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BASIC

NATO and Climate Change

Towards a Joint Understanding and Response

Dr Gry Thomasen

**The British American Security
Information Council (BASIC)**

Work + Play
111 Seven Sisters Rd
Finsbury Park
London
N7 7FN
United Kingdom

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**Défense
nationale** **National
Defence**



Dr Gry Thomassen

Dr Gry Thomassen is Research Director at BASIC and Programme Manager of BASIC's programme on Risk Reduction. She is an expert in NATO, including NATO-Russia relations, nuclear non-proliferation and the Arctic and she leads BASIC's work in these areas. Gry has published in high impact journals such as *Marine Policy* and *International Journal*, and she is the co-editor of *The Palgrave Handbook of Non-State Actors in East-West Relations*. She has also authored policy reports and policy briefs providing advice directly to governments.

Gry holds a PhD in Cold War history from the University of Copenhagen and was awarded a postdoc grant by the Carlsberg Foundation and the Danish Ministry of Defence to undertake research into nuclear non-proliferation at the Danish Institute for International Studies. Prior to joining BASIC, she has also been Visiting Postdoctoral Research Fellow at the Cold War History Research Centre in Budapest and a Visiting Researcher at the Centre for Science and Security Studies, King's College, London.

BASIC

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Policy Recommendations

RECOMMENDATION: Increase and Sustain Allies' Climate Change Awareness

The emerging common understanding of the impacts of climate change on security amongst NATO states provides an opportunity to increase and sustain allies' climate security awareness. This can include addressing how NATO allies' efforts to adapt to and mitigate climate change are not detracting from NATO's core tasks. This can include addressing how NATO allies' efforts to adapt to and mitigate climate change are not detracting from NATO's core tasks. Specifically, the Climate Change and Security Action Plan commits NATO to leverage its science and technology programmes and communities to research the impact of climate change on security. NATO can utilise this community of experts to undertake a specific study of common misconceptions and obstacles to pursue a transition in thought on the climate security agenda. The annual Climate Change and Security Impact Assessment is a good opportunity to publish the results.

RECOMMENDATION: Establish a Working Group on the Operational Challenges of 'Adaptation Gaps'

To ensure allies' adaptation and mitigation efforts do not impact future operations negatively, NATO can capitalise on the current awareness among the allies of the effects of climate change on security to establish a working group to discuss and identify how adaptation and mitigation measures may pose operational challenges in the medium and long terms, and explore possibilities of coordinating the various decarbonization and adaptation measures that members can apply. The working group members should be representatives from both states that are less and well advanced in implementing the climate security agenda to situate the findings in real time and within current political and economic circumstances. This work could be facilitated by CCASCOE. The working group should aim to deliver a report to the Secretary General outlining its findings.

NATO and Climate Change: Towards a Joint Understanding and Response

Introduction¹

Climate change effects on security have become an increasingly important topic in international politics. Over the past decades different states across the Euro-Atlantic region have adopted a range of national policies or strategies to deal with the effects of climate change on their security, reflecting that climate change has firmly established itself on the political agenda. At the same time, the EU has commissioned its member states to adopt strategies and plans to manage the effects of climate change through its 2022 Strategic Compass, and NATO has - since its 2021 Climate Change and Security Action Plan, as well as the 2022 Strategic Concept - set out to manage the effects of climate change on its range of tasks.² This suggests that states do not see a choice between preparing for climate change and security, rather states have come to consider the effects of climate change on their security as an integral part of defence planning and capability development.

Yet, as this report shows, different states have different approaches to climate change and security. It suggests that some states still consider climate change effects on security of less importance than traditional considerations, or perhaps that some states believe that adapting their war fighting abilities to the effects of climate change is detracting from their primary responsibilities of protecting and defending the state.³

This report proceeds in four parts. In the first part, I lay out what climate change and climate security is. This is followed by the second part that briefly explains the evolution of NATO's turn toward climate awareness, and the third part is the analysis of how NATO states are approaching climate change effects on security. I identify commonalities and differences in their approaches and priorities. The report ends with some concluding observations and recommendations on how to move NATO policies forward in this area.

1. The author would like to thank Lisa Vickers for her invaluable help with finding the many strategies and her insightful comments.
2. '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' (EEAS, March 2022); NATO, 'NATO 2022 Strategic Concept' (Brussels: NATO, 29 June 2022), https://www.nato.int/cps/en/natohq/topics_210907.htm; NATO, 'NATO Climate Change and Security Action Plan', NATO, accessed 29 April 2024, https://www.nato.int/cps/en/natohq/official_texts_185174.htm.
3. John Conger, 'False Choices and Climate Security', The Hill, 16 May 2023, sec. Opinion - Energy and Environment, <https://thehill.com/opinion/energy-environment/4006384-false-choices-and-climate-security/Conger>.

Climate change, defence, and security

Climate change becomes more unpredictable as societies may react differently to the effects of climate change.

What is climate change?

According to the UN, 'climate change refers to long-term shifts in temperatures and weather patterns.'⁴ These changes are driven by human activities, especially the burning of fossil fuels which increase greenhouse gases (GHG) in the atmosphere and cause temperatures to rise abnormally. Experienced differently across the globe, climate change manifests itself in numerous ways, including in rising sea levels, extreme weather events such as wildfires and floods, forced displacement, and vector borne diseases.

The 2015 Paris Agreement is a legally binding international treaty with more than 190 State parties. The Agreement commits states to limit the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels by 2100. However, it is now widely believed that by 2030 the 1.5°C threshold will be surpassed. The Intergovernmental Panel on Climate Change (IPCC) - the UN body for assessing science related to climate change - estimates that global emissions will have to reach net zero by 2050 to limit the temperature rise to 1.5°C or reach net zero by 2070 to limit the rise to 2°C. Beyond 2°C there are tipping points in the Earth's system.

Dealing with climate change, however, is a complex endeavour. On the one hand, climate change needs to be dealt with in the short-term to slow the rise of temperatures to reduce the risk of climate extremes and irreversible tipping points, and on the other, climate change must be dealt with through a long-term perspective to stabilise the climate and keep temperatures below 1.5°C.⁷ Whereas the rise in temperature is scientifically predictable, the many extreme weather events that have occurred over the years, such as wildfires and flooding, are far more difficult to predict. In addition, climate change becomes more unpredictable as societies may react differently to the effects of climate change. This makes climate change effects on security somewhat difficult to control and certainly underscores the complexity of predicting the effects of climate change in both the short- and long-term.

Climate change and defence

Why should defence care about climate change? The 'carbon boot print' of defence - the total emissions of carbon dioxide from armed forces and the related industries - accounts for as much as up to 5% of the total global carbon dioxide emissions, which makes defence the largest single institutional emitter of carbon dioxide.⁸ In this context it is important to realise that while wartime emissions are large, the upkeep of defences in peacetime is probably more costly from a carbon footprint perspective.⁹

4. United Nations, 'What Is Climate Change?', United Nations (United Nations), accessed 8 June 2024, <https://www.un.org/en/climatechange/what-is-climate-change>.
5. Damian Carrington and Damian Carrington Environment editor, 'World's Top Climate Scientists Expect Global Heating to Blast Past 1.5C Target', The Guardian, 8 May 2024, sec. Environment, <https://www.theguardian.com/environment/article/2024/may/08/world-scientists-climate-failure-survey-global-temperature>.
6. 'Summary for Policymakers — Global Warming of 1.5 oC', accessed 4 May 2024, <https://www.ipcc.ch/sr15/chapter/spm/>.
7. Institute for Governance & Sustainable Development, 'A Primer on Cutting Methane: The Best Strategy for Slowing Warming in the Decade to 2030', 2023.
8. Duncan Depledge, 'Low-Carbon Warfare: Climate Change, Net Zero and Military Operations', International Affairs 99, no. 2 (6 March 2023): 667–85, <https://doi.org/10.1093/ia/iad001>; Mohammad Ali Rajaeifar et al., 'Decarbonize the Military — Mandate Emissions Reporting', Nature 611, no. 7934 (3 November 2022): 29–32, <https://doi.org/10.1038/d41586-022-03444-7>.
9. The Pentagon for example has been graded the 43th 'country' in the World in terms of fossil fuel emissions. Jamie Shea, 'NATO and Climate Change: Better Late Than Never', Policy Brief (Washington DC: The German Marshall Fund of the United States, March 2022), <https://www.gmfus.org/sites/default/files/2022-03/Shea%20-%20NATO%20climate%20-%20brief.pdf>.

To meet the obligations under the Paris Agreement, or simply to avoid a significant rise in temperature, states have increasingly come to see that reducing the emissions from their armed forces and related industries is important to mitigate the effects of climate change. In this context, some states have embarked upon 'greening' defence to reduce their environmental impacts; however, while 'greening' defence appears to be self-evident, some states have questioned the wisdom of 'greening', believing that these efforts can compromise national security.¹⁰ This is evident in the Euro-Atlantic area, where NATO makes an effort to repeatedly clarify that 'military effectiveness in carrying out NATO's core tasks remains the number one priority, even if this objective may sometimes clash with mitigation goals'.¹¹

Decarbonising defences, however, is not necessarily about 'greening' defences. Duncan Depledge, in his recent article, describes how the quest to decarbonise was a result of the energy demands in the Western campaigns in Iraq and Afghanistan. At the time, the increasing oil prices and the casualties in connection with protecting the fuel convoys led defences to consider alternatives to fossil fuels in their operations, thus making decarbonising defence a matter of operational ability and resilience, and not about mitigating climate change. Depledge also clarifies that the energy the states primarily, if not exclusively, focused on, was the 'installation' energy and not the 'operational' energy, meaning that defences in their operations remained thoroughly committed to fossil fuels.¹²

That being said, there is an imminent shift towards low carbon defence. The currently unfolding move towards net zero futures - where several states in the Euro-Atlantic region have committed to a net zero future within a few decades, such as the US, UK, Germany and European organisations, such as the EU - have essentially left militaries exposed. Indeed, they may very well suffer reputational damage as stand out carbon dioxide emitters in a world that attempts to mitigate climate change. In addition, in a net zero world, militaries based on fossil fuels will be harder to maintain, develop and crew, and thus subsequently far more expensive, and therefore requiring a larger share of national budgets. All of which is occurring at the same time as militaries are required to continuously adapt to the impacts of climate change on their operations, military installations, and equipment.¹³ Ultimately, this means, according to Depledge: '[W]hereas in the past decarbonization has been seen as a goal that must be balanced against the need to maintain operational effectiveness, in the years ahead, operational effectiveness may well come to depend on decarbonization'.¹⁴ While 'low carbon warfare' is in the future, some defences, however, are already approaching decarbonisation as a matter of operational effectiveness as the analysis below shows.

The 'carbon boot print' of defence - the total emissions of carbon dioxide from armed forces and the related industries - accounts for as much as up to 5% of the total global carbon dioxide emissions, which makes defence the largest single institutional emitter of carbon dioxide.

Notwithstanding the above efforts to green defence, there has still not yet been a direct causal link between climate change and conflict established. While it remains unclear and debated among scholars exactly how and under which conditions climate change leads to conflict, it appears to be the case that the effects of climate change, as many other conditions, can exacerbate levels of tensions and increase instability.¹⁵

10. Conger, 'False Choices and Climate Security'.

11. NATO, 'The Secretary General's Report NATO Climate Change and Security Impact Assessment. Second Edition, 2023' (NATO, 2023); NATO, 'Remarks by NATO Secretary General Jens Stoltenberg at the High-Level Roundtable "Climate, Peace and Stability: Weathering Risk Through COP and Beyond" in Glasgow, UK', NATO, accessed 4 May 2024, https://www.nato.int/cps/en/natohq/opinions_188262.htm; Michael Rühle, 'Scoping NATO's Environmental Security Agenda', NDC Policy Brief (NATO, March 2020), <https://www.ndc.nato.int/news/news.php?icode=1426#>.

12. Duncan Depledge, 'Low-Carbon Warfare: Climate Change, Net Zero and Military Operations', *International Affairs* 99, no. 2 (6 March 2023): 667–85, <https://doi.org/10.1093/ia/iiaad001>; Jamie Shea, 'NATO and Climate Change: Better Late Than Never', Policy Brief (Washington DC: The German Marshall Fund of the United States, March 2022), <https://www.gmfus.org/sites/default/files/2022-03/Shea%20-%20NATO%20climate%20-%20brief.pdf>.

13. Jamie Kwong, 'How Climate Change Challenges the U.S. Nuclear Deterrent', Working Paper (Washington DC: Carnegie Endowment for International Peace, July 2023); 'Defence Command Paper 2023: Defence's Response to a More Contested and Volatile World', GOV.UK, 13 February 2024, <https://www.gov.uk/government/publications/defence-command-paper-2023-defences-response-to-a-more-contested-and-volatile-world>; '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'.

14. Depledge, 'Low-Carbon Warfare: Climate Change, Net Zero and Military Operations'.

15. Katharine J. Mach et al., 'Climate as a Risk Factor for Armed Conflict', *Nature* 571, no. 7764 (1 July 2019): 193–97, <https://doi.org/10.1038/s41586-019-1300-6>; Joshua W. Busby, *States and Nature: The Effects of Climate Change on Security, The Politics of Climate Change* (Cambridge: Cambridge University Press, 2022), <https://doi.org/10.1017/9781108957922>; Depledge; Rühle, 'Scoping NATO's Environmental Security Agenda', <https://www.ndc.nato.int/news/news.php?icode=1426#Rühle>; Kendra Sakaguchi, Anil Varughese, and Graeme Auld, 'Climate Wars? A Systematic Review of Empirical Analyses on the Links between Climate Change and Violent Conflict', *International Studies Review* 19, no. 4 (1 December 2017): 622–45, <https://doi.org/10.1093/isr/vix022>.

Securitising climate change

When looking at the evolution of NATO policies on climate change, however, it resembles a slow movement towards securitising climate change.

NATO did not fully recognise climate change effects on security until a relatively late date, mainly as a result of the many crises NATO has faced in the post-Cold War era, as well as, according to Shea, an international focus on mitigation of climate change, rather than adaptation to the effects of it.¹⁶ When looking at the evolution of NATO policies on climate change, however, it resembles a slow movement towards securitising climate change.

Securitisation is an act of speech 'through which an intersubjective understanding is constructed within a political community to treat something as an existential threat to a valued referent object, and to enable a call for urgent and exceptional measures to deal with the threat'.¹⁷ The securitising actor, in this case NATO member states, can then claim the right to extraordinary measures to secure the referent object of security's survival.

Towards securitisation

Although NATO itself refers to a sort of climate awareness starting as early as 1969 with the establishment of the Committee on the Challenges of Modern Society (CCMS) - which managed studies focussed on a few environmental issues, such as air pollution and hazardous waste - climate change was listed once in the 2010 Strategic Concept as one among several 'key environmental and resource constraints', alongside unspecified health risks and increasing energy needs.¹⁸ When NATO developed the so-called Green Defence Framework in 2014 that recognised NATO activities as having a significant environmental impact, the primary objective was to bring forward the agreement made at the 2012 Chicago summit to 'work towards significantly improving the energy efficiency of military forces'.¹⁹ The Green Framework was particularly interested in the opportunities that '[n]ew sustainable and environmentally conscious technologies such as wind power systems, solar panels and alternative fuels' provided,²⁰ and the framework was primarily driven by a desire to 'potentially reduce cost and lower the risks to Allied soldiers and help reduc[e] the environmental footprint'.²¹

It was not until 2021 at the Brussels Summit, however, that NATO connected climate change to security. Mentioned no less than 15 times in the summit communique, NATO states agreed that '[c]limate change is 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 neighbourhood',²² and ensured that 'the greatest responsibility of the Alliance is to protect and defend our territories and our populations against attack, and we will address all threats and challenges which affect Euro-Atlantic security'.

16. Shea, 'NATO and Climate Change: Better Late Than Never'.

17. Barry Buzan and Ole Wæver, *Regions and Powers: The Structure of International Security*, Cambridge Studies in International Relations (Cambridge: Cambridge University Press, 2003), <https://doi.org/10.1017/CBO9780511491252>.

18. NATO, 'Active Engagement, Modern Defence - NATO 2010 Strategic Concept', NATO, accessed 31 May 2024, https://www.nato.int/cps/en/natohq/official_texts_68580.htm.

19. NATO, 'GREEN DEFENCE FRAMEWORK', 2014.

20. NATO, 'GREEN DEFENCE FRAMEWORK', 2014.

21. NATO, 'GREEN DEFENCE FRAMEWORK', 2014.

22. NATO, 'Brussels Summit Communiqué Issued by NATO Heads of State and Government (2021)', NATO, accessed 2 June 2024, https://www.nato.int/cps/en/natohq/news_185000.htm.

a 360-degree approach and encompasses measures to increase both NATO's and Allies' awareness of the impact of climate change on security, along with developing clear adaptation and mitigation measures, and enhanced outreach, while ensuring a credible deterrence and defence posture and upholding the priorities of the safety of military personnel and operational and cost effectiveness.

Further, it was decided that NATO should become 'the leading organization when it comes to understanding and adapting to the impact of climate change on security', and states agreed to 'initiate a regular high-level climate and security dialogue to exchange views and coordinate further action'.²³ At the Summit, the allies subsequently agreed to the Climate Change and Security Action Plan (CCSAP).

The Action Plan was an exceptional measure intended to provide 'a 360-degree approach and encompasses measures to increase both NATO's and Allies' awareness of the impact of climate change on security, along with developing clear adaptation and mitigation measures, and enhanced outreach, while ensuring a credible deterrence and defence posture and upholding the priorities of the safety of military personnel and operational and cost effectiveness'.²⁴

The 360-degree approach focussed on four broad pillars, namely awareness, adaptation, mitigation and outreach. In the awareness pillar, NATO pledged to carry out an annual Climate Change and the Security Impact Assessment (CCSIA) to analyse the effects of climate change on the strategic environment, as well as on NATO military assets, installations, missions and operations.

In the adaptation pillar, the Alliance referred to incorporating climate change considerations into a broad range of its activities, including in defence planning, assets and installations, exercises, and disaster response. In addition, NATO would assess how 'climate change might impact its deterrence and defence posture, including readiness, enablement, and military mobility'.²⁵

In the mitigation pillar, NATO intended to develop a mapping and analytical methodology of greenhouse gas emissions from its military activities and installations. The idea was that the methodology could help individual NATO states assess their own mission assessment programmes and 'contribute to formulating voluntary goals to reduce greenhouse gas', and, importantly, NATO would use this methodology to 'study the feasibility of scaling up innovative low carbon technologies through its own procurement practices'. Finally, in terms of the outreach pillar, the alliance pledged to increase cooperation and exchanges on climate change and security with international organisations, such as the EU and UN.²⁶

The 2021 Brussels Summit also saw the establishment by Canada of the NATO Climate Change and Security Centre of Excellence (CCASCOE). The Centre, which is a platform for both military and civilian actors, aims to:

'develop, enhance, and share knowledge on climate change and security effects, and to develop the means and best practices to respond to these challenges. It also allows participants to work together to build required capabilities and best practices and contribute to NATO's goal of reducing the climate impact of military activities'.²⁷

23. NATO, 'NATO Climate Change and Security Action Plan'.

24. NATO, 'NATO Climate Change and Security Action Plan', NATO, accessed 29 April 2024, https://www.nato.int/cps/en/natohq/official_texts_185174.htm.

25. NATO, 'NATO Climate Change and Security Action Plan', NATO, accessed 29 April 2024, https://www.nato.int/cps/en/natohq/official_texts_185174.htm.

26. NATO, 'NATO Climate Change and Security Action Plan', NATO, accessed 29 April 2024, https://www.nato.int/cps/en/natohq/official_texts_185174.htm.

27. Global Affairs Canada, 'NATO Climate Change and Security Centre of Excellence', GAC, 21 March 2022.

28. NATO, 'NATO 2022 Strategic Concept'.

29. NATO, 'The Secretary General's Report NATO Climate Change and Security Impact Assessment. Second Edition, 2023' (NATO, 2023).

In essence, both CCASCOE and CCSIA were about increasing awareness amongst the allies about climate change so that they could have the same situational awareness and common understanding of the impacts of climate change on security, and crucially what NATO must do to adapt its warfighting capabilities and eventually reduce its boot print. NATO continued its push for member states to understand the importance of climate change in its 2022 Strategic Concept. Here, NATO maintained its understanding that climate change is 'a defining challenge of our time, with a profound impact on Allied security. It is a crisis and threat multiplier. It can exacerbate conflict, fragility and geopolitical competition'.²⁸

NATO's turn toward securitising climate change is arguably the result of a set of concurring circumstances, most notably that the effects of climate change have begun to impact allied operations, military infrastructure and installations. As the latest CCSIA from 2023 highlights, for example, the operational energy requirements will increase as a result of new and increased requirements of cooling, heating or ventilation for military systems and personnel have ultimately changed as a result of global warming.²⁹

Both CCASCOE and CCSIA were about increasing awareness amongst the allies about climate change so that they could have the same situational awareness and common understanding of the impacts of climate change on security, and crucially what NATO must do to adapt its warfighting capabilities and eventually reduce its boot print.

At the same time, however, NATO became more aware that militaries, as one of the largest GHG emitters, must work to mitigate climate change. This was introduced with the 2021 Climate Change and Security Action Plan which, amongst other things, pledges to develop a mapping and analytical methodology to measure GHG emissions from NATO states' military activities and installations. Apart from assisting the member states in reducing GHG emissions, the methodology may also be seen as a way for the alliance to create a *raison d'être* for defence's existence and relevance in the age of climate change and, crucially, secure funding for the continued upkeep of military installations and infrastructure at the same time as the states a moving towards net zero futures. As discussed in Part 1, defence is potentially left exposed following many states' commitments to net zero futures, and by being responsive to this commitment, defences become less exposed.

Secretary General Stoltenberg remarks on NATO's need to be responsive to climate change in the foreword to the latest CCSIA in 2023:

'Climate change is a defining challenge of our time, with a profound impact on Allied security. It is a "threat multiplier" that can exacerbate conflict, fragility, and geopolitical competition. It also makes it harder for the military to do its job. If NATO wants to safeguard the security of its almost one billion citizens, it cannot be indifferent to the challenge of climate change. It must understand and adapt to it, it must play its part in mitigating it, and it must reach out to other actors, including the scientific community, to develop common approaches to meeting this challenge.'³⁰

28. NATO, 'NATO 2022 Strategic Concept'.

29. NATO, 'The Secretary General's Report NATO Climate Change and Security Impact Assessment. Second Edition, 2023.' (NATO, 2023).

30. NATO, 'The Secretary General's Report NATO Climate Change and Security Impact Assessment. Second Edition, 2023.' (NATO, 2023).

Towards a common understanding of impacts of climate change on security

This analysis provides a first mapping of how climate security is seen among NATO allies.

There is, in other words, no lack of intentions in NATO to develop a joint understanding of how the effects of climate change impact security. The question is how far this joint understanding has come - particularly after the 2021 Brussels Summit - or perhaps more precisely, how NATO member states have securitised climate change in their national plans and strategies against the backdrop of a full scale armed conflict in NATO's near vicinity.

The following analysis is based on a sample of 62 national strategies on defence and climate change, the most recent national security strategies that taken together provide an overview of the status of climate change adaptation and mitigation efforts among the allies, as well as their understandings of how climate change impacts security. BASIC was able to find several of these strategies available online, and sent requests to NATO member states when we were unable to find them. While some permanent delegations to NATO provided them, not all responded to BASIC's request. We were unable to find both types of documents from all NATO states. The majority of the strategies on defence and climate change have been produced in the last few years, reflecting the centrality of the 2021 Brussels Summit decision of moving NATO towards a new era of climate awareness. A list of the strategies the analysis is based on is provided in Appendix A.

The analysis is a reading of the 62 strategies. We first identified how NATO framed areas for action as an effect of climate change and the various threats emanating from climate change in key documents and strategies, including the Climate Change and Security Impact Assessments (CCSIA), various summit communiques, as well as Strategic Concepts³¹. We then applied these findings to our reading of the strategies. There is however, a limit to an analysis based on mentions of certain terminology or phrases as an illustration of how far the NATO member states have come in implementing a climate security agenda. It is clear that some of the terminology used in the strategies are directly adopted from NATO guiding documents, which in turn means that the actual level of integration can be lower than is otherwise suggested in the strategy.

The analysis is focussed on three of the 2021 Climate Change and Security Action Plan's four pillars of awareness, adaptation, mitigation and outreach. First, it looks into how 'aware' the allies are of the impacts of climate change on their security. Second, the analysis looks into how the NATO states are approaching adaptation, and third, it delves into how mitigation is approached.

This analysis provides a first mapping of how climate security is seen among NATO allies. The analysis is not an attempt to provide an in-depth analysis of all NATO states policies in these areas, rather it is intended to provide a first mapping of how climate security is seen among the allies leading to insight into where the future of NATO security is headed in the context of climate change. Several documents were in the original language and we have used Google translate to enable our findings to be shared in English.

31. 'NATO Climate Change and Security Action Plan', NATO, 2021; 'NATO 2022 Strategic Concept', NATO, 2022; 'The Secretary General's Report NATO Climate Change and Security Impact Assessment. Second Edition, 2023', NATO, 2023; 'Green Defence Framework' NATO, 2014; 'Remarks by NATO Secretary General Jens Stoltenberg at the High-Level Roundtable "Climate, Peace and Stability: Weathering Risk Through COP and Beyond" in Glasgow, UK', NATO, https://www.nato.int/cps/en/natohq/opinions_188262.htm (accessed 4 May 2024); 'NATO Climate Change and Security Action Plan. Compendium of Best Practice', NATO, 2022; 'Active Engagement, Modern Defence - NATO 2010 Strategic Concept', NATO, 2010; 'Brussels Summit Communiqué Issued by NATO Heads of State and Government (2021)', NATO, https://www.nato.int/cps/en/natohq/news_185000.htm. (accessed 2 June 2024).

Climate-security awareness

NATO is quite clear that it considers climate change simultaneously as a crisis and threat multiplier that can exacerbate conflict, fragility and geopolitical competition undermining allied security in numerous ways and thus requiring the alliance to adapt across all its activities. Only by doing so is the alliance able to safeguard the security of its citizens.³² When looking closer at NATO's conception of how climate change can impact its security, it lists primarily five potential threats.

As the starting point, NATO's strategic environment also encompasses geographical areas outside the treaty area. Climate change effects outside the Euro-Atlantic area can therefore become a threat to allied security through i) mass migration, ii) escalation of conflict, and iii) climate change is also seen to be capable of increasing intra-state insecurity as a result of transition away from a fossil fuel based economy (the so-called transitions risks) or as a result of scarcity of resources, such as water and food.

NATO, in addition, speaks of climate change as iv) a threat multiplier which recognises that climate change can aggravate existing threats; for example, resource scarcity can make populations more vulnerable to recruitment from terrorist organisations. Finally, v) climate change is also related to increased systemic competition, which is sometimes referred to as the global order, or multilateral order or geopolitical competition in the documents. The causal link between climate change and geopolitical competition is not explained or further developed in NATO concepts and other documents; however, it is notable that many NATO states are explicitly stating that climate change is one of many other conditions that may lead to conflict.

The causal link between climate change and geopolitical competition is not explained or further developed in NATO concepts and other documents; however, it is notable that many NATO states are explicitly stating that climate change is one of many other conditions that may lead to conflict.

These specific climate related threats do not capture all the potential threats NATO states see from the effects of climate. For example, all states mention climate change in their strategies apart from Montenegro and Latvia, while only some states focus on climate change effects on environmental security, human security, or relate climate change to energy security. While some NATO allies appreciate that climate change is of global concern, the effects of which will reverberate on a wide scale, others explicitly refer to risks to their domestic securities due to climate change effects, such as flooding, forest fires, and the like.³³

While some NATO allies appreciate that climate change is of global concern, the effects of which will reverberate on a wide scale, others explicitly refer to risks to their domestic securities due to climate change effects, such as flooding, forest fires, and the like.

Table 1 outlines the allies' awareness of the five primary threats potentially deriving from climate change. While awareness as defined in pillar one of the Climate Change and Security Action Plan is not clearly quantifiable, table one indicates that NATO states are aware of the different threats to their security emanating from the effects of climate change; however, certain threats appear to be more prevalent than others, most notably climate change impacts in the form of escalating or exacerbating conflict, inducing mass migration and increasing intrastate insecurity.

* indicates mention in national security strategy, or similar,

** indicates mention in strategies on defence and climate change (or similar).

32. NATO

33. NATO states that explicitly mention concern regarding domestic impacts of climate change in their strategies are as follows: Albania, Belgium, Bulgaria, Canada, Croatia, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Luxembourg, the Netherlands, North Macedonia, Norway, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom, and United States of America. Those that did not comment on these domestic effects in their strategies are as follows: the Czech Republic, Estonia, Italy, Latvia, Lithuania, Montenegro, and Turkey. While the latter states may not mention the direct effects of climate change on their own nations, many still acknowledge that climate change is a global issue and will have ripple effects.

NATO member	Aggravate geopolitical competition	A threat multiplier	Exacerbate/escalate conflict	Mass migration	Increase insecurity
Albania	x*	x*	x*	x*	x*
Belgium	x*	x*	x*	x*	x*
Bulgaria			x*		
Canada	x*	x*	x*	x*	x*
Croatia				x*	
Czech Republic			x** ³⁴	x* ³⁵	x**
Denmark			x**	x*	x*
Estonia	x*		x*	x*	x*
Finland ³⁶	x*	x*	x*	x*	x*
France	x**	x**	x**	x**	x**
Germany			x*		x*
Greece			x**	x**	x**
Hungary	x**			x*	
Iceland					
Italy					
Latvia					
Lithuania			x*	x*	
Luxembourg	x*	x*	x*		x*
Netherlands			x*	x*	x*
North Macedonia ³⁷				x*	
Montenegro					
Norway	x**	x**	x**		
Poland					
Portugal	x**	x**	x**	x**	x**
Romania	x*	x**	x*	x**	x*
Slovakia			x**	x**	
Slovenia		x*	x*	x*	x*
Spain		x**	x**	x**	x**
Sweden ³⁸	x*		x*	x*	x*
Türkiye					
UK	x**	x*	x**	x*	x*
US		x*	x*	x*	x*

Adaptation

As the adaptation pillar of the CCSAP denotes, adaptation is about carefully considering the effects of climate change on NATO's broad range of activities and responding accordingly. In general terms, NATO states frame adaptation as advancing the resilience of their armed forces. There are a range of areas to focus on, however, four in particular stand out as fundamental for NATO's ability to deliver its core mission of safeguarding the security of its member states.³⁹

34. The Security Strategy of the Czech Republic 2023.

35. The Long Term Perspective for Defence 2030.

36. Finland is currently developing its national security strategy forthcoming in 2025. 'Finnish Government to Draw up National Security Strategy', Finnish Government, accessed 4 June 2024, <https://valtioneuvosto.fi/en/-/1410869/finnish-government-to-draw-up-national-security-strategy>.

37. North Macedonia makes mention of climate change numerous times, however, is not specifying which threats it sees emanating from climate change.

38. Sweden's National Security Strategy is currently being developed. Sweden does not have a separate defence and climate security strategy, however, this is a part of foreign policy and at the operational level within the defence forces. Email correspondence with Sweden's delegation to NATO.

39. NATO, 'NATO's Purpose', NATO, accessed 4 June 2024, https://www.nato.int/cps/en/natohq/topics_68144.htm.

These include adapting NATO's operational ability and operational planning to the effects of climate change to be able to operate in extreme warm conditions, mostly in NATO's southern neighbourhood, but also in extreme cold conditions such as in the Arctic region. Many NATO states talk about resilience in connection with adaptation. Closely related to operational planning and ability are exercises, and it has become evident that on the one hand, NATO has to exercise in order to prepare for missions in extreme conditions, and on the other, that climate change impacts the opportunity to do so, for example, by reducing the hours of the day available to exercise. Finally, civilian crisis management is an area where NATO foresees increased activity by military forces in responding to extreme climatic events.⁴⁰ While this is not an exhaustive list of areas impacted by climate change, these four indicators arguably form a baseline of adaptation planning and awareness among the allies.

Table 2 below shows the allies that have taken these adaptation perspectives into consideration in their various strategies. It reflects that among the NATO allies, plans to adapt to the effects of climate change are not as progressed in some states compared to others. Ultimately it reflects that there are considerable adaptation gaps among allies, where planning for adaptation is not well progressed across the alliance, and it is apparent that some states are miles ahead from a large group that have no mention of adaptation to the effects of climate change in their planning. This may also reflect that in some NATO states these plans are currently underway.

TABLE 2

NATO state	Operational ability	Operational planning	Civilian Crisis Management	Exercises
Albania			x*	
Belgium				
Bulgaria				
Canada	x**	x**	x**	x**
Croatia				
Czech Republic	x***			
Denmark				
Estonia				
Finland ⁴¹			x*	
France	x**	x**	x**	x**
Germany	x**	x**	x**	x**
Greece			x**	
Hungary				
Iceland				
Italy	x**	x**	x**	
Latvia				
Lithuania				
Luxembourg			x*	
Montenegro				
Netherlands		x*	x*	
North Macedonia			x*	
Norway	x**	x**		
Poland				
Portugal	x**	x**	x**	x**
Romania	x**	x**	x**	
Slovakia				
Slovenia				
Spain	x**	x**	x**	x**
Sweden ⁴²				

40. NATO, 'NATO 2022 Strategic Concept' (Brussels: NATO, 29 June 2022), https://www.nato.int/cps/en/natohq/topics_210907.htm.

41. While Finland's strategies did not explicitly mention that climate change influences its operational plans, these documents the importance of

42. Finland having dialogue with partner states in international fora on the links between climate and security.

In 'Total Defence 2021–2025', Sweden states that 'Environmental and climate considerations should be integrated into the work on total defence issues, including national goals, the Paris Agreement and Agenda 2030 with the global sustainable development goals.'

Türkiye				
UK	x**	x**	x**	x**
US	x**	x**	x**	x**

Mitigation

The mitigation pillar is focussed on reducing, or rather, enabling allies to reduce GHG emissions. While CO₂ is the main contributor to climate change, it is important to note that carbon dioxide is one of several GHG that contribute to global warming, including methane and nitrous oxide.⁴³

Decarbonisation can have several aims beyond just mitigating the effects of climate change. Although NATO allies may feel the moral or ethical imperative to reduce its carbon footprint to 'play its part in mitigating'⁴⁴ climate change, decarbonisation has strategic and operational advantages. Militaries based on fossil fuels will, as discussed in Part I of this report, be more expensive, harder to maintain, and more difficult to find qualified personnel to operate as states are moving towards net zero futures and new 'green' technologies are available. There is, in other words, a strategic and operational advantage for NATO allies to decarbonise.⁴⁵

Decarbonisation can be split into (at least) three specific areas of action. First, as discussed throughout this report, NATO has traditionally been concerned with energy and securing sufficient energy for both operations and facilities. In the coming decades, NATO foresees higher energy needs as a result of climate change; for example, there will be an increased need to operate cooling systems, and it recognises that low-carbon sources could help manage those increased operational energy needs.⁴⁶ Secondly, decarbonisation is also a way to increase operational ability mainly by allowing forces to be more autonomous and ready (e.g. less dependent on fuel supply) which ultimately increases resilience. As the UK Ministry of Defence puts it: 'Armed forces the world over will face this challenge and will need to build resilience. A defence properly organised for climate change is one that will be better able to defend its citizens'.⁴⁷ Third, and ultimately related to alliance cohesion, levelled decarbonisation across the alliance will ensure the ability of NATO to operate in coalitions. That being said, decarbonisation can also be associated with risks, for example, how will a decarbonised defence perform against a fossil fuelled adversary?

Table three below illustrates to what extent these three perspectives are incorporated in allied strategies. As with plans for adaptation, some NATO members are more progressed in their plans to decarbonise, however, it is important to recognise that the majority of NATO states have committed to net zero futures or a significant reduction of their CO₂ emissions, which inevitably will have an impact on defence and armed forces.

NATO allies may feel the moral or ethical imperative to reduce its carbon footprint to 'play its part in mitigating' climate change, decarbonisation has strategic and operational advantages.

TABLE 3

NATO state	Decarbonise (energy)	Decarbonise (operations)	Decarbonise (coalitions)
Albania			
Belgium			
Bulgaria	x*		
Canada	x**	x**	
Croatia			
Czech Republic	x***	x***	

43. OAR US EPA, 'Overview of Greenhouse Gases', Overviews and Factsheets, 23 December 2015, <https://www.epa.gov/ghgemissions/overview-greenhouse-gases>.

44. NATO, 'The Secretary General's Report NATO Climate Change and Security Impact Assessment. Second Edition, 2023.' (NATO, 2023).

45. See for example the UK, Danish, French and Greek strategies.

46. NATO, 'The Secretary General's Report NATO Climate Change and Security Impact Assessment. Second Edition, 2023.' (NATO, 2023).

47. Ministry of Defence, Defence's Response to a More Contested and Volatile World: Presented to Parliament by the Secretary of State for Defence by Command of His Majesty (London: Ministry of Defence, 2023).

Denmark	x**	x**	
Estonia			
Finland			
France	x**	x**	
Germany ⁴⁸			
Greece	x*		
Hungary			
Iceland	x*	x**	
Italy	x**	x**	
Latvia			
Lithuania			
Luxembourg ⁴⁹	x*	x*	
Montenegro			
Netherlands	x**	x**	
North Macedonia			
Norway ⁵⁰	x**	x**	
Poland			
Portugal	x**	x**	
Romania ⁵¹	x**	x**	
Slovakia			
Slovenia			
Spain	x*		
Sweden ⁵²			
Türkiye			
UK	x**	x**	
US	x***	x***	

48. In Germany's Strategy on Defence and Climate Change the ministry refers to the 'Sustainability and Climate Protection Strategy' that should outline mitigation efforts. However, we have been unable to find it.

49. In Lignes Directrices de la Défense Luxembourgeoise à L'Horizon 2035.

'continuer à mesurer, évaluer et à réduire les émissions de gaz à effet de serre et l'empreinte écologique de la Défense tout en améliorant son efficacité opérationnelle'

50. Like many NATO states, Poland plans to develop cleaner energy, however, not in the specific context of the armed forces. This indicates a broader understanding of how decarbonising and military are interlinked.

51. Romania is like Poland, mindful of the need to develop clean energy without directly relating it to defence.

52. Similar to Poland, Türkiye has recognised the need to decarbonise, but has not explicitly placed this recognition within the context of its armed forces.

Conclusions

Is important to realise that there are a range of operational issues deriving from inconsistent adaptation and mitigation measures. Ultimately this can affect alliance cohesion in both material and social terms.

In general terms NATO member states have a common understanding of climate change's impact on security. Although some states appear to be further ahead than others in terms of measures to address these impacts, the 2021 decision to securitise climate change clearly turned the alliance towards a new awareness of the impacts of climate change on security.

NATO states are currently, however, at very different stages when it comes to both adapting defences to the effects of climate change and setting their defences on course to contribute to mitigating climate change - the latter despite the fact that the allies have committed to either net zero futures or to drastically reduce their CO₂ emissions, which will eventually involve decarbonizing defences as they are the largest institutional emitters of GHG as mentioned above.⁵³ The common understanding of climate change's impact on security, however, provides a starting point and an opportunity for NATO allies to increase their efforts in both adaptation and mitigation.

Whilst tempting to focus attention solely on the security issues that arise from the current Russian war against Ukraine,⁵⁴ it is important to realise that there are a range of operational issues deriving from inconsistent adaptation and mitigation measures. Ultimately this can affect alliance cohesion in both material and social terms, largely by creating what can be seen as a two tier NATO. A two tier NATO is understood here as an alliance where some allies are able to operate in conditions that require forces to have adapted to the effects of climate change, while others are unable. This does not have to be a point of contention, however; burden sharing in the defence of the alliance has currently and historically been a point of dispute between allies, ultimately threatening alliance cohesion.

RECOMMENDATIONS: Increase and Sustain Allies' Climate Change Awareness

The emerging common understanding of the impacts of climate change on security amongst NATO states provides an opportunity to increase and sustain allies' climate security awareness. This can include addressing how NATO allies' efforts to adapt to and mitigate climate change are not detracting from NATO's core tasks. This can include addressing how NATO allies' efforts to adapt to and mitigate climate change are not detracting from NATO's core tasks. Specifically, the Climate Change and Security Action Plan commits NATO to leverage its science and technology programmes and communities to research the impact of climate change on security. NATO can utilise this community of experts to undertake a specific study of common misconceptions and obstacles to pursue a transition in thought on the climate security agenda. The annual Climate Change and Security Impact Assessment is a good opportunity to publish the results.

More specifically, in material terms NATO allies are not clearly identifying the risks associated with inconsistent adaptation and mitigation efforts, and if the alliance does not overcome the adaptation gaps and evenly adapt their capabilities to operate in different and harsher climates, there can be negative impacts on NATO operations both in terms of ensuring allied security – especially as NATO's strategic environment is outside the treaty area – and in terms of the allies' ability to operate in coalitions. If there is

53. 'Nationally Determined Contributions Registry | UNFCCC', accessed 12 June 2024, <https://unfccc.int/NDCREG>.

54. Gry Thomsen, 'Clashes of Perceptions. Bridging Perspectives on Security in Europe' (London, United Kingdom: BASIC (British American Security Information Council), November 2022), <https://basicint.org/report-clashes-of-perceptions-bridging-perspectives-on-security-in-europe/>.

55. Barry, Fetzek, and Emmett, 'Green Defence'; Depledge, 'Low-Carbon Warfare: Climate Change, Net Zero and Military Operations'.

insufficient training of personnel, and equipment that is unable to operate in extreme climates, some allies will not be able to operate in those climates and cannot take part in coalitions that operate in those theatres. The adaptation gaps represent a significant challenge to NATO abilities to operate in different climates as an alliance. Different decarbonisation measures can have a similar negative impact.⁵⁵

RECOMMENDATIONS: Establish a Working Group on the Operational Challenges of 'Adaptation Gaps' ⁵⁶

To ensure allies' adaptation and mitigation efforts do not impact future operations negatively, NATO can capitalise on the current awareness among the allies of the effects of climate change on security to establish a working group to discuss and identify how adaptation and mitigation measures may pose operational challenges in the medium and long terms, and explore possibilities of coordinating the various decarbonization and adaptation measures that members can apply. The working group members should be representatives from both states that are less and well advanced in implementing the climate security agenda to situate the findings in real time and within current political and economic circumstances. This work could be facilitated by CCASCOE. The working group should aim to deliver a report to the Secretary General outlining its findings.

56. I am indebted to the anonymous peer reviewer for their suggestion to suggest the term 'Adaptation gaps'.

APPENDIX A

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