique de l'expertise face à l'Anthropocène" in: *Les Champs de Mars: 101-126*.
- 66 Hardt (2021).
- 67 European Parliament (2022:3).
- 68 IPCC, Intergovernmental Panel on Climate Change (2022): Summary for Policymakers. In: *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* (pp. 3-32). Cambridge University Press, Cambridge/ New York, NY; Lenton et al. (2019).



A Canadian Armed Forces Flight Engineer surveys the wildfires in British Columbia from onboard a CH-147 Chinook helicopter during a reconnaissance flight as part of Operation LENTUS 17-04 in Kamloops British Columbia, on July 12, 2017.

Image by: MCpl Gabrielle DesRochers, Canadian Forces Combat Camera

# Rethinking Firepower and Security Dilemmas in the Era of Climate Change

**SIMON DALBY**

*Simon Dalby is Professor Emeritus at Wilfrid Laurier University, Waterloo, Ontario, where he taught in the Balsillie School of International Affairs, and a Senior Fellow at the Centre for International Governance Innovation. He is the author of Anthropocene Geopolitics (University of Ottawa Press, 2020), Rethinking Environmental Security (Edward Elgar, 2022) and Pyromania: Fire and Geopolitics in a Climate Disrupted World (Agenda, 2024).*

The 2022 Russian invasion of Ukraine generated two simultaneous security crises for NATO: firstly, the obvious military one and, secondly, the energy crisis in Europe. In one sense, these were old issues reigniting fears of Russian intentions on the continent and reminding older residents of fuel supply crises of earlier times related to conflict in the Middle East. But in the context of rapidly advancing scholarship on how the Earth's ecology functions, and the dangerous heat wave worldwide in 2023, massive forest fires in Canada, and record highs in global sea surface temperatures, those old concerns must be supplemented by a clear appreciation of the new dangers that are looming in the immediate future: a third security crisis related to the rapid ecological transformations now underway around the world. Climate change is the most important consideration, but far from the only one as the burgeoning earth system sciences have been making clear in recent years.<sup>1</sup>



This entails a rethinking of security that is necessary because of the scale and speed of the transformations the global economy is causing to the earth system. Unless there is a rapid reduction in the use of fossil fuel, greenhouse gas emissions (GHG) will cause further escalating destabilizations of the climate system with likely catastrophic consequences for civilization. Current trajectories of fossil fuel use will make all these problems increasingly severe and ever more difficult to tackle in this decade and the next. In the language of earth system science, we are rapidly moving towards a “hothouse earth.”<sup>2</sup> Failure to change the trajectory of fossil fuel use promises constant and severe existential security threats to modern societies. These consequences and risks, as this article suggests, require a paradigm shift in the way we think about, study, and apply security.

In Thomas Kuhn’s classic study of physics and paradigms, he (very loosely) suggested that ways of doing research in particular scientific fields persist with established modes of inquiry until the anomalies in terms of results can no longer be explained by the operant theoretical framework.<sup>3</sup> New interpretive frameworks are then invoked to provide theoretically coherent explanations of the findings. In turn, the new theoretical framework poses novel questions, and inevitably raises new difficulties down the road. Key to all this is the necessity to recontextualize questions, to put them in a new, often larger framework, and to rethink how things interact once the new context is considered.

Insofar as the term paradigm refers to an overarching intellectual framework, it seems apt to invoke it in current circumstances to think about security. This is clearly the case and a challenge for military organizations because climate change—and the larger debate about the rapidly changing earth system now encapsulated in the use of the term Anthropocene<sup>4</sup>—suggests that conventional formulations of security no longer fit our circumstances, in the larger context of providing solutions to social difficulties, not to mention providing safety to populations facing threats of various sorts. The old dangers of warfare, conflict, geopolitical ambitions, and the related insecurities will not cease, but they will occur against a rapidly transforming geophysical background that can no longer be taken for granted and that will have a transformative impact on every sector of human activity.

While notions of security have been reworked and extended in the post-Cold-War period, and a broadened focus on human security has structured thinking in NATO and elsewhere, this article suggests that climate change demands a much more

fundamental rethinking. Climate change is not another buzzword to mainstream into existing security narratives and military practices. It is affecting underwater operations, atmospheric communications, soldiers’ health, and so much more. Assumptions that the planet is a stable backdrop for the human drama are no longer tenable. To borrow Daniel Matthews’ phrasing, while in the Shakespearean formulation all the world is a stage for the human drama, the stage is now being reorganized repeatedly and the props are changing frequently while the fire alarm in the theatre is ringing loud and clear.<sup>5</sup> These new circumstances, the matter of living in the Anthropocene, where human actions are rapidly reshaping how the earth system works, require a new paradigm in thinking about security.

## Rethinking Security

In the aftermath of the Cold War, there were numerous efforts to tackle the concept of security, to focus on the dangers of arms proliferation and constrain the production of nuclear weapons in particular, and to think about extending security to deal with many other vulnerabilities and dangers to human populations, not just to states. Human security became a catchall phrase, crystallized by the 1994 United Nations Human Development report which set out an ambitious list of dangers faced by people in many places.<sup>6</sup> It noted that environmental security was a growing problem, caused not by the deliberate hostile actions of any particular state, but by the unintended consequences of industrial activity, urbanization, and economic growth policies.



A Canadian Armed Forces member wraps up equipment for transport near Burns Lake, British Columbia, during Operation LENTUS on 4 Aug, 2023.

Image by: Corporal Alexandre Brisson, Visual Communications Support, Canadian Armed Forces Photo



Members of the 3<sup>rd</sup> Battalion, Princess Patricia's Canadian Light Infantry, participate in fire prevention operations in Grande Prairie, Alberta in support of Operation LENTUS 23-01 on May 11, 2023.

Image by: MCpl Cass Moon, Canadian Armed Forces photo

Academic analyses have also focused on this enlarged agenda and the processes whereby some issues were “securitized” by states, i.e., issues raised to the level of an emergency or threat requiring more than routine policy responses by states to provide protection.<sup>7</sup> The failures of some states to provide for the protection of their populations from genocide, crimes against humanity, and related matters also raised the question of limitations on the principle of sovereignty. If states fail to function effectively, and hence cannot exercise effective sovereignty over their territory, the argument was that the larger international community had a responsibility to protect their populations; sovereignty was understood as contingent rather than absolute.<sup>8</sup> Larger efforts at international coordination, within organizations such as the G-20, sought to extend practices of liberal cooperation in trade and environmental matters to agendas for human rights protection and conflict avoidance. In short, security was to be understood as an issue that went far beyond military protection based on national concerns.

Clearly, national security could not be provided by unilateral measures in a complex interdependent world. Indeed, traditional notions of national security undergirded by firepower, and in particular the threat of nuclear annihilation, were seen as part of the problem to which international institutions had to be the answer. But most of this discussion of extended security did not focus on existential threats such as a major nuclear war bringing about the end of civilization, and thus could be easily dismissed by those who maintained that national security had priority. The end of the Cold War had supposedly removed the dangers of great power conflicts and nuclear annihilation.

Security policy would now focus on lesser threats and smaller conflicts, with all the misery and avoidable casualties they entail.

While events in Ukraine and fears of a conflict over Taiwan in 2022 have moved nuclear dangers back into the consciousness of policy-makers, earth system science findings are now making it very clear that many human beings, and possibly the future of civilization itself, are facing existential threats from the enormous use of fossil fuels in particular and, more generally, the ecological disruptions set in motion by the extraordinary scale of recent human industrial and agricultural activities. This is the new set of circumstances that requires a paradigm shift in security thinking. Assumptions of a stable environment that will last long into the future can no longer be the basis of policy thinking.

## Firepower and Security Dilemmas

What does it all mean for security thinking and practices? At the heart of these new circumstances lie the dangers of firepower in two senses. Firepower is usually understood in the military sense, and most obviously in the potential for the use of nuclear weapons. But as this article outlines, firepower today must also be understood in terms of the power offered by the widespread civilian use of fossil fuel combustion.<sup>9</sup> This extensive use of combustion to power so much of modern society is precisely what is causing dangerously accelerating climate and other ecological change, with all the associated hazards of storms, droughts, and major agricultural and economic disruptions.

During the Cold War, national security was undergirded by military firepower. This overabundance of firepower, in the form of thousands of nuclear weapons constructed to deter various

forms of military action, endangered those putatively defended by these systems as much as everyone else. Mutually assured destruction led to serious international attempts at arms control to limit the dangers. To put the matter very bluntly, it is precisely the widespread use of firepower, in the other, industrial sense of the word, that is now rendering so many people vulnerable.

This is a matter usually discussed in terms of security dilemmas, where preparations to protect one human society arouse fears in another, in turn leading them to arm themselves, hence raising more fears. Vicious spirals of mutual fear of assured destruction and weapons construction end up endangering everyone. But in John Herz's classic formulation, these security dilemmas are social problems caused by competing human communities.<sup>10</sup> Now climate change and other ecological disruptions are the result of our economic system that depends on a secure supply of fossil fuels, endangering people in novel ways in the new increasingly artificial circumstances of our times.<sup>11</sup> Security through fossil-fuelled economic growth for some is endangering future generations everywhere.

The central point, to put it differently, is that climate change models of accelerating future consequences due to the changing atmosphere suggest another kind of security dilemma. Modern societies are increasingly being rendered vulnerable by the products of the other form of firepower on the loose in the earth system: the use of fossil fuels that power much of our social and economic systems. The emissions of greenhouse gases threaten everyone; hence the need for a paradigm shift in security thinking.

## The Energy Security Paradox

Fire is key to military organizations, but more fundamentally to modernity. Its controlled use is what has given rise to most contemporary technology, and it is at the heart of smelting of many metals, as well as industrial production processes. Modern power is all about the mastery of fire in its multiplicity of human uses and, as historian Stephen Pyne repeatedly reminds us, we are the only species that has learned the ignition trick.<sup>12</sup> Fire has made us the dominant species on earth and allowed us to radically transform most terrestrial landscapes and completely change the species mix in the biosphere too. But in the process, combustion is changing the atmosphere on such a scale that the rich and industrial segments of humanity are determining the future configuration of the planet's climate system, and so much more.

In hydrological science terms, we are in a condition of non-stationarity. The past is no longer a good indication of the likely future range of meteorological conditions. Stationarity refers to the traditional patterns of rainfall, snow, and droughts, which until fairly recently fluctuated within predictable ranges. Hence engineers could design bridges, dams, and other infrastructure to withstand a one in one-hundred-year flood or

But in John Herz's classic formulation, these security dilemmas are social problems caused by competing human communities. Now climate change and other ecological disruptions are the result of our economic system that depends on a secure supply of fossil fuels, endangering people in novel ways in the new increasingly artificial circumstances of our times.

other extreme event. Weapon manufacturers make assumptions about environmental conditions: sea temperatures affect sonar, extreme heat and weather affect air operations, and so on. But weather records are no longer a reliable indication of what is likely to occur. More extremes and less reliability are making planning and risk assessments more difficult, and, ironically, more necessary too.

Security practitioners need a paradigm shift to focus more clearly on how to explain all this, how to act in these new circumstances that result from "the great acceleration" of civilian firepower,<sup>13</sup> and how to adapt their decision-making processes. Rapidly reducing the use of firepower in the sense of fossil fuels is key to slowing climate change and making it easier to cope with the disruptions already set in motion, but any such reduction or lack thereof will impact the security landscape and the use and utility of military firepower.

Jonna Nyman calls this the energy security paradox.<sup>14</sup> It is the choice between short-term security perpetuating the existing arrangements with their reliance on fossil fuels, and the need to drastically curtail fossil fuel use to prevent further accelerating earth system disruptions and all the resulting insecurities in future decades.

A new paradigm is needed that addresses the long-term impacts of continued fossil fuel use and reformulates security

to prevent these future catastrophic disruptions. This is an unsettling matter for traditional security practitioners, who mostly remain focused on state rivalries, or on dealing with immediate political instabilities in various places. The biggest threats to our future do not come from external sources. Climate change is a self-inflicted problem, and as among the highest per capita emitters of greenhouse gases, Canadians are more responsible for the current situation than most other societies.<sup>15</sup> We are not apart from nature, but a key part of it. That profound shift in understanding, away from modern assumptions that we could endlessly manipulate nature for our convenience without having to worry too much about the consequences, lies at the heart of reconsiderations of what it is that now makes us in Canada insecure, as well as most other peoples elsewhere.

## Security After Firepower?

Much of this might sound outlandish. Much of it is anathema to traditional modes of security thinking. The proposition is that we need to think on a different scale, on the scale of a new paradigm that extends the contextualization of security dilemmas and mutually assured destruction to our geophysical context, newly understood in terms of earth system science. We urgently need a new paradigm to encompass the novel circumstances of a climate-disrupted world, one which Anatol Lieven thinks can at least reasonably invoke nationalism to mobilize action, because matters of national survival loom for most societies in the near future.<sup>16</sup> This proposition is tricky because national survival obviously depends on international cooperation if the Paris Agreement process is to be complemented with timely measures to prevent more disruptions to the earth system.

In the case of the Cold War, some of the worst dangers were tackled by efforts at arms control, restricting the number of warheads on missiles and monitoring compliance with agreements. Mutual restraint among political elites became a matter of necessity for survival, a *negarchy* in Daniel Deudney's terms.<sup>17</sup> Yet, unlike arms control, climate change is not a problem that goes away as soon as the combustion of fossil fuels ceases. Carbon dioxide already in the atmosphere will take centuries to be absorbed by natural processes, and carbon capture and storage technologies (even if they do work in the future) would take decades, if not more, to work at anything close to the necessary scale. So, the longer restraints on combustion are delayed, the more severe the climate disruptions become in the future. Time is of the essence in curtailing combustion. Understanding this as the key context for climate security clearly does require a new paradigm.

In the process, it becomes clear that worrying about climate-induced political instabilities in the Sahel or elsewhere in the underdeveloped global south is fine insofar as it goes.<sup>18</sup> Those symptoms of the much larger process of transformation need some attention, and undoubtedly will call on the Canadian Armed Forces for peacekeeping roles as well as disaster and humanitarian assistance. But these are minor symptoms in comparison to the much larger task of remaking economies and urban systems, and the energy transition that is already shifting the foundations of political and economic power. Indeed, avoiding the worst of climate change requires thinking, in a fashion loosely analogous to Cold War notions of arms control, of drastically restricting and then ceasing the production and consumption of fossil fuels. A coal ban treaty seems especially apposite in the short run as a first step in this direction.<sup>19</sup> Beyond a focus on banning coal explicitly, there is growing impetus behind an international initiative for a fossil fuel non-proliferation treaty.<sup>20</sup>

In terms of rethinking security, the fossil fuel non-proliferation initiative parallels arms control agreements in some key ways. Where the dangers of firepower in military terms have been tackled by agreements to constrain the production and deployment of dangerous weapons, the new proposals focus on doing the same thing with the novel dangers of civilian firepower. Stopping investments in new fossil fuel exploration and infrastructure construction will constrain and eventually reduce the amount of fossil fuels being extracted from the earth, and hence the quantities being burnt. Where arms control agreements have verification and transparency mechanisms, so too will non-proliferation efforts on fossil fuel production. They ought to be much easier to verify than the more complicated matters of counting greenhouse gas emissions, a tricky part of the Paris process. Mines, wells, pipelines, and tankers are much easier to count and monitor.

It has long been clear that fossil fuel companies already have resource reserves that are larger than what can be consumed if the planetary system is to remain under the average global temperature increase of 1.5° Celsius above pre-industrial levels, which was the aspirational target set in the Paris Agreement.<sup>21</sup> There is no need to explore for new sources or bring new wells and mines on stream if a stable climate is the policy goal. If no new developments are put in place then, as existing gas and oil wells become depleted, overall production will decline. Coupled with rapid technological innovation to replace fossil-fuelled "firepower" with electrical modes of energy, this non-proliferation initiative could work to reduce the dangers of fossil fuel use quite rapidly. The parallels with arms control efforts are quite clear; constraining the



production and use of dangerous technologies should enhance human security generally.

## Climate Geopolitics

Climate change is not, and can hardly be, the primary mission of military organizations. Nevertheless, climate change will affect not only the military's operational environment (which is something that the military is comfortable to discuss) but most likely the core mission (which is something that the military avoids discussing) as it transforms the geopolitical environment within which it will operate. Demands for humanitarian and disaster response are increasing and will continue to increase. Decisions about war and military operations will likely include, in the near future, considerations about GHG emission costs. All of this to say that climate security requires nothing less than tackling this new security dilemma directly and doing so urgently. In parallel with arms control in the Cold War period, designed to constrain the potential use of nuclear firepower and to simultaneously develop modes of confidence building, as well as monitoring compliance with agreements, a much more robust set of agreements to accelerate the decarbonization of the global economy is now needed.

Also needed are international agreements to facilitate transitions to this post-fossil-fuel world, and in the process

manage the geopolitical upheavals that weaning the world off petroleum, gas, and coal will inevitably bring.<sup>22</sup> Transition strategies for fossil fuel producers and for consumers are needed, albeit many of the fossil fuel producers have accumulated considerable wealth to facilitate the process. This is a tall order in present geopolitical circumstances but nevertheless necessary given the rapid recent accumulation of greenhouse gases in the atmosphere.

While fossil fuels have powered the prosperity of the modern world, their continued use is now dramatically endangering people and societies in many places. As with traditional concerns about the dangers of massive military firepower, now too with the fossil-fuelled version, both must be constrained to make a more secure future.

Understanding that the world is being dramatically transformed by modern societies—and that, on current trajectories, fossil fuel combustion is leading to a radically different ecological future for the planet and all its inhabitants—must be the starting point for this rethinking. Changing this trajectory by rapidly reducing the use of fossil fuels is essential for a relatively stable future planetary climate system, the *sine qua non* for large-scale civilization. Constraining firepower in both its senses is key to the new security paradigm needed for our common future.

Canadian  
Military Journal  Revue militaire  
canadienne

## Notes

- 1 J. Rockström, and O. Gaffney, *Breaking Boundaries: The Science of our Planet*. New York: DK Publishing 2021.
- 2 B. McGuire., *Hothouse Earth: An Inhabitant's Guide*. London: Icon, 2022.
- 3 T. Kuhn. *The Structure of Scientific Revolutions*. Chicago: Chicago University Press, 1962.
- 4 United Nations Development Program *Human Development Report 1994*. New York: Oxford University Press 1994.
- 5 Daniel Matthews. *Earthbound: The Aesthetics of Sovereignty in the Anthropocene* Edinburgh: Edinburgh University Press 2021.
- 6 United Nations Development Program *Human Development Report 1994*. New York: Oxford University Press 1994.
- 7 B. Buzan, O. Waever & J. de Wilde *Security: A New Framework for Analysis* Boulder: Lynne Rienner, 1998.
- 8 S. Elden *Terror and Territory: The Spatial Extent of Sovereignty* Minneapolis: University of Minnesota Press 2009.
- 9 S. Dalby *Rethinking Environmental Security* Cheltenham: Edward Elgar, 2022.
- 10 J. Herz, Idealist Internationalism and the Security Dilemma. *World Politics*, 2(2) (1950). pp. 157–180.
- 11 E. Löwbrand and M. Mobjörk (Eds) *Anthropocene (In)Securities*. Stockholm: Stockholm International Peace Research Institute/ Oxford University Press. 2021.
- 12 S.J. Pyne, *The Pyrocene*. Berkeley: University of California Press. 2021.
- 13 J. R. McNeill, and P. Engelke, *The Great Acceleration: An Environmental History of the Anthropocene since 1945*. Cambridge, MA.: Harvard University Press. 2016.
- 14 J. Nyman, *The Energy Security Paradox: Rethinking Energy (In)Security in the United States and China*. Oxford: Oxford University Press. 2018.
- 15 C.W. Callahan and J.S. Mankin, National attribution of historical climate damages. *Climatic Change* 172. (2022). pp. 40–59.
- 16 A. Lieven, *Climate Change and the Nation State: The Case for Nationalism in a Warming World*. New York: Oxford University Press. 2020.
- 17 D. Deudney, *Bounding Power: Republican Security Theory from the Polis to the Global Village*. Princeton: Princeton University Press. 2007.
- 18 C.E. Werrell, and F. Femia, eds *The Epicenters of Climate and Security: The New Geostrategic Landscape of the Anthropocene*. Washington: Center for Climate and Security, 2017.
- 19 A. Burke, and S. Fishel, A coal elimination treaty 2030: Fast-tracking climate change mitigation, global health and security. *Earth System Governance*, 3 (2020). 100046.
- 20 P. Newell, H. van Asselt & F. Daley "Building a fossil fuel non-proliferation treaty: Key elements" *Earth System Governance* 14 (2022). 100159. See also <https://fossilfuel treaty.org/cop27>.
- 21 D. Welsby, J. Price, S. Pye & P. Ekins "Unextractable fossil fuels in a 1.5 C world" *Nature* 579 (2021). 230–234.
- 22 Global Commission on the Geopolitics of Energy Transformation. *A New World: The Geopolitics of the Energy Transformation*. 2019. ([www.geopoliticsofrenewables.org](http://www.geopoliticsofrenewables.org) 2019)



Her Majesty's Canadian Ship FREDERICTON sails under a display of aurora borealis off the coast of Scotland during Exercise JOINT WARRIOR as part of Operation REASSURANCE on April 16, 2015.

Image by: Maritime Task Force — OP Reassurance, DND

## Canadian military meteorology and the evolution of the corresponding military occupational group

### **CHIEF WARRANT OFFICER (CWO) MARC BOUCHER**

*Chief Warrant Officer (CWO) Marc Boucher, MMM, CD, is currently completing his bachelor's degree in geography at the University of Manitoba. A Meteorological Technician (Met Tech) by trade, CWO Boucher was employed at the Transition Unit Manitoba / Saskatchewan in 2020–2023 when he wrote this article. In July 2023, he was appointed as the 23<sup>rd</sup> Canadian Forces Leadership and Recruit School Chief Warrant Officer and, in the same year, as a Knight of Grace of The Most Venerable Order of the Hospital of St. John of Jerusalem.*

## The 19<sup>th</sup> century

**Throughout the history of human conflict, military leaders have experienced the impact of weather on the battlefield. One example is Napoleon at Waterloo. Another is D-Day, which was postponed to 6 June 1944 due to bad weather the previous day. Generals need favourable weather to conduct military operations on battlefields. Canada recognized the need to develop a military weather service capability, which would play a major role in decision making for its military operations all over the world.**

Canada's meteorological history had a modest start in the 19<sup>th</sup> century, when a British Army officer, Sir John Henry Lefroy,<sup>1</sup> began a meteorological and magnetic observation program at the University of Toronto in 1839.<sup>2</sup> In 1853, the Province of Canada took over the program and built a new observatory.<sup>3</sup> Later, the program became the headquarters for meteorology in Canada. It was soon determined that multiple observation sites were needed in order to be able to create a weather forecast. The Superintendent, G. T. Kingston,<sup>4</sup> set up a system of telegraphically linked stations which enabled the service to issue both storm warnings and daily forecasts. The storm-warning system was established to help with navigation on the St. Lawrence River.<sup>5</sup>

Quickly, the observation system was extended westward to Winnipeg and eastward to Halifax with more and more requirements for information to be collected. The first weather forecast was published in two different formats: the storm format and the public format, both covering the area from the Great Lakes to the St. Lawrence River to the Atlantic Ocean.

## The Great War

During World War I, the military quickly discovered the advantage of air superiority on the battlefield and began expanding its aviation capability. The Royal Flying Corps Canada (RFCC) was established in late January 1917 to recruit and train Canadians for service in the Royal Flying Corps (RFC).<sup>6</sup> Camp Borden was selected as the location for Canada's first and largest military aerodrome. The first cadets arrived on 28 March 1917 and started flying on 30 March. The RFCC realized the importance of getting accurate weather forecasts, and as early 1917 the RFC was receiving daily forecasts from the U.K. Ministry of Transport.

By the time the Armistice was signed on 11 November 1918, the RFCC program saw a new generation of Canadians impassioned by aviation, including the weather network led by civilians.<sup>7</sup> One of the key lessons for Canada from the Great War was that the meteorological system was not developed enough to support the new need to fly coast to coast.

## Between the World Wars

Fifty years after the beginning of meteorology in Canada, weather forecasts were available to the Canadian population in daily newspapers. During the 1920s, it became apparent that aviation would play a bigger role in the lives of Canadians. The mail system was developed and the use of airplanes to travel across the country made the Department of Transportation (DoT) realize its dependence on meteorological science.<sup>8</sup> By 1932, new airports and meteorological observation sites were opening along the flight routes.

## The Second World War

On 1 September 1939, just before the outbreak of war, the Canadian meteorological network consisted of only 51 meteorologists, 20 meteorological assistants and 57 observers.<sup>9</sup> In addition, there were 26 qualified teletype operators and 59 clerical administrative personnel. That was too few for what the war would require in meteorological support. The Controller of the Meteorological Branch, John Patterson, in his 1939 address to the new students in meteorology, said, "For you young men who are just entering the Service there is a very great future in meteorology.... Of all sciences, meteorology will probably make the greatest advance in the next hundred years. This, then, is your opportunity."<sup>10</sup>

The British Commonwealth Air Training Plan (BCATP) generated a sudden and enormous need for meteorologists in both forecasting and instructional roles. To meet that need, an intensive four-month course was created in November 1940 for the purpose of producing enough qualified personnel to support the war effort. The University of Toronto was selected to teach those courses.<sup>11</sup>

The need to develop a transatlantic aviation weather service was identified and deemed essential to support the war effort in Europe. By November 1939, the Chief of Air Staff signed off on an agreement that would see the Meteorological Division of DoT provide the full range of met services required by the Royal Canadian Air Force (RCAF). All over the country, meteorological schools were opened to train the new pilots who were part of the BCATP program. In addition, the RCAF created a new occupation—Meteorological Observer—to address its needs.



The Northern lights can be seen beyond HMCS HARRY DEWOLF during Cold Weather Trials near Frobisher Bay on February 21, 2021.

Image by: Corporal David Veldman,  
Canadian Armed Forces Photo

The defence of North America required the augmentation of aerodromes along the east coast and became extremely important for anti-submarine patrols. When more and more observation sites were developed throughout the country, the RCAF designed the first Canadian Military Met Observer course, given in Toronto in 1942. The course had 23 trainees, all single women, and was part of the RCAF women's division.<sup>12</sup> In February 1943, a request was sent to the Treasury Board to ask all civilian meteorologists employed by the military to become RCAF officers. The request was denied, but the meteorologists were granted the right to use officers' facilities on bases.<sup>13</sup>

Under the North American Defence Agreement, the United States Army Air Force established about four dozen observing stations in Northwestern Canada, where there was considerable flying along the Northwest Staging Routes and the Mackenzie River airway.<sup>14</sup> A smaller number of stations were established in northeastern Canada to supplement the Canadian observing network along the Crimson or Northeast Ferry Route.

The British High Commissioner requested that Canada provide weather support for the Royal Navy along the east coast of Canada for the safety of convoys. In 1942, the first Royal Canadian Navy meteorologists were recruited; however, those men were employed as briefers and liaisons with the Navy, not as forecasters. To get better weather information, meteorologists needed to collect data at sea. Weather intelligence emerged as a strategic commodity during the war but, as the Allies gained an upper hand in the Atlantic, weather ship observations grew and expanded, and by 1945 up to 21 weather ships were stationed in the Atlantic and Pacific oceans.<sup>15</sup>

Services for the Canadian Army (CA) were largely limited to the provision of surface and upper air data and forecasts for artillery units on the coasts and at training camps in central Canada. In 1941, the federal government expropriated the Suffield area and gave it to the British, who then used it for conducting chemical warfare research. It was also used as a long-range artillery test area. A meteorological section was added to study the effects of weather on the blast wave and sound. Confidential wartime research work was carried out, and meteorologists and met observers were part of the project.<sup>16</sup>

The Army was also developing capacity to conduct military operations to gain experience in moving men, equipment and supplies over difficult terrain in severe winter weather. In Newfoundland (1943-44) and Saskatchewan (1944-45), meteorological support was required for two exercises, Eskimo and Polar Bear.

The end of the war was not the end of the meteorology occupation. In fact, it was only beginning, and meteorology was a capability that National Defence had just started learning how to use. The Department of National Defence (DND) continued to employ civilian meteorologists, with the cooperation of DoT.

## After the Second World War

After the war, the military's commitments were drastically reduced, and the training ceased. In 1946 the RCAF realized the importance of maintaining a meteorological program at all of its stations, and the training started again. In cooperation with DoT, the training program changed and was tasked with



supporting DND in training meteorologists, while DND was responsible for training met observers. RCAF Station Trenton, Ontario, was designated as the location of the new School of Meteorology (SMet).

The RCN was looking to use RCAF Station Shearwater as a Fleet school, and the CA was using Shilo as a training school for meteorology. From September 1947 until March 1957, the SMet routinely trained meteorology tradesmen and tradeswomen for the RCN, the CA and the RCAF. In the 1950s, the school also started to teach mixed courses that included both men and women.<sup>17</sup>

DND identified new priorities to increase military presence in the Arctic. Once again, DoT and DND were working in collaboration toward a common objective. In 1947, an agreement between Canada and the United States was reached to establish Joint Arctic Weather Stations (JAWS),<sup>18,19</sup>. In that same year, Station Eureka was established by airlift from Thule, Greenland. Resolute was established in September, and Alert followed. Alert was originally planned as a JAWS Arctic weather station but was staffed by the RCAF.<sup>20</sup> The weather station itself was staffed by DoT employees.

The expansion in the north was a great challenge for the engineers due to the extreme weather. On 1 July 1950, the first meteorological observation was officially reported at Canadian Forces Station Alert. On 31 July 1950, during a low-level parachute airdrop of supply operations, the RCAF lost a Lancaster when the plane crashed after a parachute became entangled with the airplane tail. Nine people died, including an American meteorologist, Colonel Hubbard, who was one of the people who had originally identified the site.<sup>21</sup>

Canada and eleven other nations signed the North Atlantic Treaty Organization (NATO) agreement on 4 April 1949. As a member of NATO, Canada became a member of the Standing Group Meteorological Committee (SGMC) in 1950.<sup>22</sup> This agreement provided the occasion for the new meteorological occupation to expand its role outside of the country, and it started to support RCAF stations in Europe. Meteorological stations in Canada were staffed by civilians; however, for ease of communication with our allies, the meteorologists who were based in Europe were temporarily given a uniform and wore the ranks of captain or major.

## The 1950s

In 1952, Canada was augmenting its presence in Europe by opening bases in France and Germany. The first meteorological officers and met observers arrived at 2 Wing Grostenquin in France. In 1953, it was the turn of 3 Wing Zweibrücken and 4 Wing Baden-Solingen in Germany. It took two more years before the Canadian weather network was ready to connect with the European Weather Circuit in 1955.<sup>23</sup> With the new bases in Europe and the installation of new weather stations in northern

Canada, the occupation has demonstrated the importance of meteorology in conducting military operations.

As a new conflict raged in Korea, the Canadian military was calling for more meteorological support. In 1953, an agreement was signed by DoT and DND that DoT would provide weather forecasts for both the RCN and the RCAF for the bases outside of Canada.<sup>24</sup> In 1956, the agreement was extended to the artillery, which operated its own radiosonde units. During that high-tempo operation, SMet in Trenton was running three to four courses per year to produce enough Met Observers to face the high demand. In 1954, SMet taught the first met observer integrated course (men and women; Navy, Army and Air Force)<sup>25,26</sup>. The school of meteorology was a decade ahead of its time, as it was not until 1968 that DND unified the forces and started to offer combined elements training.

Meteorological Technicians' role on board ships became more important in the 1950s. They became part of the integrated crew and part of every naval operation. Aboard major vessels, civilian meteorologists were employed to produce weather forecasts. In 1958, the RCN wanted to augment its presence in the Arctic and identified the need to forecast the ice in the north. A collaboration between DND and DoT began, and the ice forecasting was taken over by the DoT Meteorological Branch in October 1959. This service was part of a coordinated Canada/United States (CANUS) program to provide assistance to Atlantic shipping and to resupply the northern Distant Early Warning (DEW) Line sites.<sup>27</sup>

On 1 September 1958, Alert began its operational role as a signals intelligence unit<sup>28,29</sup>. Alert passed from the RCAF command to the CA Command, but the meteorological observations continued to be done by DoT. At the same time, the DEW Line project was developing a radar line of defence to detect possible incoming airborne attacks from the Soviet Union. Major sites, like Cape Dyer, were operating a weather station with observations conducted at their site. In 1990, human observers were replaced by the Automated Weather Observation System (AWOS).

## The 1960s

In 1963, Canada and the United States formed an oceanography subcommittee of the CANUS Military Co-operation Committee.<sup>30</sup> At the same time, NATO formed the NATO Military Oceanography Committee. In Canada, synoptic oceanography was assigned to the Directorate of Meteorology and became part of the day-to-day operations at the newly created Halifax Meteorological and Oceanographic Centre (METOC).

The same year, the occupation was going through an expansion in anticipation of launching the ship-borne helicopter program.<sup>31</sup> Forecasters were only at sea with the carrier or with Squadron staff. HMCS BONAVENTURE had two civilian

## On Friday 15 February 1974, at 20h00, a fire destroyed the Canadian Forces School of Meteorology (CFS Met) Trenton. The new CFS Met took up residence at CFB Winnipeg on 1 August 1974.

forecasters. Most destroyers didn't have a Met Tech until the occupation took over the Nav Yeoman function in 1965.

The space program brought new technologies for producing weather forecasts. The Telecommunications Supplement agreement between Canada and the United States was signed in 1965 and gave Canadian access to satellite weather information.<sup>32</sup>

In January of 1968, for the first time, satellite image reception trials were conducted aboard the only Canadian aircraft carrier, HMCS *Bonaventure*.<sup>33</sup> Meteorological support for HMC ships was then found on Canadian destroyers and supply vessels, with particular emphasis on ships that carried helicopters and had at least one Met Tech.

The reorganization of Canada's armed forces into a single unified force became effective on 1 February 1968. The reorganization process created the single Chief of Defence Staff (CDS) and deleted the three separate Chiefs of Staff. The second step in the process united the three services under single control and management using common logistics, supply and training systems. The new structure provided a broader career opportunity for met observers, and the occupation name was changed to Meteorological Technician (121 Met Tech).

The new program centralized the career management function, and the Met Tech 121 trade became the responsibility of the Posting and Careers Directorate, Air Operations and Service. The integration policies also meant broader training for all Met Tech personnel.<sup>34</sup> The Canadian government aimed to maximize the efficiency of the weather offices in Canada and overseas. Bases in France and Germany were closed and resources were centralized. Canadian Forces Base (CFB) Lahr opened in West Germany in 1967, and weather forecasts were being produced by September of that year.

The newly formed Mobile Command of the Canadian Land Forces received mobile radiosonde tactical units. The first field unit supported was CFB Shilo in 1967. CFB Petawawa and CFB

Valcartier were added later, and they were embedded with the artillery units.

The new rocket sonde program was introduced to Air Command in the mid-1960s. The program was created to achieve a much higher atmospheric profile than the normal radiosonde that used the weather balloon. The Cold Lake site needed to be rearranged to be part of the Aerospace Engineering Test Establishment (AETE), responsible for the Primrose Lake Evaluation Range (PLER). Originally, the program was conducted at three different locations in Canada: Primrose Lake, Alberta; Churchill, Manitoba; and Highwater, Quebec. Once NASA started its Space Shuttle Flying program, the PLER location was selected to support its operation and the other two sites were closed in early 1970.

### The 1970s

The 1970s represented a decade of great challenges and changes. The *Official Languages Act* and the recognition of the equal status of English and French in Canada resulted in changes to many positions in the weather services as they became designated as bilingual.<sup>35</sup> The School of Artillery was transferred from CFB Shilo to CFB Gagetown in 1970, and the Army's meteorological school was incorporated into the Combat Arms School.<sup>36</sup>

In 1971, the Department of Environment (DoE) was replacing DoT. Under the new department, the Canadian Meteorology Service became the Atmospheric Environment Service (AES).

On Friday 15 February 1974, at 20h00, a fire destroyed the Canadian Forces School of Meteorology (CFS Met) Trenton. The new CFS Met took up residence at CFB Winnipeg on 1 August 1974. The new school was established at Air Command Headquarters (HQ). Considering the complexity of moving a school from one province to another in a very short period, CFS Met staff did so very successfully while maintaining operations and cancelling only one course that year.<sup>37</sup>

The arrangements for civilian personnel, communications and equipment resources provided by DoE were transferred to DND responsibility. Major issues were pointed out with those changes, and DND was not able to provide meteorologists on all bases. That problem was resolved by expanding the Met Techs' weather service role to include giving weather briefings. It was also pointed out that DND could take greater advantage of the new technology available, in that it eliminated the need for forecasters at every air base. DND could thus move to a regional forecasting system. From 1977 to 1979, twenty forecaster positions were replaced by briefer positions held by non-commissioned officers (NCOs).<sup>38</sup>

At the same time, DND opted for using more automated equipment, and units were installed that could take unmanned readings and transmit them to a weather office. By the end of

the decade, the acquisition of equipment to receive satellite imagery, new generation radars, and minicomputers enhanced the service available to the Canadian Forces. Weather information could be stored and called up on video display terminals.

The Canadian Forces Weather Service (CFWS) operated 22 weather facilities, which included Canadian Forces Forecast Centres (CFFCs), METOCs, Canadian Forces Weather Offices (CFWOs), Ballistic Meteorological Sections, Upper Air Sections and 24 ships. Also, the meteorological observer responsibility at CFS Alert was transferred to DND for the first time since 1950.<sup>39</sup>

## The 1980s

In 1980 the occupation became the proud owner of its own official school logo, approved by Her Majesty Queen Elizabeth II. The motto at the bottom, inscribed in Latin as "COGNITIO CAELI," translates into English as "Knowledge of Weather."<sup>40</sup>

Because of the difficulty of training meteorologists and briefers, it was suggested that greater responsibility be given to the Met Tech NCOs. The decision was made to use military Met Techs to conduct weather briefings and locate the forecasters in regional centres. Briefers took over the customer service roles, and the CFWS units at Comox, Edmonton, Trenton and Halifax were identified to provide weather warning service to NORAD.<sup>41</sup>

In terms of technological improvements, AES provided two new radar sites at CFB Cold Lake and CFB Bagotville.<sup>42</sup> A new system was designed to transmit graphics, satellite imagery and radar data to replace facsimile networks. After those improvements, each station could call up information, run analysis programs, generate composite charts, create graphic overlays and add text to prepare local, regional or worldwide forecasts from an expanding information base.

In 1987, DND took over the meteorological program at Goose Bay.<sup>43,44,45,46</sup> The Canadian government awarded the contract for conducting weather observations to a civilian company on the main stations of the North Warning System (NWS). Sites that were not staffed year-round were equipped with the new Remote Environmental Automatic Data Acquisition Concept (READAC) system. CFS Met oversaw training of the civilian meteorological observers who would go to work on the DEW line.<sup>47</sup> A total of 47 new READAC sites were supposed to be installed in the next few years, to cover unstaffed sites.<sup>48</sup> Air Command allowed the occupation to grow, adding five new Met Tech positions to support the inspection and training requirements of the NWS.

The Army meteorological sections were growing and were more involved with different Army exercises.<sup>49</sup> At about the same time, the occupation was starting to be deployed in United Nations (UN) deployments when 5 RALC was deployed in Cyprus.<sup>50</sup>

The downsizing of the occupation's preferred manning level would force DND to look at alternative solutions to reduce the cost of domestic operations.

Met Techs were also part of the Rendezvous exercises conducted at CFB Wainwright, where Force Mobile Command (FMC) was practising to be prepared to meet the Soviet threat.

Canada was also supporting the NASA shuttle program in 1981 and 1984. The section located at Primrose Lake, Alberta, supported the Challenger shuttle program by launching Loki weather rockets for the launch on 5 October 1984 (with Canada's first astronaut, Naval Commander Marc Garneau, on board).

When the Chernobyl disaster happened in Ukraine (USSR) in April 1986, Canada was the first country in the world to issue a real-time prediction of the dispersion of radionuclides.<sup>51</sup> The military rapidly realized the importance of having that capability and started to include it within the chemical, biological, radioactive and nuclear (CBRN) doctrine.

## The 1990s

The Director of Meteorology and Oceanography (D Met Oc) had a specific vision of what the occupation would look like, to make the meteorological enterprise efficient. Each Command Headquarters was assigned a Senior Staff Officer to advise its individual commands on matters relating to its weather services.<sup>52</sup>

The CFFCs were responsible regionally for weather watches, weather warnings, aerodrome forecasts, special forecasts and advice and consultation to weather briefing offices and military commanders. The METOCs were to provide oceanography services in addition to meteorological services. Briefing Offices were staffed by DND Met Techs and had local weather watches. In addition, there were also briefing offices in 24 HMC Ships, crewed by DND Met Techs.

The Mobile Force Command requested that the Meteorological Technicians provide data on the upper winds to help the artillery achieve better precision. Finally, the CFWS also operated Scientific Units at the Aerospace Engineering Test Establishment at PLER and at the Defence Research Establishment at Suffield.

## As a small occupation undergoing restructuring, it was stretched to its maximum at one point when more than 25% of the Met Techs were deployed in one year.

The occupation seemed to have a bright future; however, it would be drastically changed by a combination of international events caused by the collapse of the Soviet Union, domestic events, and the 1993 Canadian election. Budget cuts, downsizing of the military, and increasing international UN peacekeeping missions would stretch the capability of the Meteorological enterprise to its limits.<sup>53</sup>

The downsizing of the occupation's preferred manning level would force DND to look at alternative solutions to reduce the cost of domestic operations. The automatization of the weather observing program would be one of the solutions brought to the table. Privatization of the CFWS would also be considered. The acquisition of new technologies would allow it to do more with fewer staff.

The Forces Reduction Program was implemented in April 1992 and continued until the end of the 1997-98 fiscal year. The occupation was hit hard by a massive exodus of experienced Met Techs. Bases located in Europe closed and the last Met Tech left Germany in October 1993.<sup>54</sup> Twelve years after DND took over CFB Goose Bay, DND Met Techs were replaced by a civilian contractor.<sup>55</sup> The same thing was happening across the country.

In November 1992, CFFC Trenton established a Special Operations desk to provide meteorological support to CF operations worldwide. Another centralization occurred in the 1990s with the creation of the Army Met Centre (AMC) in Gaagetown.<sup>56</sup> To help the customers, a 1-800 line was created in 1994 to get access to weather briefings and to look for aviation products such as METAR and TAF 24/7.<sup>57</sup> New meteorological positions were created to be embedded with the intelligence units at Kingston,<sup>58</sup> Longue-Pointe and Edmonton.

Only 23 READAC systems were installed on the NWS. In 1996, human observations were discontinued at the long-range sites, and only the READAC system would collect weather data.<sup>59</sup> In 1998, 1 Canadian Air Division (1 CAD) decided not to install AWOS on fixed-wing sites.<sup>60</sup> The same year, a web page was created to replace the 1-800 line. After nine years of planning, the first Short-Range Forecaster course was finally taught in 1993 at CFS Met.<sup>61</sup>

The operational tempo increased in 1990, when Met Techs were deployed in the municipality of Saint-Amable, Quebec, where a tire fire had occurred, to provide upper air data that would help in forecasting the toxic fallout. Two months later, Op SALON took place, and Met Techs from Force Mobile Command were deployed to deal with the Oka crisis.<sup>62</sup>

In addition, Met Techs were deployed on Op FRICTION after Iraq invaded Kuwait, on Op SULTAN in Honduras, and then on the UN mission in Haiti. In 1994, CFB Trenton started to support weather forecasts for missions in the former Yugoslavia, the southern Adriatic Sea and Rwanda. In 1996, when the Saguenay region of Quebec was flooded, CFB Bagotville oversaw weather forecasts to help the local authorities. In 1999, Met Techs deployed to Op KINETIC in Kosovo.

### The 2000s

On 11 September 2001, the world order changed. Immediately after the terrorist attacks in New York, Environment Canada initiated enhanced data monitoring and modelling systems. The enhanced monitoring and modelling was used to forecast the movement of potentially toxic dust and smoke resulting from the destruction of the World Trade Center.<sup>63</sup>

Suddenly, the need for meteorological support exploded with the mission in Afghanistan. The acquisition of new technologies such as tactical unmanned aerial vehicles (TUAVs) necessitated a meteorological detachment to support the mission.<sup>64</sup> The international coalition based at Kabul and Kandahar needed meteorologists and Met Techs to operate a full weather network. In the field, artillery units were also requesting meteorological products. An airfield was built in Dubai. Camp Mirage was the hub for Canadian Forces operations in Afghanistan, supporting Op APOLLO, Op ATHENA and Op ARCHER. The Afghanistan mission was also supported by the RCN, and again Met Techs were on board HMC ships. The Met Techs embedded in the artillery and TUAV units in 2006 were the first in the occupation's history to see combat action and apply their meteorological skills on a battlefield. Lastly, the Air Command asked the occupation to support Op PALLADIUM in Bosnia-Herzegovina in 2003.<sup>65</sup>

As a small occupation undergoing restructuring, it was stretched to its maximum at one point when more than 25% of the Met Techs were deployed in one year. The occupation had to continue to support operations at home, at airfields, at sea and at CFS Alert. The occupation no longer had the opportunity to train and develop a Met Tech over a period of 12-15 years, to prepare them to become a briefer/forecaster.

One of the options proposed was to transfer the briefer's responsibility from Sgt 6A to Pte/Cpl, on top of the traditional task of weather observation. The forecaster's responsibilities from 6B WO qualified to a Sgt/MCpl.<sup>66</sup> With these upcoming



changes, an occupational review was done: each position was looked at and evaluated, and a decision was made as to the proper rank to occupy them. Briefings and forecasts centralized their operations at the Army Met Centre in Gagetown. To execute the newest restructuring, the training had to be changed, so the SRF course was cancelled and all previous occupation training was streamlined into two training courses: the Tactical Weather Specialist course and the Met Forecaster course.

With the approval of the Defence Intelligence Review, the occupation passed from the Air Command to the Chief of Defence Intelligence and moved under the “Capabilities” intelligence “pillar.”<sup>67</sup> New Met Tech positions were created with the joint NBCD Company to support the Special Forces. Lastly, CFS Met Commanding Officer changed in 2006 to a military officer.<sup>68</sup> Beginning in 1947, the schools at Trenton and Winnipeg were led by civilian meteorologists.

## The 2010s

In 2012, Aviation Command was making plans to install the All-Weather Inc. (AWI) AWOS on its bases to help the Meteorological occupation, due to a shortage of met observers.<sup>69</sup> The installation for the initial test phase was carried out in December 2012 at CFB Bagotville, CFS Alert, CFS Comox and CFS Cape Dyer.

The AMC building was renovated, and an extension was built and became the Joint Meteorological Centre (JMC).<sup>70</sup> To improve critical mass to provide meteorological support to the CAF, most forecasts and meteorological operations were centralized in a new facility in Gagetown. The METOCs were not part of that centralization and continued to support the RCN from Halifax and Esquimalt.

CFS Met had passed from Air Force Command to Military Personnel Command to CFINTCOM. On 17 April 2018, CFINTCOM brought the Canadian Forces School of Military Intelligence and CFS Met under its umbrella, assuming command and control of the schools. With this move, the majority of the CFWOS was now under CFINTCOM.

The Meteorological Inspector cell moved from 1 CAD Winnipeg to CFINTCOM in Ottawa. The Afghan years badly hurt the occupations PML, and in 2012 the occupation recruited 56 new Met Techs to the trade (roughly 25% of the occupation were new recruits). Two new courses—the Met Inspector and Met Office Supervisor courses—were created to maintain the CAF’s high standard of meteorological service.

New positions were created with Canadian Special Forces Command in Ottawa, Petawawa and Trenton. Also, the occupation grew when a Sr NCO position was added at Canadian Joint Operations Command Headquarters. A new unit, 2 Air Expeditionary Squadron, was created at CFB Bagotville and included a meteorological section.

Internationally, Met Techs continued to be deployed for Op Hestia, Op Enduring Freedom, Op Artemis, Op Reassurance, Op Impact and the UN mission in Mali. Domestically, Met Techs supported the Vancouver Winter Olympics, the G8 and G20 Summits and Op Nanook. In 2018, Canada became the leading nation for METOC data and products for the NATO Response Force.

Climate change has already had observable effects on the environment and restricted the scope and efficiency of military operations. The role of the Met Techs in the planning of future military operations will continue to grow, and the occupation is ready to face the challenges.

Canadian  
Military Journal **CMJRM** Revue militaire  
canadienne



A meteorology technician delivers his morning brief to participants from various nations who are participating in Exercise MAPLE FLAG in the Air Force Tactical Training Centre theatre, 4 Wing Cold Lake, Alberta on May 30, 2016.

Image by: Cpl Manuela Berger, 4 Wing Imaging

## Notes

- 1 Carol M. Whitfield and Richard A. Jarrell, "Lefroy, Sir John Henry," *The Canadian Encyclopedia* (University of Toronto/Université Laval, 1982), [http://www.biographi.ca/en/bio/lestroy\\_john\\_henry\\_11E.html](http://www.biographi.ca/en/bio/lestroy_john_henry_11E.html) (retrieved 10 July 2022).
- 2 Morley K. Thomas, "A Brief History of Meteorological Services in Canada, Part 1: 1839-1930" (Toronto: Canadian Meteorological Service, 24 December 1970), <http://cmosarchives.ca/History/wxschistory.pdf> (retrieved 10 July 2022).
- 3 James Maurice, "Province of Canada (1841-67)," *The Canadian Encyclopedia*, 7 February 2006, last edited 27 September 2019, <https://www.thecanadianencyclopedia.ca/en/article/province-of-canada-1841-67> (retrieved 10 July 2022).
- 4 Morley K. Thomas, "Kingston, George Templeman," *The Canadian Encyclopedia* (University of Toronto/Université Laval, 1982), [http://www.biographi.ca/en/bio/kingston\\_george\\_templeman\\_11F.html](http://www.biographi.ca/en/bio/kingston_george_templeman_11F.html) (retrieved 10 July 2022).
- 5 Thomas, "A Brief History of Meteorological Services in Canada, Part 1: 1839-1930," p. 7.
- 6 Department of National Defence, "RCAF marks 100th anniversary of first military pilot training in Canada," 29 March 2017, [https://www.canada.ca/en/department-national-defence/news/2017/03/rcaf\\_marks\\_100thanniversaryoffirstmilitarypilottrainingincanada.html](https://www.canada.ca/en/department-national-defence/news/2017/03/rcaf_marks_100thanniversaryoffirstmilitarypilottrainingincanada.html) (retrieved 10 July 2022).
- 7 Department of National Defence, "History of the Canadian Forces Weather Services 1939-1989" (1989), p. 2, [https://cmosarchives.ca/History/CFWShistory\\_e.pdf](https://cmosarchives.ca/History/CFWShistory_e.pdf) (retrieved 10 July 2022).
- 8 Thomas, "A Brief History of Meteorological Services in Canada, Part 1: 1839-1930," p. 14.
- 9 Morley K. Thomas, "A Brief History of Canadian Meteorological Services, Part 2: 1930-1939," *Atmosphere* Vol. 9, No. 2 (1971), p. 46, para 12, <http://cmosarchives.ca/History/wxschistory.pdf> (retrieved 10 July 2022).
- 10 Thomas, "A Brief History of Canadian Meteorological Services, Part 2: 1930-1939."
- 11 Thomas, "A Brief History of Meteorological Services in Canada Part 1: 1839-1930," WWII section, para 3.
- 12 Rebecca Milo, "Women in Meteorology in Canada: The Early Days," <https://bulletin.cmos.ca/women-in-meteorology-canada/> (retrieved 10 July 2022).
- 13 Morley K. Thomas, *Metmen in Wartime: Meteorology in Canada 1939-1945*, illustrated edition (Toronto: ECW Press, 2001), p. 55.
- 14 Morley K. Thomas, "A Brief History of Meteorological Services in Canada, Part 3: 1939-1945," (Toronto: Canadian Meteorological Service, 10 September 1971) p. 74, para 7, <http://cmosarchives.ca/Atmosphere/a0903.pdf> (retrieved 10 July 2022).
- 15 P. D. McTaggart-Cowan, "Post-war meteorology in Canada," (Royal Meteorological Society, Vol. 2, No. 3, January 1951), <https://cmosarchives.ca/RMS/r0203.pdf>.
- 16 Thomas, "A Brief History of Meteorological Services in Canada, Part 3: 1939-1945," p. 74, para 6.
- 17 John Mornan, "Trenton hub of Forces meteorology training," *CONTACT* (CFB Trenton Base newspaper), 26 September 1969.
- 18 R. W. Rae, "Joint Arctic Weather Project," <http://pubs.aina.ucalgary.ca/arctic/Arctic4-1-18.pdf> (retrieved 10 July 2022).
- 19 "CFS Alert," <http://www.jproc.ca/rrp/alert.html> (retrieved 10 July 2022).
- 20 Adam Lajeunesse and P. Whitney Lackenbauer, *Canadian Arctic Operations, 1941-2015: Lessons Learned, Lost, and Relearned* (Fredericton: Gregg Centre for the Study of War and Society, University of New Brunswick; LIBRARY AND ARCHIVES CANADA CATALOGUING IN PUBLICATION, 2017), pp. 273-74, <https://www.unb.ca/fredericton/arts/centres/gregg/what/publications/CdnArcticOps2017.pdf> (retrieved 10 July 2022).
- 21 Alex Brockman, "Forever on guard," CBC news, 28 December 2018, <https://newsinteractives.cbc.ca/longform/a-memory-of-sacrifice> (retrieved 10 July 2022).
- 22 B. D. Brodie, R. K. Cross, P. T. Cromwell and R. L. Wagner, "History of the Canadian Forces Weather Services 1939-1989," (Department of National Defence), p. 5, [http://cmosarchives.ca/History/CFWShistory\\_e.pdf](http://cmosarchives.ca/History/CFWShistory_e.pdf) (retrieved 10 July 2022).
- 23 *Ibid.*, p. 6.
- 24 *Ibid.*
- 25 Mornan, "Trenton hub of Forces meteorology training."
- 26 Canadian Meteorological and Oceanographic Society, "CMOS Met Ob Course 32 - 1954," RCAF Trenton, [http://cmosarchives.ca/Metphotos/T4/MetOb32\\_1954.html](http://cmosarchives.ca/Metphotos/T4/MetOb32_1954.html) (retrieved 10 July 2022).
- 27 Brodie et al., "History of the Canadian Forces Weather Services 1939-1989."
- 28 "CFS Alert," <http://www.jproc.ca/rrp/alert.html> (retrieved 10 July 2022).
- 29 Lajeunesse and Lackenbauer, *Canadian Arctic Operations, 1941-2015*.
- 30 Brodie et al., "History of the Canadian Forces Weather Services 1939-1989," p. 9.
- 31 Government of Canada, "The Canadian Navy in the 1960s" (08 November 2017), <https://www.canada.ca/en/navy/services/history/naval-service-1910-2010/years-of-crisis.html> (retrieved 10 July 2022).
- 32 Brodie et al., "History of the Canadian Forces Weather Services 1939-1989," p. 7.
- 33 *Ibid.*
- 34 *Ibid.*, p. 8.
- 35 Government of Canada, "The Official Languages Act and You," 19 August 2015, <https://www.canada.ca/en/treasury-board-secretariat/services/values-ethics/official-languages/official-languages-act-and-you.html> (retrieved 10 July 2022).
- 36 Royal Regiment of Canadian Artillery, <https://www.canadiansoldiers.com/corpsbranches/royalregimentof-canadianartillery.htm>.
- 37 *Canadian Forces Weather Service Newsletter*, 1974, p. 13.
- 38 Brodie et al., "History of the Canadian Forces Weather Services 1939-1989," p. 10.
- 39 *Canadian Forces Weather Service Newsletter*, 1978, p. 24.
- 40 *Canadian Forces Weather Service Newsletter*, 1980, p. 56.
- 41 Brodie et al., "History of the Canadian Forces Weather Services 1939-1989," p. 12, [http://cmosarchives.ca/History/CFWShistory\\_e.pdf](http://cmosarchives.ca/History/CFWShistory_e.pdf) (retrieved 10 July 2022).
- 42 *Air Command Met Tech Newsletter*, April 1986, p. 5.
- 43 *Canadian Forces Weather Service Newsletter*, 1981, p. 2.
- 44 *Canadian Forces Weather Service Newsletter*, 1987.
- 45 *Air Command Met Tech Newsletter*, April 1986, p. 6.
- 46 *Air Command Met Tech Newsletter*, November 1986, p. 4.
- 47 *Canadian Forces School of Meteorology Newsletter*, 1989, Vol. 7, p. 8.
- 48 *Air Command Met Tech Newsletter*, November 1986, p. 3.
- 49 *Canadian Forces Weather Service Newsletter*, 1980, p. 34.
- 50 *Canadian Forces Weather Service Newsletter*, 1980, p. 63.
- 51 Environment Canada News Release, "In crisis and calm: 130 years of meteorological service for Canada and the world," 23 Oct 2001.
- 52 Brodie et al., "History of the Canadian Forces Weather Services 1939-1989," Annex.
- 53 *Canadian Forces Weather Service Newsletter*, 1993.
- 54 *Canadian Forces Weather Service Newsletter*, 1992.
- 55 *Canadian Forces Weather Service Newsletter*, 1990.
- 56 *Canadian Forces Weather Service Newsletter*, 1995.
- 57 *Canadian Forces Weather Service Newsletter*, 1994.
- 58 *CFWOS Newsletter*, 2005, p. 8.
- 59 *CFWOS Newsletter*, 2008, p. 32.
- 60 *Canadian Forces Weather Service Newsletter*, 1998, p. 47.
- 61 *Air Command Met Tech Newsletter*, June 1993.
- 62 *Canadian Forces Weather Service Newsletter*, 1990.
- 63 Environment Canada News Release, "In crisis and calm: 130 years of meteorological service for Canada and the world," 23 Oct, 2001.
- 64 *CFWOS Newsletter*, 2005, p. 8.
- 65 *CFWOS Newsletter*, 2003, p. 82.
- 66 *CFWOS Newsletter*, 2008, p. 12.
- 67 *CFWOS Newsletter*, 2008, p. 32.
- 68 *CFWOS Newsletter*, 2006, p. 54.
- 69 *CFWOS Newsletter*, 2010, p. 17.
- 70 *CFWOS Newsletter*, 2012.



Belfast, Northern Ireland.  
8 March 2014. Signs are held which say "Implement UNSCR 1325 Now" at International Women's Day.

Image by: Stephen Barnes/  
Alamy Live News

# The First Partnership for Peace Consortium Workshop on Women, Peace and Security in Professional Military Education: Reflections, Considerations, and the Way Ahead

**GRAZIA SCOPPIO AND BJÖRN LAGERLÖF**

*Dr. Grazia Scoppio is a professor in the Department of Defence Studies, Royal Military College of Canada (RMC), is cross-appointed in the Department of Political Studies at Queen's University, and a Fellow at the Centre for International and Defence Policy at Queen's. She was Acting Deputy Director Research, Dallaire Centre of Excellence for Peace and Security, Canadian Defence Academy (2023), was a Fulbright Canada Research Chair in Peace and War Studies at Norwich University, Vermont, USA (2021), and was Dean of Continuing Studies at RMC (2017–2020) after serving as Associate Dean (2013–2016). Her multidisciplinary research includes diversity and gender in military organizations, military education, organizational culture, and immigration, and she has authored or co-authored several publications, including the book *The Power of Diversity in the Armed Forces—International Perspectives on Immigrant Participation in the Military*, co-edited by Scoppio and Greco. She has received grants and awards from the Social Sciences and Humanities Research Council of Canada, the Canadian Department of National Defence, and Fulbright.*

*Mr. Björn Lagerlöf is the Senior Advisor to the Commander of the Canadian Defence Academy and Section Head of the Commander's Advisory Group. In this capacity, Mr. Lagerlöf is responsible for overseeing the Academy's cadre of specialist advisors, leading the development and delivery of key corporate initiatives, planning and supporting the Academy's defence diplomacy and international capacity-building efforts, and advising the Commander on the Academy's operations and plans. Over the past 15 years, Mr. Lagerlöf has held numerous positions within the Department of National Defence as a Policy Officer, Program Manager, and Senior Policy Advisor, and has represented Canada abroad, including a deployment to Afghanistan in 2010 and numerous engagements in support of the North Atlantic Treaty Organization's Defence Education Enhancement Programme in Ukraine and Iraq.*



## Introduction

It has been over 20 years since a historic milestone was reached when the United Nations (UN) Security Council adopted the first Resolution (UNSCR 1325) on Women, Peace and Security (WPS) recognizing the importance of integrating gender perspectives in international security and peace operations. Much progress has been made since then, such as gender mainstreaming in operational planning for peacekeeping and security missions, deploying Gender Advisors in peacekeeping operations and at headquarters, and developing a gender resource package and training.<sup>1</sup> However, there is still work to be done, such as better integration of WPS in Professional Military Education (PME). To achieve progress in this domain, the Canadian Defence Academy (CDA), the Swedish Defence University, and the United States George C. Marshall Center have partnered to organize and deliver a series of workshops on WPS in PME. The first workshop was entitled “What to Teach — How to Teach: Women, Peace & Security and Student-Centered Learning in Professional Military Education.” The event was hosted at the North Atlantic Treaty Organization Headquarters (NATO HQ) in Brussels, Belgium in November 2022, bringing together 40 defence practitioners, academics, and military members from 12 countries across the Alliance and its partners. This article aims to bring to light the important role of PME in advancing what is referred to as the WPS agenda, share the considerations that emerged from the workshop, and identify remaining gaps.

To inform our inquiry, we consulted official UN and NATO websites and documents, relevant research, and interdisciplinary literature. In addition, since one of us is part of the CDA organizing team for the workshop, and the other is a workshop participant, we drew on the workshop report, on a survey of participants, and on our own notes and reflections. We begin the article with an overview of UNSCR 1325, related resolutions, and the NATO WPS policy, with ensuing discussion on the important links to PME. Next, we present the rationale for the workshop initiative, and a summary of the first workshop. We then highlight best practices, lessons shared, and reflections from participants. This is followed by our own reflections on unresolved key issues, and future areas to explore for this critical initiative.

## Overview of UNSCR 1325 and NATO WPS Policy

In 1945, in the aftermath of the horrors of the Second World War, 51 states (currently 193) created the UN with the main goal of maintaining international peace. Several activities were identified to achieve this goal, including conflict prevention and peacekeeping, which are the primary responsibility of the UN Security Council.<sup>2</sup> Since its inception, the Security Council has passed 2,672 resolutions, which are the formal expressions of the opinion or will of the Council.<sup>3</sup>

In 2000, the Council adopted UNSCR 1325 on WPS, a landmark resolution inspired by previous events, including the Beijing Declaration, which was adopted at the 1995 World

Conference on Women, with the aim to “advance the goals of equality, development and peace for all women everywhere in the interest of all humanity.”<sup>4</sup> UNSCR 1325 expressed concern that women and children are the most affected by armed conflict and reaffirmed the important role of women in the prevention and resolution of conflict, thereby calling member states to action by addressing four pillars—participation, prevention, protection, and relief and recovery—through

- ▶ increasing women’s participation and representation at all levels of decision-making, conflict resolution, peace processes, and peacekeeping;
- ▶ incorporating gender perspectives into peacekeeping operations;
- ▶ providing training on women’s protection, rights, and needs, as well as gender-sensitive training for military personnel, civilian police, and civilian personnel involved in peacekeeping operations;
- ▶ recognizing the impact of armed conflict on women and girls, including gender-based violence, and providing protection and respect of human rights; and
- ▶ considering the special needs of women and girls in post-conflict situations, disarmament, and reintegration and ensuring equal access to humanitarian assistance.<sup>5</sup>

Building upon the first resolution on WPS, the UN Security Council adopted nine additional resolutions (1820, 1888, 1889, 1960, 2106, 2122, 2422, 2467, and 2493), promoting the participation of women in peacemaking and peacebuilding





Lieutenant Colonel (retired) Jose Rodriguez, US Southern Command Human Rights Coordinator, interacts with the troops during a women, peace and security briefing as part of Exercise TRADEWINDS at Camp Seweyo, Guyana on 19 July 23.

Image by: MCpl Genevieve Lapointe, Canadian Forces Combat Camera, Canadian Armed Forces Photo

as well as preventing and addressing conflict-related sexual violence.<sup>6</sup> Collectively, these resolutions are referred to as the WPS agenda.

In 2007, NATO adopted its first policy on WPS, in conjunction with the Euro-Atlantic Partnership Council (EAPC), which is a forum for consultation on political and security-related issues between NATO and its partners in the Euro-Atlantic region.<sup>7</sup> The initial policy was followed by "Bi-Strategic Command Directive 40-1 on integrating UNSCR 1325 and Gender Perspectives into NATO Command Structure," several action plans<sup>8</sup> and various iterations of the initial NATO policy.<sup>9</sup> These policies, action plans and directives, clearly outline acknowledgment by NATO of the disproportionate impact of conflict on women and girls, the essential role of women in peace and security contexts, and the importance of integrating gender perspectives in NATO's structures, operations, and the three core tasks of deterrence and defence, crisis prevention and management, and cooperative security.<sup>10</sup>

Unfortunately, policy does not always or quickly translate into practice. Indeed, since the adoption of UNSCR 1325, the complementary Resolutions, and the NATO policy on WPS, progress has been made but challenges remain. A 2020 report by the Women's International League for Peace and Freedom assessed the gaps in WPS implementation, including 1) Resolution 1325 remains a framework for conflict-affected countries rather than a conflict prevention framework. Consequently, there is still rampant armed conflict where women are disproportionately impacted by sexual and gender-based violence and other

actions; 2) The major focus of WPS implementation has reflected an "add women and stir" approach to military and peacekeeping operations while conflict prevention considerations are mostly absent; 3) There are limited resources to support full implementation of the WPS agenda as shown by only one third of funded National Action Plans (NAPs); 4) The lack of accountability.<sup>11</sup>

On the positive side, there have been many accomplishments, such as the adoption of NAPs in over 100 member states,<sup>12</sup> including Canada;<sup>13</sup> increases in women's participation in peace processes and peacekeeping operations;<sup>14</sup> rising numbers of uniformed women involved in peacekeeping missions (currently 4.8% of military contingents and 7.8% of all uniformed personnel, military, police, justice and corrections);<sup>15</sup> the mainstreaming of gender perspectives in all NATO operations and activities and the creation of Gender Advisor and Gender Focal Point roles;<sup>16</sup> the delivery of Gender Advisor courses by both the UN<sup>17</sup> and NATO;<sup>18</sup> and the identification of Gender in Military Operations as a NATO discipline, which is integrated in education programmes, individual training, collective training and exercises.<sup>19</sup>

Each member state has also made efforts to add WPS to military training and PME as defined in the next section. Germane to our ensuing discussion on WPS and gender in PME is the statement in the 2007 NATO WPS policy regarding education and training:

*Education and training is an essential tool to raise awareness of UNSCR 1325 for civilian and military personnel, and to contribute to the effectiveness of operations and missions. It is therefore reflected in NATO's Action Plan on the mainstreaming of UNSCR 1325 in NATO's operations and missions.... Education and training is also an essential key to fostering changes in mindset and behaviour. NATO and national education and training programmes, including pre-deployment scenario-based training and defence reform efforts, can provide valuable contributions to assist in achieving those goals.<sup>20</sup>*

## WPS and Gender in PME

Prior to delving into the role of PME in conveying knowledge about WPS, it is important to provide some definitions. To begin, the difference between military training and military education should be clarified. According to the military historian Ronald Haycock, soldiers typically undergo a lot of training, but do not necessarily receive as much education, and there is an important distinction between the two: "Put simply, training is

a predictable response to a predictable situation. Education, on the other hand, is a reasoned response to an unpredictable situation—that is, critical thinking in the face of the unknown. Modern soldiering demands that both education and training reside together and are absolutely necessary. But they are fundamentally different.”<sup>21</sup> Haycock further states that history has shown that a poorly educated military can lead to leadership and ethical failures, such as the tragic events of the Canadian Armed Forces (CAF) mission to Somalia and the ensuing Commission of Inquiry, revealing, “fundamental issues of shortcomings in military leadership and ethics, and thereby education.”<sup>22</sup>

To be sure, PME has played a pivotal role in developing “soft skills,” such as critical thinking, cultural awareness, leadership, and interpersonal skills, and in shaping mindsets and behaviours to prepare military personnel for the complex environments they will encounter on peacekeeping, humanitarian or conflict missions, during which they may also face ethical dilemmas, including witnessing gender-based violence.<sup>23</sup> It follows that our soldiers, aviators, and sailors must be well educated on WPS and gender topics.

As mentioned, in recent years, the topics of WPS and gender have been included, to some extent, within PME, for both officers and non-commissioned members (NCMs), throughout various institutions of military education across the Alliance and its partners.<sup>24</sup> Additionally, some best practices have been identified such as integrating gender perspectives into doctrine; developing policies that address gender education; publishing articles on gender and the military, highlighting institutional achievements; including gender sensitivity as a criterion in job descriptions, recruiting, evaluations, and promotions; and allocating sufficient resources to gender education.<sup>25</sup> Unsurprisingly, this has met with resistance due to the dominance of men in militaries. In some cases, hostility towards women, including servicewomen, still exists as does sexual misconduct and violence within the ranks, inhibiting the process of social and cultural evolution.<sup>26</sup> Consequently, some military personnel still view WPS and gender as women’s issues. This resistance is evidenced by the superficial way in which these topics may be delivered at military education establishments, as illustrated by this statement from a female graduate of a Canadian PME institution: “This is the challenge. We are trying to provoke a culture change with giving two PowerPoint presentations... It has to be incorporated in everything that we do; otherwise we will never get there.”<sup>27</sup> From a United States perspective, and according to Lieutenant Colonel Casey Grider, United States Air Force, too often these topics have been marginalized in the curriculum and are rarely given the same

importance as traditional topics that are considered core components of defence and security.<sup>28</sup>

To overcome the flawed notion that WPS and gender topics only concern women, it is important to include men, boys, and persons of other gender identities in the conversation. Indeed, “there is a growing recognition of the need to look at the impact of masculine identities on gender inequality... Furthermore, while women and girls are the main targets of perpetrators in conflict-related sexual violence, men and boys are also exposed to sexual violence in war.”<sup>29</sup> These “hegemonic masculinities” are a form of masculinity that is “constructed in relation to various subordinated masculinities as well as in relation to women” to legitimate unequal power relations between genders.<sup>30</sup>

As well, the debate is still open on whether WPS and gender topics should be mainstreamed across the PME curriculum and therefore become part of the mandatory core courses for all military members, or whether they should be electives that a few can select, or whether they should be more specialized courses that are geared for specific roles such as Gender Advisors. Given the critical importance of WPS and gender perspectives in operations, all the above offerings should exist as they are complementary. An analysis of existing curricula in PME institutions across NATO and its partners can reveal opportunities to incorporate WPS concepts in core courses such as leadership, command, peacekeeping, security, and strategy, while elective courses should concurrently be offered to allow for deeper study and analysis.<sup>31</sup> At the same time, specialized courses should continue to be delivered, including those for Gender Advisors or Gender Focal Points.

In addition, the content, method of delivery, and source of instructors remain difficult, and sometimes poorly answered, questions. The first workshop organized by the CDA, the Swedish Defence University, and the George C. Marshall Center aimed to address these and other questions, as we will illustrate in the next sections.

## Why Launch the “WPS in PME Initiative”?

Since the adoption of UNSCR 1325 in 2000, some effort has been made to understand how PME needs to address the topic of gender and understand the way in which conflict disproportionately affects women, girls, and boys. Centers of Excellence, such as the Nordic Center for Gender in Military Operations, have developed specialized training for senior leaders, Gender Advisors, and commanding officers. Additionally, organizations like the Dallaire Center of Excellence for Peace and Security have created curriculum such as “Mainstreaming Gender

Perspectives in Operations” to advance knowledge and understanding of this topic.<sup>32</sup> However, after almost 25 years, the question now is not whether military learners know about the WPS agenda and gender perspectives, but rather whether they understand the concepts and how to apply them in operational or institutional settings. Further, work done by the Dallaire Center of Excellence for Peace and Security to map the field, in terms of education and training on gender and WPS, has revealed a need to look at WPS education from a holistic perspective across the military career spectrum.

In November 2021, the CDA submitted a proposal to the Partnership for Peace Consortium (PfPC) of Defence Academies to consider adding WPS and gender perspectives in PME as a Consortium-supported initiative. Specifically, CDA proposed that Canada lead a workshop series to explore potential barriers that learners might face in fully understanding how to advance the WPS agenda or incorporate gender perspectives in their professional areas of responsibility. The multi-workshop initiative that was tabled for consideration would consist of a series of workshops, culminating in 2025, with the 25<sup>th</sup> anniversary of the adoption of UNSCR 1325.

CDA chose to advance this effort within the PfPC because it is a multinational group of like-minded defence academies that supports NATO Allies and partners through various defence education focused activities, including curriculum development, academic research, conferences, workshops, and study groups. Additionally, the PfPC engages with several NATO partners (e.g., Ukraine, Georgia, Bosnia) in areas related to education and training capacity building. As Commander CDA is Canada’s representative on the PfPC’s Senior Advisory Council, this proposal also provided an opportunity for Canada to lead a new initiative that is important to all members.

Over a three-year period, the proposed initiative aims to consider current approaches for mainstreaming WPS in PME and to identify potential gaps that could be further explored. Given that many partners have done significant work with WPS already, CDA proposed to examine best practices for integrating WPS principles into curricula using student-centered learning methods and frameworks to facilitate the advancement of the WPS agenda. The goal in doing so will allow us to move beyond WPS and gender perspectives and understand how they can be applied. The PfPC Senior Advisory Council supported the proposal unanimously because of its focus on generating specific outputs to assist educators in their efforts to incorporate WPS into existing curricula, as well as offering key resources to help them better deliver this content. Furthermore, both Sweden and the United States agreed to co-lead alongside Canada and to commit funding and experts to the initiative.

CDA proposed that Canada lead a workshop series to explore potential barriers that learners might face in fully understanding how to advance the WPS agenda or incorporate gender perspectives in their professional areas of responsibility.

The proposal also resonated with many PfPC countries. Given that many are working to advance WPS across the spectrum of peace and security activities, they acknowledge that there are increasing requirements to optimize their education, training, and professional development to effectively prepare their personnel to apply gender perspectives and WPS principles. This demand for education and training is evidenced by the increasing number of options for defence and security professionals provided by organizations such as the UN and NATO. Some nations are developing educational, training, and professional development packages on WPS and gender perspectives to suit their domestic context. To ensure the approach is relevant to national cultures, values, and commitments, many are also doing the same for the international security contexts in which their armed forces personnel operate. Concurrently, armed forces are recognizing the benefits of a variety of educational delivery methods and frameworks to increase professional competencies and effectiveness across the spectrum of military activities.<sup>33</sup>

These educational packages are making use of the principles of adult learning. For example, the cutting-edge practice of heutagogy, an adult learning methodology for students with professional experience, demonstrates the importance of developing critical thinking capabilities by enabling military professionals to determine how and what they learn in relation to contemporary problems, emerging technologies, methods of communication, and complex communities and cultures.<sup>34</sup> The goal is to make learning relevant to the specific context of each learner, by emphasizing dialogue, self-reflection, and an

The goal is to make learning relevant to the specific context of each learner, by emphasizing dialogue, self-reflection, and an exchange of perspectives.

exchange of perspectives. It is particularly suited to topics such as WPS and the application of gender perspectives to military planning and activities.

Student-centered adult learning is a budding methodological practice within the education and training of armed forces. Traditionally, military training and education relies on conventional teaching strategies used in civilian academic institutions where focus is placed on the “design, organization, and follow-through of the perspective of the academic teacher”<sup>35</sup> rather than learning outcomes and competencies based on the needs of the student. The transition from learning that prioritizes inputs from the organization to outcome-based student-centered learning takes additional steps to ensure that students have a say in the “skills, knowledge, and competencies they can expect to develop through their studies.”<sup>36</sup>

Moving away from an input model to an outcome framework may have significant benefits for members of armed forces, particularly when they are expected to facilitate the advancement of WPS in multidimensional, inter- and intra-state peace and security activities. The success of such activities is often hinged upon the effective application of gender perspectives and the integration of WPS principles in complex operations where their effective application is also contingent upon the skills, knowledge, and competencies related to the changing contexts and cultures in which personnel are situated.<sup>37</sup> Thus, input-oriented one-size-fits-all education and training intended to be replicated in the same way across diverse students with diverse needs may not be appropriate for achieving desired outcomes for WPS.

Centering on these key ideas, the initiative proposed by CDA aimed to highlight the contributions of armed forces to the WPS agenda and demonstrate how student-centered learning

methodologies can enhance the understanding and competencies of defence and security sector practitioners to advance the agenda. Partnering with the Swedish Defence University and the United States George C. Marshall Center, the CDA team turned its initial proposal into a workshop concept, titled, “Advancing the Women, Peace and Security Agenda through Student-Centered Professional Military Education.” Over the course of 2022, teammates from across the three organizations met virtually and in person to refine the concept and hone the workshop agenda. In June 2022, the group’s work took on added relevance following the release of the new NATO Strategic Concept, which emphasizes the importance of integrating the WPS agenda across all NATO core tasks.<sup>38</sup>

The release of the new NATO Strategic Concept coincided with the organizing team’s efforts to finalize its agenda and determine the location of its first workshop. Given the importance NATO had placed on WPS and the need for the Alliance to work to integrate it across all NATO core tasks, the CDA team worked with the Canadian Joint Delegation to NATO to organize the workshop in Brussels, to highlight joint efforts by Canada and its partners to advance WPS while also providing a central location for those interested in participating.

## From Early Concepts to the First Workshop

This section examines how the team took its initial concept and delivered a three-day workshop in November 2022. It draws heavily on information contained in the post-workshop report.<sup>39</sup> The team’s initial planning meeting in June 2022 allowed the group to settle on the key objectives for the initiative. Specifically, the group agreed that it would pursue three objectives, including:

1. To establish a community of practice for WPS in PME so that educators can share best practices, research, and curriculum development and delivery resources.
2. To create a resource guide for WPS in PME, in order to support PfPC efforts to advance WPS, which is kept up to date on the mobile web app.
3. To publish a best practices manual on student-centered learning methodologies, which uses WPS as the example.

For the first workshop, the agenda focused on two main questions: 1) how do we improve the delivery of WPS-related content using student-centered learning approaches? And 2) how can we mainstream this more effectively in PME?



Major Tiffani Summers, Public Affairs officer from US Army, interacts with the troops during a women, peace and security briefing as part of Exercise TRADEWINDS at Camp Seweyo, Guyana on 19 July 23.

Image by: MCpl Genevieve Lapointe,  
Canadian Forces Combat Camera,  
Canadian Armed Forces Photo



On November 15–17, 2022, in Brussels, the multinational team delivered a three-day collaborative, multinational workshop. This first event brought together 40 academic, civilian, and military security and defence experts representing PME institutes and security organizations from 12 countries: Canada, Sweden, the United States, Norway, Poland, Ukraine, Bulgaria, Romania, Croatia, Germany, the United Kingdom, and Switzerland. This included representatives from NATO allies and partners, as well as organizations such as the International Committee of the Red Cross (ICRC), the Inter-American Defense College (IADC), and the Small Arms Survey, who are working on integrating student-centered methodologies in defence and security education.

Day 1 was held at NATO HQ with keynote addresses, a high-level panel on advancing WPS in practice, a poster gallery by international military colleges on how they integrate WPS and student-centered learning in PME, and an interactive thematic marketplace. The marketplace provided participants the choice of exploring topics such as student-centered learning approaches, cultural property protection, men's engagement and solidarity, resilience, gender perspectives and the war in Ukraine, and the institutionalization of gender perspectives through gender focal point networks. Participants were seated together at tables of 10 and were asked to choose the top three topics they wished to learn about. Participants then left their respective tables to go and hear the presentations on the three topics they chose. Participants returned to their tables of 10 following these presentations and held discussions with each other to share their reflections on what they had learned and

what they would like to explore more deeply, and to hear about those topics they did not have the chance to learn about.

Days 2 and 3 of the workshop focused on strengthening our collective understanding of how WPS and student-centered learning approaches have been or can be integrated into professional military education. This included a reflection on current challenges and opportunities for integrating WPS. Participants also discussed potential ways in which student-centered learning approaches could be employed to enhance a learner's understanding of gender perspectives and WPS in relation to their own professional responsibilities.

Over the three days, there were many insights shared and key takeaway points. First, there was broad consensus over the need for a community of practice focused on WPS in PME. Participants noted the benefit they derived from connecting with other professionals working in this space, especially because it allowed for a sharing of perspectives on delivering WPS-related content and using student-centered learning approaches, including successes and challenges. Others also remarked that in addition to such a community of practice, a network for female PME practitioners, which could facilitate activities like mentoring, could be considered.

Participants shared several reflections on the topic of WPS and student-centered learning approaches in PME. Many noted that there remains a need for a more comprehensive understanding of the field of WPS and of the challenges we face in mainstreaming WPS in PME. A key aspect of this was a shared sentiment that learners often do not have a solid baseline knowledge or understanding of topics such as gender, and the

way in which gender shapes and influences their thinking and actions. Related to this reflection was the observation by some that differences in familiarity with WPS exist among PME practitioners. Those sharing this view noted that as the initiative moves forward, it will be important to ensure that we utilize and build on the existing expertise, knowledge, and foundations within the field of WPS. In addition, it will be very important to bring new voices and perspectives to the conversation, especially those in disciplines which traditionally have not incorporated gender perspectives. Such a broadening of the audience can help when working to weave WPS throughout the curriculum.

Several participants also reflected on how the workshop provided a more in-depth understanding of student-centered learning and of the value of designing classes/learning activities in a way that is more engaging, interesting, and effective in terms of enhancing learning. There was much discussion on how this approach can build greater understanding of how to apply a complex topic, such as gender, to a complex phenomenon (i.e., conflict), especially as it helps create space for learners to be self-reflective and self-critical, while also giving learners a deeper sense of purpose/buy-in when they are asked to incorporate gender perspectives into their work. On this topic, however, participants also noted the need for a better understanding of the differences between education and training, particularly as gender and WPS are often delivered in a “training” environment. There was also a desire for more information on recommended teaching strategies, or classroom activities, that are most conducive to facilitating student learning, or faculty development, on WPS.

Lastly, discussions addressed the institutional aspects of mainstreaming WPS that generated several questions around institutional responsibilities. This included questions about standards and learning outcomes, the sequencing of learning over a person’s career, the linking of individual learning to organizational roles and responsibilities, and the measurement of effectiveness (including whether or not more studies on gender mainstreaming metrics are required). The group also noted the complementary relationship between leadership and advocacy, and the importance for leaders to be advocates, especially in the field of WPS. At the same time, however, several participants expressed frustration with how WPS has been advanced through mandatory training and education, often in response to commitments made in WPS NAPs. Specifically, participants noted how such training often becomes a compliance exercise focused on awareness and not achieving an understanding of WPS. The result is that such training and education

simply enables an organization to put a check in the box that training was done without ever having to validate whether or not someone truly understands and can implement what they have learned. Some participants observed that such commitments do not enable the mainstreaming of WPS because they result in stand-alone training, which often fails to deliver the foundational knowledge required to advance WPS (i.e., a true understanding of gender and how to apply gender perspectives).

A post-workshop survey of the participants, distributed in early December 2022, reinforced our observations regarding the discussions at the workshop. The survey sought to gain insight into what participants felt had gone well and what they thought could be improved, and to seek the participants’ input on the way ahead for the initiative. Although only 25% of participants completed the post-event survey, the results do offer some noteworthy points upon which to reflect. Overall, 90% of respondents were satisfied with the workshop. Furthermore, 90% found the workshop to be either useful or very useful in advancing the discussion on WPS in PME, and 80% found the discussions to be useful or very useful with respect to student-centered approaches to learning.

In response to what appealed most to participants, respondents highlighted the emphasis on student-centered learning and active learning. Others noted the important role the workshop played in connecting individual researchers with the broader community of practice. In terms of what participants found less appealing, some remarked that it would have been useful to have two or three different tracks for participants, with one focused on those who are brand new to WPS and another for those who have a deeper knowledge and understanding of the topic. Participants also indicated that more time for networking would have been beneficial. When asked about how to further implement the initiative, including perspectives on what other groups might be included, participants held different views; some felt that no changes were necessary, while others encouraged the addition of PME institutions from the Arab world and Eastern Europe to the group.

## Reflections and the Way Ahead

Several topics identified by other scholars emerged during the workshop. Many participants acknowledged the resistance to the broad mainstreaming of WPS. It was also shown that gender and WPS are routinely marginalized in curriculum due to being considered special interest topics, rather than a core

element of defence and security.<sup>40</sup> This observation sparked much discussion around the need to use specific learning activities to build knowledge on WPS and gender while also ensuring these concepts are mainstreamed.

The workshop helped to enhance current thinking on WPS in PME by focusing on how learning about WPS is achieved. The focus on adult-centered learning methodologies advanced the concept that, for a learner to understand and apply concepts such as gender and the principles within the WPS Agenda, we need to make the learning material relevant to the learner so that it will encourage critical self-reflection and dialogue. In doing so, we can help improve the application of gender and WPS goals in military contexts.<sup>41</sup>

In general, participants accepted this point of view. However, it is clear from their input that much work remains. Those who attended noted the need for more resources to support curriculum development and course planning. Furthermore, they indicated a desire to be informed about best practices in adult-centered learning and WPS.

While we reflect on the first workshop, planning has begun for a second workshop scheduled to be held in Poland in July 2024. Overall, the objectives of the first workshop were achieved. We can see a nascent, but strong, community of practice forming. Our colleagues at the Swedish Defence University have published a manual in Swedish and English on student-centered learning, and the CDA will publish a resource guide next year. The second workshop will build on the first one and reinforce the community of practice established through the 2022 workshop. There will also be opportunities to explore areas of future research, such as further defining the military role in advancing WPS; exploring how WPS content can be incorporated into war gaming and tabletop exercises; learning how to develop WPS educational activities; and identifying WPS-related competencies and learning outcomes.

## Conclusion

Several considerations can be drawn from our inquiry. Over 20 years ago, UNSCR 1325 put the spotlight to WPS and gender, and increased awareness of these issues. Today, there should no longer be any doubts that WPS agenda and gender perspectives are fundamental pieces in the successful outcome of peacekeeping and security operations. Integrating these topics into PME is essential to this success.

The first workshop in Brussels aimed at uncovering *how* to teach these topics and *what to* teach. Student-centered adult learning methodologies lend themselves well to hands-on, contextualized learning. In such an approach, learners can reflect on their own identity, social status, and potential biases, as well as engage in challenging facilitated discussions about complex topics, such as gender-based violence in conflicts, in a safe environment. Contextualizing learning ensures that it is relevant to the work environment of military learners and therefore more impactful. The importance of understanding that gender is about everyone—men, women, boys, girls, and gender-diverse persons—cannot be overstated.

In the last section, we offered reflections on the inaugural workshop, future areas to explore, and the way ahead for this critical initiative, including matters still requiring resolution. These issues include resistance towards the integration of WPS and gender topics in PME, which are seen as women's issues; the marginalization of these topics in curricula; the need for measures of success; and the lack of resources. Debate remains on whether WPS and gender topics should be mainstreamed and made mandatory for all military members, or whether they should be contained within electives that a few can select, or whether they should be incorporated within more specialized courses that are geared for specific roles, such as Gender Advisors. The answer is that all of the above should be implemented. Only through career-long education can mindsets and behaviours—of all military professionals, including specialists—be changed, and the goals of the WPS agenda be achieved.

## Notes

- 1 United Nations, From the Charter to Security Council Resolution 1325, accessed November 5, 2023, <https://www.un.org/womenwatch/osagi/wps/peace/how-we-got-to-1325.pdf>
- 2 "Security Council," United Nations, accessed April 14, 2023, <https://www.un.org/securitycouncil>.
- 3 "Security Council Resolutions," United Nations, accessed April 14, 2023, <https://www.un.org/security-council/content/resolutions>.
- 4 United Nations, *Beijing Declaration and Platform for Action (1995)*, <https://www.un.org/womenwatch/daw/beijing/pdf/BDPfA%20E.pdf>.
- 5 "Landmark Resolution on Women, Peace and Security," Office of the Special Adviser on Gender Issues and Advancement of Women, United Nations, accessed April 14, 2023, <https://www.un.org/womenwatch/osagi/wps>.
- 6 "Security Council Resolution on Women Peace and Security," United Nations Peacemaker, accessed April 14, 2023, <https://peacemaker.un.org/wps/normative-frameworks/un-security-council-resolutions>.
- 7 "Women, Peace and Security," NATO Library, last updated October 19, 2022, <https://natolibguides.info/women/documents>.
- 8 NATO, *NATO/EAPC Women, Peace and Security Policy and Action Plan* (2018), [https://www.nato.int/nato\\_static\\_fl2014/assets/pdf/pdf\\_2018\\_09/180920-WPS-Action-Plan-2018.pdf](https://www.nato.int/nato_static_fl2014/assets/pdf/pdf_2018_09/180920-WPS-Action-Plan-2018.pdf).
- 9 "Women, Peace and Security," NATO Library, last updated October 19, 2022, <https://natolibguides.info/women/documents>.
- 10 "Women, Peace and Security," NATO, last updated October 19, 2022, [https://www.nato.int/cps/en/natohq/topics\\_91091.htm](https://www.nato.int/cps/en/natohq/topics_91091.htm).
- 11 Women's International League for Peace and Freedom, *UNSCR 1325 at 20 Years – Perspectives from Peace Activists and Civil Society* (Geneva, Switzerland: WILPF International Secretariat, 2020), [https://www.wilpf.org/wp-content/uploads/2020/11/WILPF\\_UNSCR-1325-at-20-Years\\_Web.pdf](https://www.wilpf.org/wp-content/uploads/2020/11/WILPF_UNSCR-1325-at-20-Years_Web.pdf).
- 12 "National Action Plans: At a Glance," Women's International League of Peace and Freedom, accessed April 14, 2023, <https://1325naps.peacewomen.org/#:~:text=The%20first%20National%20Action%20Plan,and%20security%2C%20including%20UNSCR%201820>.
- 13 Government of Canada, *Canada's National Action Plan on Women, Peace and Security* (2022), [https://www.international.gc.ca/world-monde/issues\\_developpement-enjeux\\_developpement/gender\\_equality-egalite\\_des\\_genres/cnap\\_wps-pnac\\_fps.aspx?lang=eng](https://www.international.gc.ca/world-monde/issues_developpement-enjeux_developpement/gender_equality-egalite_des_genres/cnap_wps-pnac_fps.aspx?lang=eng)
- 14 "Elsie Initiative for Women in Peace Operations Canada," Government of Canada, last updated November 7, 2022, [https://www.international.gc.ca/world-monde/issues\\_developpement-enjeux\\_developpement/gender\\_equality-egalite\\_des\\_genres/elsie\\_initiative-initiative\\_elsie.aspx?lang=eng](https://www.international.gc.ca/world-monde/issues_developpement-enjeux_developpement/gender_equality-egalite_des_genres/elsie_initiative-initiative_elsie.aspx?lang=eng).
- 15 "Women in Peacekeeping," United Nations, accessed April 14, 2023, <https://peacekeeping.un.org/en/women-peacekeeping#:~:text=in%202020%2C%20out%20of%20approximately,personnel%20in%20UN%20Peacekeeping%20missions>.
- 16 "Integration of Gender Perspective in NATO's Work," HQ SACT Office of the Gender Advisor, NATO, accessed April 14, 2023, <https://www.act.nato.int/gender-advisor#:~:text=Integration%20of%20Gender%20Perspective%20in,and%20Government%2C%205%20July%202022>.
- 17 "Training Program for Military Gender Advisors," United Nations Institute for Training and Research, accessed April 14, 2023, <https://www.unitar.org/sustainable-development-goals/peace/our-portfolio/pre-deployment-support-military-police-corrections-and-civilians/military-gender-advisor-online-training>.
- 18 "NATO Gender Advisor Course," Swedish Armed Forces International Centre (SWEDINT), last updated April 27, 2023, <https://www.forsvarsmakten.se/en/swedint/nordic-centre-for-gender-in-military-operations/courses-at-ncgm-and-how-to-apply-2/nordeco-gender-advisor-course>.
- 19 NATO, "Integration of Gender Perspective."
- 20 Peace Women, *NATO/EAPC Policy for Implementing UNSCR 1325 on Women, Peace and Security, and Related Resolutions* (2007), <http://peacewomen.org/sites/default/files/NATO%20POLICY.pdf>.
- 21 Ronald Haycock, "The Labours of Athena and the Muses: Historical and Contemporary Aspects of Canadian Military Education," *Canadian Military Journal* 2, no. 2 (2001): 8, <http://www.journal.forces.gc.ca/vo2/na2/doc/5-22-eng.pdf>.
- 22 Haycock, "The Labours of Athena," 6.
- 23 Grazia Scoppio and Robin Schock, *The Importance of Culture, Soft Skills for Inter-Agency, Complex Operations* (Canadian Forces Leadership Institute, 2011).
- 24 See for e.g.: "How to Integrate Gender Perspective in Military Education and Training? A Unique Regional Knowledge Tool Is Out," South Eastern and Eastern Europe Clearinghouse for the Control of Small Arms and Light Weapons (SEESAC), last modified December 9, 2022, [https://www.seesac.org/News\\_1/how-to-integrate-gender-perspective-in-military-education-and-training-a-unique-regional-knowledge-tool-is-out/](https://www.seesac.org/News_1/how-to-integrate-gender-perspective-in-military-education-and-training-a-unique-regional-knowledge-tool-is-out/).
- 25 See for e.g.: Geneva Centre for Security Sector Governance (DCAF), *Best Practices in Teaching Gender to the Military* (2012), [https://dcaf.ch/sites/default/files/publications/documents/Best\\_practices\\_teaching\\_military\\_gender.pdf](https://dcaf.ch/sites/default/files/publications/documents/Best_practices_teaching_military_gender.pdf).
- 26 See for e.g., in the Canadian military context, Marie Dechamps, *External Review into Sexual Misconduct and Sexual Harassment in the Canadian Armed Forces* (Ottawa: Department of National Defence, 2015), <https://www.canada.ca/en/department-national-defence/corporate/reports-publications/sexual-misbehaviour/external-review-2015.html>.
- 27 Vanessa Brown, "Locating Feminist Progress in Professional Military Education," *Atlantis* 41, no. 2 (2020): 34, <https://www.erudit.org/en/journals/atlantis/2020-v41-n2-atlantis05922/1076198ar/>.
- 28 Lt Col Casey M. Grider, "The Strategic Centrality of Women, Peace, and Security: A Call to Mainstream in Professional Military Education," in *Women, Peace and Security in Professional Military Education*, eds. Lauren McKenzie and Lt Col Dana Perkins (Quantico, VA: Marine Corps University Press, 2022), 97-103, <https://www.usmcu.edu/Portals/218/Women%20Peace%20Security%20full%20digital%20copy.pdf>.
- 29 United Nations Regional Centre for Preventive Diplomacy for Central Asia (UNRCCA), *Women, Peace and Security* (2020), 2, [https://unrcca.unmissions.org/sites/default/files/unrcca\\_handout\\_wps\\_2020.pdf](https://unrcca.unmissions.org/sites/default/files/unrcca_handout_wps_2020.pdf).
- 30 Raewyn Connell, *Gender and Power* (Sydney: Allen and Unwin, 1987), 183.
- 31 Grider, "The Strategic Centrality."
- 32 "The Torch: Canadian Defence Academy Publications," Canadian Defence Academy, last updated June 8, 2023, <https://cfc-ca.libguides.com/c.php?g=709488&p=5084096>.
- 33 Vanessa Brown and Alan Okros, "Unlearning 'Stranger Danger': Developing Cultural Competence in Canadian Military Professionals Through Collective Learning and Self-Reflection," in *Warriors or Peacekeepers? Building Military Cultural Competence*, eds. Kjetil Enstad and Paula Holmes-Eber (Cham: Springer International Publishing, 2020), 75-96, [https://doi.org/10.1007/978-3-030-36766-4\\_6](https://doi.org/10.1007/978-3-030-36766-4_6).
- 34 Chris Kenyon and Stewart Hase, "Moving from Andragogy to Heutagogy in Vocational Education" (2001), <https://eric.ed.gov/?id=ED456279>.
- 35 Angele Attard, Emma Di Loio, Koen Geven, and Robert Santa, *Student Centered Learning: An Insight into Theory and Practice* (European Students' Union, 2010), <https://www.esu-online.org/wp-content/uploads/2016/07/2010-T4SCL-Stakeholders-Forum-Leuven-An-Insight-Into-Theory-And-Practice.pdf>.
- 36 Attard et al., *Student Centered Learning*.
- 37 Brown and Okros, "Stranger Danger."
- 38 "NATO 2022 Strategic Concept," NATO, accessed April 14, 2023, <https://www.nato.int/strategic-concept>.
- 39 "What to Teach – How to Teach: Women, Peace & Security and Student-Centered Learning in Professional Military Education," Canadian Defence Academy, accessed April 14, 2023, on the WPS in PME app, <https://apps.apple.com/ca/app/wps-in-pme/id6444263163>.
- 40 Grider, "The Strategic Centrality."
- 41 Brown and Okros, "Stranger Danger."





Members of Global Affairs Canada, the Canadian Border Services Agency, and members of Task Force Jerusalem help with the assisted departure of evacuees from Tel Aviv, Israel to Athens, Greece as part of Operation ION on 16 October 2023.

Image by: Corporal Charles Audet, Canadian Armed Forces Photo

## Emotional Granularity and Antifragility: A Concept and Tool for Thriving in the Face of Adversity

**MATHIEU GAGNON, LOBNA CHÉRIF AND JUSTINE GROB**

*Dr. Mathieu Gagnon is a faculty member in the Department of Military Psychology and Leadership at the Royal Military College of Canada in Kingston, Ontario. He holds a Ph.D. in Experimental Psychology from the University of Ottawa and his research centers mainly on emotions and their facial expressions.*

*Dr. Lobna Chérif is a faculty member in the Department of Military Psychology and Leadership, and the Chair in Resilience, at the Royal Military College of Canada in Kingston, Ontario. She has a Ph.D. in Cognitive Psychology from Laval University, is a Certified Positive Psychology Practitioner and Resiliency Trainer, and a Certified Professional and Personal Coach.*

*Ms Justine Grob is a Teacher of French as a Second Language in the Language Centre at the Royal Military College of Canada in Kingston. She has a master's degree in education from Strasbourg University, in France. She is also a certified Life and Wellness coach from Canada Coach Academy.*

# “Misnaming things adds to the misfortunes of the world.”

Albert Camus

## Emotion, resilience, and antifragility

**Resilience is often defined as the process and outcome of successfully adapting to difficult life experiences and is greatly influenced by how we respond emotionally to these experiences<sup>1,2,3</sup>. In fact, since different emotions are adaptive to different issues<sup>4</sup>, it's important to respond flexibly with the emotions that are most appropriate to the context<sup>5</sup>. In a similar vein, Taleb proposes the term “antifragility” to describe the response of individuals who react flexibly to volatility, disorder, and stressors and grow, even thrive, in the face of adversity<sup>6</sup>. These individuals are aware of and understand their emotions well, and have optimal emotional responses depending on the context<sup>7</sup>.**

Although this ability seems to be reserved for a small number of individuals who exercise rigorous control over their emotions, this is not necessarily always the case. In fact, everyone can train themselves to influence their emotional reactions so as to optimize their response to different situations. To make progress towards this goal, we must first understand that although we may seem to be at the mercy of our emotions, they are actually a psychological construct on our part, resulting from a series of cognitive interpretations<sup>8,9</sup>. This process is, of course, rarely conscious and almost always instantaneous, but the fact remains that it is an active construction over which we have a certain power of influence. To understand why and how this is possible, it's important to understand the stages in the psychological construction of an emotion.

## The stages of emotional construction

According to the constructionist approach to emotions<sup>9</sup>, it is important to distinguish between your body's initial reaction to an event and the interpretation of that reaction in terms of a specific emotion. More specifically, when an event occurs, the nervous system reacts by producing a series of changes at different levels: muscular, visceral, hormonal, etc. These changes are perceived as an initial physical feeling that is not yet a specific emotion, but is characterized by two dimensions: valence and activation level<sup>10,11</sup>. Valence refers to whether these changes are experienced as unpleasant (negative valence) or pleasant (positive valence), and activation level refers to whether an increased or decreased intensity of physiological changes are experienced (e.g., increased heart rate, intensified breathing). Let's take an example of a young captain suddenly learning that he/she has to give a very controversial briefing

to a commanding officer in a few minutes. On hearing the news, he/she might automatically switch from a relatively neutral (neither pleasant nor unpleasant) and calm state, to one that has a negative (unpleasant) valence and significant physiological activation (e.g., heart beating faster, breathing more rapidly, throat getting dry, sweating underarms, etc.).

It should be noted that for the constructionist approach to emotions<sup>9</sup>, this state is not yet a specific emotion, as several different emotions are characterized by negative valence and/or high physiological activity (e.g., anger, fear). Indeed, for these changes to give rise to a defined emotion, individuals must interpret them in the light of various elements such as context (i.e., the situation in which they find themselves), their goals and motivations, past experiences, socio-cultural norms concerning emotions, etc<sup>9</sup>. Yet, even though this work is done automatically and unconsciously (hence the initial impression that our emotions are self-imposed), individuals have a certain influence on the process, since the final interpretation will also depend on the categories they have in their conceptual repertoire for emotions.

## Emotional granularity

Researchers in emotional psychology describe the richness of our emotional conceptual repertoire using the term emotional “granularity” (or differentiation)<sup>12</sup>. This term refers to the ability to be aware of the fine-grained differences between various emotional states and to identify them using distinct categories or words<sup>12,13,14,15</sup>. In summary, individuals with high emotional granularity will use exact terms to talk more specifically about their emotional state depending on the context (e.g., distinguishing between feeling disappointed, frustrated, and stressed)

whereas those with low emotional granularity will be less likely to make these context-dependent distinctions and will describe their emotions in more general terms<sup>13,16,17,18</sup>. In other words, the more we are able to distinguish between different emotional concepts and identify them accurately, the more our emotional response has the potential not only to be situationally flexible, but also to enable us to be antifragile. Conversely, the less able we are to distinguish conceptually between different emotions, the more likely we are to respond rigidly and maladaptively to different situations.

Let's go back again to the example of the impending controversial briefing. If the young captain doesn't clearly distinguish fear from other concepts such as stage fright, nervousness, apprehension, or surprise, it's highly likely that he or she will automatically interpret his or her initial state as fear. This reaction would be inappropriate, as it involves thoughts (impression of threat) and behaviours (flight, fight, freeze) that are not adapted to the challenge of giving the briefing. However, if his or her emotional understanding is rich and subtle, the young captain would be more likely to interpret this state appropriately, perhaps as a mixture of surprise and stage fright but not really fear. Such a reaction would be more appropriate, as it would better mobilize the individual's energy towards the task at hand, once the sense of personal threat has been dispelled, and allow him or her to grow from the experience.

### **Emotional granularity and elements of resilience and antifragility**

Beyond the theoretical arguments presented in the previous section, the research also highlighted various observations, supporting the importance of emotional granularity for various issues inherent to resilience and antifragility. A first series of observations concerns its link with numerous clinical psychological disorders. For example, individuals with high emotional granularity are less likely to be diagnosed with depression, anxiety disorder, or post-traumatic stress disorder<sup>19,20,21,22,23</sup>. On the other hand, low levels of granularity characterize individuals with borderline personality disorder<sup>24</sup>, anorexia and bulimia nervosa<sup>25,26</sup>, and schizophrenia<sup>27</sup>. Furthermore, there appears to be an inverse relationship between the level of emotional

...individuals with high emotional granularity are less likely to be diagnosed with depression, anxiety disorder, or post-traumatic stress disorder. On the other hand, low levels of granularity characterize individuals with borderline personality disorder, anorexia and bulimia nervosa, and schizophrenia.

granularity and symptom severity in people with depression: those with more granularity reportedly have less intense depressive symptoms<sup>28,29</sup>, and a gradual increase in granularity over twelve months was found to lead to a significant reduction in symptoms<sup>30</sup>.

A second series of observations revealed the link between granularity, psychological adjustment, and well-being. It was found that high levels of granularity are associated with a better ability to manage stressors and negative emotions<sup>13,29,31,32,33,34</sup>. As a result, such individuals show more adaptation, less anxiety, and better mental health<sup>20,23,29,35,36,37,38,39,40,41,42,43,44</sup>. Among other things, people with high levels of granularity are less likely to engage in maladaptive behaviours such as excessive drinking and eating<sup>45,46</sup>, drug use<sup>47</sup>, and aggression<sup>15</sup>.

...to help readers practise better emotional granularity, we present a tool called the Emotion Scale. Inspired by Nathanson and collaborators and Brackett's Mood Meter, this tool proposes 100 words to distinguish between different emotions characterized by various levels of valence and activation.

Furthermore, a third series of observations highlighted the link between emotional granularity and social skills. More specifically, high emotional granularity is reportedly associated with a better ability to recognize others' emotions<sup>48</sup>, a better disposition for empathy<sup>49</sup>, and better social decision-making<sup>50</sup>. Each of these components contributes to emotional intelligence, which is itself fundamental to leadership.

These different sets of observations are the result of a neurological mechanism described by Lieberman and colleagues<sup>51</sup>. In fact, using neuroimaging techniques, these researchers discovered that defining emotions (as opposed to other forms of emotional processing or encoding) helped to decrease the responses of the amygdala and other limbic regions when viewing negative emotional images. What's more, it was also associated with greater activation in the right ventrolateral prefrontal cortex, an area of the brain linked to emotion regulation. Overall, these results suggest that encountering situations that elicit negative emotions is less unpleasant if the individual actively acknowledges the emotions he or she is feeling.

## **An approach to bring about emotional granularity**

Many people find it hard to pinpoint exactly what they're feeling, and often the most obvious term isn't the most precise. In fact, very few of us have developed a vocabulary detailed enough to describe our emotions with great precision. Without this ability, it can be difficult for someone to communicate their stories and needs, manage their behaviours, or get support from others.

Given the benefits associated with high levels of emotional granularity, it is worth asking whether one can practice applying it so as to reap these benefits. According to the theory of constructed emotion<sup>9</sup>, this is possible with the help of interventions aimed, among other things, at paying attention to our different emotions, increasing our understanding of them, and clarifying the language we use to distinguish them<sup>52,53,54</sup>. Indeed, studies that have used such an approach note an improvement in this ability<sup>55,56,57,58,59</sup>. What's more, this increase would have a positive impact on various elements, including a decrease in certain inappropriate emotional reactions<sup>60</sup>, a better understanding of how emotions influence decision-making<sup>46,56</sup>, and better performance both academically and professionally<sup>58,61,62</sup>.

Therefore, to help readers practise better emotional granularity, we present a tool called the Emotion Scale. Inspired by Nathanson and collaborators<sup>63</sup> and Brackett's Mood Meter<sup>64</sup>, this tool proposes 100 words to distinguish between different emotions characterized by various levels of valence and activation. Specifically, it proposes 50 words describing emotions of progressively positive valence (25 associated with a low level of activation, such as serene, restful, or comfortable; 25 associated with a high level of activation, such as thrilled, proud, or hopeful) and 50 words describing emotions of progressively negative valence (25 associated with a low level of activation, such as desolate, sad, or morose; 25 associated with a high level of activation such as anxious, frightened, or frustrated). In short, this tool has been developed to enable individuals to become more aware of the subtleties of their emotional reactions and to develop a richer emotional repertoire that is adaptive to various contexts.



**Physiological activation**  
(1 = very little activated; 10 = very much activated)

<b>10</b>	Enraged	Panicked	Stressed	Jittery	Shocked	Surprised	Upbeat	Festive	Exhilarated	Ecstatic
<b>9</b>	Livid	Furious	Frustrated	Tense	Stunned	Hyper	Cheerful	Motivated	Inspired	Elated
<b>8</b>	Fuming	Frightened	Angry	Nervous	Restless	Energized	Lively	Excited	Optimistic	Enthusiastic
<b>7</b>	Anxious	Apprehensive	Worried	Irritated	Annoyed	Pleased	Happy	Focused	Proud	Thrilled
<b>6</b>	Repulsed	Troubled	Concerned	Uneasy	Peeved	Pleasant	Joyful	Hopeful	Playful	Blissful
<b>5</b>	Disgusted	Glum	Disappointed	Down	Apathetic	At Ease	Easygoing	Content	Loving	Fulfilled
<b>4</b>	Pessimistic	Morose	Discouraged	Sad	Bored	Calm	Secure	Satisfied	Grateful	Touched
<b>3</b>	Alienated	Miserable	Lonely	Disheartened	Tired	Relaxed	Chill	Restful	Blessed	Balanced
<b>2</b>	Despondent	Depressed	Sullen	Exhausted	Fatigued	Mellow	Thoughtful	Peaceful	Comfortable	Carefree
<b>1</b>	Despairing	Hopeless	Desolate	Spent	Drained	Sleepy	Complacent	Tranquil	Cozy	Serene
	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>

**Valence**  
(1 = very negative; 10 = very positive)

Table 1: Brackett's Mood Meter<sup>64</sup>

**How to use this tool in 5 steps**

The next time you feel an emotion and want to use that experience to practise your emotional granularity, follow these 5 steps:

**Step 1: Feel your emotional state**

Start by taking a few seconds to feel your emotional state. Sit comfortably somewhere (if possible) and concentrate on your body and any physical sensations that arise (tingling, tension, restlessness, etc.). Remain in this state for a while and observe it carefully.

**Step 2: Evaluate the valence of your state**

Now that you're in touch with your body and its sensations, estimate how pleasant or unpleasant your current state is using a scale from 1 to 10 (1 = very unpleasant and 10 = very pleasant).

**Step 3: Evaluate the activation level of your state**

Now estimate the extent to which your current state is physiologically activated, using a scale of 1 to 10 (1 = very little activated and 10 = very much activated).

**Step 4: Find your emotion in the word grid**

Now that you've determined a number for the valence and activation level of your state, use these two numbers to find the corresponding emotional category in the word grid. The horizontal axis of the tool corresponds to valence (step 2) and the vertical axis corresponds to physiological activation (step 3). For example, if you have indicated a valence of 3 and an activation of 8, the word suggested by the tool to describe your emotion is "angry."

**Step 5: Think about your emotion**

You can now think about the emotion suggested by the tool. Why exactly do you feel this way? Does the word accurately describe how you feel? If yes, why? If no, why not? Is there another word adjacent to the one you listed that would better describe your state?



## Notes

- 1 VandenBos, G. R. (Ed.). (2015). *APA dictionary of psychology* (2<sup>nd</sup> ed.). American Psychological Association. <https://doi.org/10.1037/14646-000>
- 2 Kay, S. (2016). Emotion regulation and resilience: overlooked connections. *Industrial and Organizational Psychology*, 9(2), 411-415. <https://doi.org/10.1017/iop.2016.3>
- 3 Kay, S. A., and Merlo, K. L. (2020). Emotion regulation as a process to foster resilience, in E. Powley, B. B. Caza, and A. Caza (Eds.), *Research Handbook on Organizational Resilience*, (pp. 86-101). Northampton, MA: Edward Elgar Publishing. <https://doi.org/10.4337/9781788112215.00014>
- 4 Smith, C. A., and Lazarus, R. S. (1990). Emotion and adaptation. In L. A. Pervin (Ed.), *Handbook of personality: Theory and research* (pp. 609-637). The Guilford Press.
- 5 Barrett, L. F. (2012). Emotions are real. *Emotion*, 12(3), 413-429. <https://doi.org/10.1037/a0027555>
- 6 Taleb, N. N. (2013). *Antifragile*. Penguin Books.
- 7 Schneider, T., Lyons, J. and Khazon, S. (2013) Emotional intelligence and resilience. *Personality and Individual Differences*, 55(8), 909-914. <https://doi.org/10.1016/j.paid.2013.07.460>
- 8 Barrett, L. F. (2013). Psychological construction: the Darwinian approach to the science of emotion. *Emotion Review*, 5(4), 379-389. <https://doi.org/10.1177/1754073913489753>
- 9 Barrett, L. F. (2017). *How Emotions Are Made: The Secret Life of the Brain*. United States: Houghton Mifflin Harcourt.
- 10 Barrett, L. F., and Russell, J. A. (1999). The structure of current affect controversies and emerging consensus. *Current Directions in Psychological Science*, 8(1), 10-14. <https://doi.org/10.1111/1467-8721.00003>
- 11 Kuppens, P., Tuerlinckx, F., Russell, J. A., and Barrett, L. F. (2013). The relation between valence and arousal in subjective experience. *Psychological bulletin*, 139 (4), 917-940. <https://doi.org/10.1111/jopy.12258>
- 12 Barrett, L. F. (2004). Feelings or words? Understanding the content in self-report ratings of experienced emotion. *Journal of Personality and Social Psychology*, 87(2), 266-281. <https://doi.org/10.1037/0022-3514.87.2.266>
- 13 Barrett, L. F., Gross, J., Christensen, T. C., and Benvenuto, M. (2001). Knowing what you're feeling and knowing what to do about it: mapping the relation between emotion differentiation and emotion regulation. *Cognition and Emotion*, 15(16), 713-724. <https://doi.org/10.1080/02699930143000239>
- 14 Tugade, M. M., Fredrickson, B. L., and Barrett, L. F. (2004). Psychological resilience and positive emotional granularity: examining the benefits of positive emotions on coping and health. *Journal of Personality*, 72(6), 1161-1190. <https://doi.org/10.1111/j.1467-6494.2004.00294.x>
- 15 Pond, R. S. Jr., Kashdan, T. B., DeWall, C. N., avostyanova, A., Lambert, N. M., and Fincham, F. D. (2012). Emotion differentiation moderates aggressive tendencies in angry people: a daily diary analysis. *Emotion*, 12(2), 326-337. <https://doi.org/10.1037/a0025762>
- 16 Lee, J. Y., Lindquist, K. A., and Nam, C. S. (2017). Emotional granularity effects on event-related brain potentials during affective picture processing. *Frontiers in Human Neuroscience*, 11:133. <https://doi.org/10.3389/fnhum.2017.00133>
- 17 Quoidbach, J., Gruber, J., Mikolajczak, M., Kogan, A., Kotsou, I., and Norton, M. I. (2014). Emodiversity and the emotional ecosystem. *Journal of Experimental Psychology: General*, 143 (6), 2057-2066. <https://doi.org/10.1037/a0038025>
- 18 Kashdan, T. B., Barrett, L. F., and McKnight, P. E. (2015). Unpacking emotion differentiation: transforming unpleasant experience by perceiving distinctions in negativity. *Current Directions in Psychological Science*, 24(1), 10-16. <https://doi.org/10.1177/0963721414550708>
- 19 Demiralp, E., Thompson, R. J., Mata, J., Jaeggi, S. M., Buschkuhl, M., Barrett, L. F., et al. (2012). Feeling blue or turquoise? Emotional differentiation in major depressive disorder. *Psychological Science*, 23(11), 1410-1416. <https://doi.org/10.1177/0956797612444903>
- 20 Mennin, D. S., Heimberg, R. G., Turk, C. L., and Fresco, D. M. (2005). Preliminary evidence for an emotion dysregulation model of generalized anxiety disorder. *Behaviour Research and Therapy*, 43(10), 1281-1310. <https://doi.org/10.1016/j.brat.2004.08.008>
- 21 Kashdan, T. B., and Farmer, A. S. (2014). Differentiating emotions across contexts: comparing adults with and without social anxiety disorder using random, social interaction, and daily experience sampling. *Emotion*, 14(3) 629-638. <https://doi.org/10.1037/a0035796>
- 22 Frewen, P. A., Lanius, R. A., Dozois, D. J. A., Neufeld, R. W. J., Pain, C., Hopper, J. W., Densmore, M., and Stevens, T. K. (2008). Clinical and neural correlates of alexithymia in posttraumatic stress disorder. *Journal of Abnormal Psychology*, 117 (1), 171-181. <https://doi.org/10.1037/0021-843X.117.1.171>
- 23 Thompson, R. J., Springstein, T., and Boden, M. (2021). Gaining clarity about emotion differentiation. *Social and Personality Psychology Compass*, 15(3), e12584. <https://doi.org/10.1111/spc3.12584>
- 24 Suvak, M. K., Litz, B. T., Sloan, D. M., Zaranini, M. C., Barrett, L. F., and Hofmann, S. G. (2011). Emotional granularity and borderline personality disorder. *Journal of Abnormal Psychology*, 120 (2), 414-426. <https://doi.org/10.1037/a0021808>
- 25 Selby, E. A., Wonderlich, S. A., Crosby, R. D., Engel, S. G., Panza, E., Mitchell, J. E., Crow, S. J., Peterson, C. B., and Le Grange, D. (2014). Nothing tastes as good as thin feels: low positive emotion differentiation and weight-loss activities in anorexia nervosa. *Clinical Psychological Science*, 2(4), 514-531. <https://doi.org/10.1177/2167702613512794>
- 26 Mikhail, M. E., Keel, P. K., Burt, S. A., Neale, M., Boker, S., and Klump, K. L. (2020). Low emotion differentiation: an affective correlate of binge eating? *International Journal of Eating Disorders*, 53(3), 412-421. <https://doi.org/10.1002/eat.23207>
- 27 Kimhy, D., Vakhrusheva, J., Khan, S., Chang, R. W., Hansen, M. C., Ballon, J. S., et al. (2014). Emotional granularity and social functioning in individuals with schizophrenia: an experience sampling study. *Journal of Psychiatric Research*, 53, 141-148. <https://doi.org/10.1016/j.jpsychires.2014.01.020>
- 28 Goldston, R. B., Gara, M. A., and Woolfolk, R. L. (1992). Emotion differentiation: a correlate of symptom severity in major depression. *The Journal of Nervous and Mental Disease*, 180 (11), 712-718. <https://doi.org/10.1097/00005053-199211000-00005>
- 29 Starr, L. R., Hershenberg, R., Li, Y. I., and Shaw, Z. A. (2017). When feelings lack precision: low positive and negative emotion differentiation and depressive symptoms in daily life. *Clinical Psychological Science*, 5(4), 613-631. <https://doi.org/10.1177/2167702617694657>
- 30 Honkalampi, K., Hintikka, J., Laukkanen, E., and Viinamäki, J. L. H. (2001). Alexithymia and depression: a prospective study of patients with major depressive disorder. *Psychosomatics*, 42(3), 229-234. <https://doi.org/10.1176/appi.psy.42.3.229>
- 31 Tan T. Y., Wachsmuth, L., and Tugade, M. M. (2022) Emotional nuance: examining positive emotional granularity and well-being. *Frontiers in Psychology*, 13:715966. <https://doi.org/10.3389/fpsyg.2022.715966>
- 32 Starr, L. R., Hershenberg, R., Shaw, Z. A., Li, Y. I., and Santee, A. C. (2020). The perils of murky emotions: emotion differentiation moderates the prospective relationship between naturalistic stress exposure and adolescent depression. *Emotion*, 20(6), 927-938. <https://doi.org/10.1037/emo0000630>
- 33 Lischetzke, T., Schemer, L., Glombiewski, J. A., In-Albon, T., Karbach, J., and Könen, J. (2021). Negative emotion differentiation attenuates the within-person indirect effect of daily stress on nightly sleep quality through calmness. *Frontiers in Psychology*, 12:684117. <https://doi.org/10.3389/fpsyg.2021.684117>
- 34 Kalokerinos, E. K., Erbas, Y., Ceulemans, E., and Kuppens, P. (2019). Differentiate to regulate: low negative emotion differentiation is associated with ineffective use but not selection of emotion-regulation strategies. *Psychological Science*, 30(6), 863-879. <https://doi.org/10.1177/0956797619838763>
- 35 Trull, T. J., Lane, S. P., Koval, P., and Ebner-Priemer, U. W. (2015). Affective dynamics in psychopathology. *Emotion Review*, 7(4), 355-361. <https://doi.org/10.1177/1754073915590617>
- 36 Hoemann, K., Khan, Z., Feldman, M. J., Nielson, C., Devlin, M., Dy, J., et al. (2020). Context-aware experience sampling reveals the scale of variation in affective experience. *Scientific Reports*, 10, 1-16. <https://doi.org/10.1038/s41598-020-69180-y>
- 37 O'Toole, M. S., Renna, M. E., Elkjær, E., Mikkelsen, M. B., and Mennin, D. S. (2020). A systematic review and meta-analysis of the association between complexity of emotion experience and behavioral adaptation. *Emotion Review*, 12(1), 23-38. <https://doi.org/10.1177/1754073919876019>

- 38 Seah, T. H. S., Aurora, P., and Coifman, K. G. (2020). Emotion differentiation as a protective factor against the behavioral consequences of rumination: a conceptual replication and extension in the context of social anxiety. *Behavior Therapy, 51*(1), 135-148. <https://doi.org/10.1016/j.beth.2019.05.011>
- 39 Liu, D. Y., Gilbert, K. E., and Thompson, R. J. (2020). Emotion differentiation moderates the effects of rumination on depression: a longitudinal study. *Emotion, 20*(7), 1234-1243. <https://doi.org/10.1037/emo0000627>
- 40 Ottenstein, C. (2020). Emotion regulation effectiveness accounts for the associations of self-reported emotion differentiation with well-being and depression. *Cognition and Emotion, 34*(5), 994-1002. <https://doi.org/10.1080/02699931.2019.1691506>
- 41 Erbas, Y., Ceulemans, E., Lee Pe, M., Koval, P., and Kuppens, P. (2014). Negative emotion differentiation: its personality and well-being correlates and a comparison of different assessment methods. *Cognition and Emotion, 28*(7), 1196-1213. <https://doi.org/10.1080/02699931.2013.875890>
- 42 Erbas, Y., Sels, L., Ceulemans, E., and Kuppens, P. (2016). Feeling me, feeling you: the relation between emotion differentiation and empathic accuracy. *Social Psychological and Personality Science, 7*(3), 240-247. <https://doi.org/10.1177/1948550616633504>
- 43 Willroth, E. C., Flett, J. A. M., and Mauss, I. B. (2019). Depressive symptoms and deficits in stress-reactive negative, positive, and within-emotion-category differentiation: a daily diary study. *Journal of Personality, 88*(2), 174-184. <https://doi.org/10.1111/jopy.12475>
- 44 Seah, T. H. S., Aurora, P., and Coifman, K. G. (2020). Emotion differentiation as a protective factor against the behavioral consequences of rumination: a conceptual replication and extension in the context of social anxiety. *Behavior Therapy, 51*(1), 135-148. <https://doi.org/10.1016/j.beth.2019.05.011>
- 45 Kashdan, T. B., Ferrisizidis, P., Collins, R. L., and Muraven, M. (2010). Emotion differentiation as resilience against excessive alcohol use: an ecological momentary assessment in underage social drinkers. *Psychological Science, 21*(9), 1341-1347. <https://doi.org/10.1177/0956797610379863>
- 46 Dixon-Gordon, K. L., Aldao, A., and De Los Reyes, A. (2015). Repertoires of emotion regulation: A person-centered approach to assessing emotion regulation strategies and links to psychopathology. *Cognition and Emotion, 29*(7), 1314-1325. <https://doi.org/10.1080/02699931.2014.983046>
- 47 Anand, D., Chen, Y., Lindquist, K. A., and Daughters, S. B. (2017). Emotion differentiation predicts likelihood of initial lapse following substance use treatment. *Drug and Alcohol Dependence, 180*, 439-444. <https://doi.org/10.1016/j.drugalcdep.2017.09.007>
- 48 Israelashvili, J., Oosterwijk, S., Sauter, D., and Fischer, A. (2019). Knowing me, knowing you: emotion differentiation in oneself is associated with recognition of others' emotions. *Cognition and Emotion, 33*(7), 1-11. <https://doi.org/10.1080/02699931.2019.1577221>
- 49 Erbas, Y., Sels, L., Ceulemans, E., and Kuppens, P. (2016). Feeling me, feeling you: the relation between emotion differentiation and empathic accuracy. *Social Psychological and Personality Science, 7*(3), 240-247. <https://doi.org/10.1177/1948550616633504>
- 50 Gendron, M. and Barrett, L. F. (2018). A role for emotional granularity in judging. *Oñati Socio-Legal Series, 9*(5), 557-576. <https://doi.org/10.35295/osls.iisl/0000-0000-0000-1087>
- 51 Lieberman, M. D., Eisenberger, N. I., Crockett, M. J., Tom, S. M., Pfeifer, J. H., and Way, B. M. (2007). Putting feelings into words: affect labeling disrupts amygdala activity in response to affective stimuli. *Psychological Science, 18*(5), 421-428. <https://doi.org/10.1111/j.1467-9280.2007.01916.x>
- 52 Barrett, L. F., Mesquita, B., Ochsner, K. N., and Gross, J. J. (2007). The experience of emotion. *Annual Review of Psychology, 58*, 373-403. <https://doi.org/10.1146/annurev.psych.58.110405.085709>
- 53 Lindquist, K. A., MacCormack, J.K., and Shalback, H. (2015) The role of language in emotion: predictions from psychological constructionism. *Frontiers in Psychology, 6*:444. <https://doi.org/10.3389/fpsyg.2015.00444>
- 54 Hoemann, K., Khan, Z., Kamona, N., Dy, J., Barrett, L. F., and Quigley, K. S. (2021). Investigating the relationship between emotional granularity and cardiorespiratory physiological activity in daily life. *Psychophysiology, 58*(6), e13818. <https://doi.org/10.1111/psyp.13818>
- 55 Vedernikova E., Kuppens, P., and Erbas, Y. (2021) From knowledge to differentiation: increasing emotion knowledge through an intervention increases negative emotion differentiation. *Frontiers in Psychology, 12*:703757 <https://doi.org/10.3389/fpsyg.2021.703757>
- 56 Cameron, C. D., Payne, B. K., and Doris, J. M. (2013). Morality in high definition: emotion differentiation calibrates the influence of incidental disgust on moral judgments. *Journal of Experimental Social Psychology, 49*(4), 719-725. <https://doi.org/10.1016/j.jesp.2013.02.014>
- 57 Widdershoven, R. L., Wichers, M., Kuppens, P., Hartmann, J. A., Menne-Lothmann, C., Simons, C. J., et al. (2019). Effect of self-monitoring through experience sampling on emotion differentiation in depression. *Journal of Affective Disorders, 244*, 71-77. <https://doi.org/10.1016/j.jad.2018.10.092>
- 58 Hagelskamp, C., Brackett, M. A., Rivers, S. E., and Salovey, P. (2013). Improving classroom quality with the RULER approach to social and emotional learning: proximal and distal outcomes. *American Journal of Community Psychology, 51* (3-4), 530-543. <https://doi.org/10.1007/s10464-013-9570-x>
- 59 Van der Gucht, K., Dejonckheere, E., Erbas, Y., Takano, K., Vandemoortele, M., Maex, E., Raes, F., and Kuppens, P. (2019). An experience sampling study examining the potential impact of a mindfulness-based intervention on emotion differentiation. *Emotion, 19*(1), 123-131. <https://doi.org/10.1037/emo0000406>
- 60 Kircanski, K., Lieberman, M. D., and Craske, M. G. (2012). Feelings into words: contributions of language to exposure therapy. *Psychological Science, 23*(10), 1086-1091. <https://doi.org/10.1177/0956797612443830>
- 61 Brackett, M. A., Rivers, S. E., Reyes, M. R., and Salovey, P. (2012). Enhancing academic performance and social and emotional competence with the RULER feeling words curriculum. *Learning and Individual Differences, 22*(2), 218-224. <https://doi.org/10.1016/j.lindif.2010.10.002>
- 62 Munir, M., and Azam, R. (2017). Emotional intelligence and employee performance: an intervention based experimental study. *Journal of Business and Economics, 9*(2), 1-19.
- 63 Nathanson, L., Rivers, S. E., Flynn, L. M., and Brackett, M. A. (2016). Creating emotionally intelligent schools with RULER. *Emotion Review, 8*(4), 305-310. <https://doi.org/10.1177/1754073916650495>
- 64 Brackett, M. A. (2019). *Permission to Feel*. Quercus Publishing.

# Book Review

## Human Security

Lewis-Simpson, S. and Meharg, S. J., Editors.  
*Evolving Human Security: Frameworks and Considerations for Canada's Military*. Dallaire Centre of Excellence for Peace and Security. Canadian Defence Academy Press: Kingston. 2023.

### BRIGADIER-GENERAL JASON LANGELIER

*Director General External Review  
Implementation Secretariat*

*In his extensive 32-year career as an infantry officer in the Canadian Armed Forces, Brigadier-General Jason Langelier has assumed a variety of command and pivotal staff positions, both at domestic and expeditionary strategic levels. His operational expertise extends to participation in five international missions in the Balkans, the Middle East, and Africa. A graduate of the Canadian Forces College, he holds dual master's degrees—one in Defence Studies and the other in Business Administration. Currently, he is diligently working towards completing a master's degree in public administration.*

During my operational experience as Force Headquarters Chief of Staff Operations and Plans in MONUSCO, the UN mission in the Democratic Republic of the Congo (DRC) from 2018 to 2019, I observed a significant deficiency in the application of a human security lens within the contributing contingent. Unfortunately, many troops displayed risk aversion, focusing primarily on protecting their own forces, which led to a critical lack of proactive engagement in safeguarding the local population, let alone freeing people from their fears, wants, and indignities.

The contingent often remained within the confines of their camps and only ventured out after belligerent incidents had already occurred, effectively closing the barn door after the horse had bolted. This approach not only failed to address the root causes of insecurity but also generated further incidents due to delayed responses. Rather than proactively analyzing patterns of behaviour and using a human security framework to shape its presence and actions, the contingent frequently cited the vast ground to cover with insufficient troops as an excuse for their reactive stance.



**Evolving Human Security Frameworks and Considerations  
for Canada's Military**

Image by: Canadian Defence Academy Press

Despite my efforts, along with those of the Force commanders, to make the contingent more effective, a human security framework would have been invaluable in explaining the intent behind our mission. It would have emphasized the importance of protecting the local population before incidents occurred, ultimately fostering a more secure and stable environment for the people of the DRC.

Now that NATO has adopted a human security framework, defence practitioners have a way to operate from a more people-centric approach to security that complements the traditional state-centric security model. Taking a closer look at how they work together improves our organization's ability to achieve mission success, whether at home or abroad.

This open access book explores the implications of such an approach for NATO's allied forces, Canada's defence team, and more specifically, the Canadian Armed Forces (CAF). The central argument of the book recognizes the evolving operational landscape, poised to intensify various human security challenges. The book urges leaders within Canada's defence and security spheres to take proactive steps in integrating human security into the core fabric of military operations, especially considering NATO's adoption of a human security framework in 2023. This assertion is particularly relevant given the anticipated changes in global security dynamics. The book is co-edited by two experts at the Dallaire Centre of Excellence for Peace and Security, formation partner of Canada's Defence Academy (CDA), Dr. Shannon





Afghan refugees who supported Canada's mission in Afghanistan arrive at Toronto Pearson International Airport on August 24, 2021.

Image by: MCpl Genevieve Lapointe, Canadian Forces Combat Camera, Canadian Armed Forces Photo

Lewis-Simpson and Dr. Sarah Jane Meharg. It includes nine contributing authors who share diverse perspectives, representing both scholars and security practitioners, and discuss pivotal themes relevant to the military's core objective—the establishment of peace and stability.

The book is divided into three sections and includes a foreword by Vice-Admiral Scott Bishop, Canada's military representative to NATO. The foreword is useful because it lays out the trajectory of human security in NATO operations, of high relevance to the defence team because of increased tensions in Europe, the Middle East, and Eurasia. The authors trace Canada's role in shaping human security and its active engagement with UN, NATO, and Canada's Allies. Part 1 provides a history lesson and is somewhat repetitive on issues related to the UN. Part 2 analyzes the influence of human security on UN and NATO frameworks and doctrine. It includes two extremely helpful graphics that illustrate how concepts, doctrine, and operations fit together under a human security framework. Authored by a retired military doctrine writer, David Lambert, I found these sections useful in understanding where we could go from here. Part 3 examines thematic ideas and case studies including local and global perspectives, and domestic and expeditionary scenarios. It includes international cases such as Sierra Leone and domestic scenarios such as Search and Rescue, alongside the Responsibility to Protect and Gender-Based Analysis Plus. Cross-cutting themes and approaches are presented in this section to aid the CAF's anticipation of human security, and thereby informing domestic and expeditionary operations. Part 3 prompted me to think about human security differently. This section could promote thought-provoking dialogues on specific topics that affect Canada's military and offers a nuanced

The book urges leaders within Canada's defence and security spheres to take proactive steps in integrating human security into the core fabric of military operations, especially considering NATO's adoption of a human security framework in 2023.

understanding of human security that is useful to security and defence practitioners. Refer to the sections co-authored by P. Whitney Lackenbauer, Wil Greaves, and Peter Kikkert in Part 3, where they argue for increased robustness of defence's human security approach in Canada as climatic factors continue to wreak havoc on the resilience of people, which has long-lasting knock-on security effects.

Understanding NATO's trajectory offers a blueprint for Canada's defence team and CAF members to consider as we participate in domestic and expeditionary operations. Situated within the established framework of international policy, the concept of human security is proposed as an effective lens to analyze aspects of operations for the CAF, domestically and internationally, to shape more sustainable solutions to security problems. The book informs the CAF's *anticipate* function with a human security framework and examines a people-centric security approach in comparison with the traditional state-centric security approach. This is particularly important in a strategic and operational space informed by the Women, Peace, and Security agenda and the intricacies of great power competition vying for priorities and scarce resources. The book argues that rather than being competitive agendas, these are in fact complementary. The Key Concepts section is a prominent feature of each chapter, providing a synopsis of the history, competing agendas, and main ideas that inform a potential human security approach for the defence team's consideration.

The book emphasizes a robust civilian protection model, harm mitigation, and the facilitation of access to basic needs. It proposes that a people-centric approach is integral to

## Do we simply protect civilians or prevent violent armed conflict?

traditional state-centric security approaches. Cross-cutting operational themes are presented for consideration, aligned with existing doctrine. Chapters 1, 2, and 3, authored by Myriam Denov and Clare Hutchinson, incorporate lesser-understood human security aspects, including cultural property protection, and combating modern slavery. These chapters build on the UN's role in safeguarding vulnerable individuals and promoting freedom from fear, want, and the right to dignity, and help the reader understand how NATO came to adopt a human security framework. Relevant to all readers interested in defence are chapters 6, 7, and 8, authored by David Lambert and Rachel

Grimes, in which military concepts of human security are drilled down into a possible doctrinal approach for reducing fears, wants, and indignities.

A central focus in the book is the ongoing debate concerning the strategic priority of protection vs. prevention. Do we simply protect civilians or prevent violent armed conflict? The authors highlight the legitimacy of interventions and advocate for comprehensive planning, implementation, and assessment using a people-centric approach to operations. These ideas would have been helpful during my time in the DRC, and now they are available to a wider defence audience.

People-centric security is complex and calls for an approach different than traditional state-centric security, but complementary to it. This book deserves to be read with attention as it is a vital resource for defence team members seeking to enhance their leadership, strategic thinking, and decision-making abilities in future domestic and expeditionary operating environments.

Canadian Military Journal **CMJ/RMC** Revue militaire canadienne



Syrian refugees check their baggage at Beirut International airport as they prepare to depart Lebanon to resettle into Canada, in accordance with the Government of Canada's Operation PROVISION on December 10, 2015.

Image by: Corporal Darcy Lefebvre,  
Canadian Forces Combat