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Introduction

Climate change is increasingly gaining recognition as a significant driver of global insecurities (Kerry & Murthi, 2024). Its impact extends past environmental degradation, permeating the realms of politics, economics and, crucially, security (European Economic and Social Committee, 2024). Rising temperatures, extreme weather events and shifting climate patterns disrupt ecosystems and societies, which in turn further aggravate conflicts over diminishing resources, and leads to displacement and political instability (United Nations, 2023). The intersection of climate change and security becomes evident, particularly for nations tasked with safeguarding stability in more ways than one. Armed forces, usually focused on traditional threats, are now called to confront the complex and unpredictable challenges posed by climate change and its nexus with traditional threats (Heise, 2021).

As these climate related threats grow in frequency and intensity, military strategies must evolve accordingly. The direct impacts of climate change, such as floods and sandstorms, disrupt military operations and logistics, while its indirect effects exacerbate resource scarcity and humanitarian crises (Tavares da Costa et al., 2023, p. 57). Adapting to these changes is crucial, especially for European nations, where military readiness plays a pivotal role in both national and collective defence (European Commission, 2024). The European sphere is particularly vulnerable due to its dense populations, critical coastal infrastructure and strategic military installations that face rising sea levels and extreme weather events (European Environment Agency, 2022).

Within this framework, NATO, as the cornerstone of European defence, has recognised climate change as a “threat multiplier”, a force that amplifies existing security risks and introduces new ones (NATO, 2023, p. 3). European militaries are now faced with two major tasks: defending their nations while increasingly being called upon to respond to climate-enhanced disasters. This paper examines how European military strategies are adapting to the multifaceted impacts of climate change, focusing on key challenges such as operational disruptions, the growing demand for disaster relief and the threat to coastal installations. In doing so, it assesses the broader implications of these adaptations for both national security and NATO’s collective defence strategy.

I. Climate Change as a Security Threat Multiplier

The conceptualisation of climate change as a “threat multiplier” reflects the understanding that climate change does not create entirely new conflicts but intensifies the pre-existing vulnerabilities, making them much more difficult to manage. For example, fragile states already struggling with political instability, economic inequality, or weak governance are

more likely to experience heightened security risks when faced with the added pressures of climate induced resource scarcity, mass migration, or natural disasters (Nguyen et al., 2023). In this sense, climate change serves as a catalyst, pushing volatile situations closer to the tipping point.

The destabilising effects of climate change are particularly acute when considering its role in aggravating migration flows and resource competition (Nguyen et al., 2023). As droughts, floods, and rising sea levels displace millions of people, the pressure on both origin and host nations grow, leading to overcrowding, eroding infrastructure, and, in some cases, inter-ethnic or inter-state conflict (Nguyen et al., 2023). In the Mediterranean, for example, climate-induced migration from North Africa and the Middle East has already posed significant challenges for European countries, such as maritime rescue operations, strain on public services, rise in nationalism and increasing the demand for border security and crisis management (Goff, et al., 2012). Similarly, competition over dwindling resources, such as water and arable land, can fuel conflict within and between nations, further complicating military planning and strategic decision-making (United Nations, 2012, p. 1).

These dynamics are reshaping the European defence landscape, forcing military planners to adopt a more climate-conscious approach to security (Lazarou & Tothova, 2022). Military forces, once focused primarily on traditional threats like terrorism, cyberattacks, or interstate conflict, now face the unpredictable consequences of a changing climate. To counter these emerging threats, European militaries must integrate climate resilience into their strategic frameworks. This involves not only preparing for immediate, climate-induced disruptions but also planning for the long-term consequences of global warming on regional stability.

Adapting to this evolving security environment requires a multidimensional approach. First, the military must mitigate the impacts of climate change on their own operations and infrastructure. This includes safeguarding coastal installations, ensuring the resilience of supply chains, and developing climate-resistant equipment and training programs. Secondly, they must respond to the broader security challenges posed by climate change, such as population displacement, resource competition, floods and other extreme weather events that destabilise regions and exacerbate existing conflicts. As NATO highlights, addressing these challenges is not optional but rather essential to the maintenance of both national and collective security in a world that is increasingly shaped by climate change.

II. Operational Disruption Caused by Extreme Weather Events

Extreme weather events, further exacerbated by climate change, are increasingly disrupting military operations and undermining the effective nature of ground defence strategies (Tavares da Costa, et al., 2023, p. 17). Storms, floods, and heatwaves not only pose immediate threats to soldiers and equipment, but also create long-term logistical challenges (NATO, 2024, p. 9). As weather patterns grow more unpredictable, militaries are encountering operational disruptions that complicate the execution of missions and put a strain on resources. (NATO, 2024, p. 14; Heise, 2021).

One critical area that is affected is the conduct of military training exercises. These exercises, are vital for maintaining operational readiness, are sometimes delayed or cancelled due to extreme weather conditions, thus reducing their overall effectiveness (Parsons et al., 2019). For example, heatwaves make it very dangerous for troops to conduct drills, leading to a reduction in training hours, while storms or floods can leave training grounds unusable (Parsons et al., 2019). This leads to a reduction of military preparedness for future deployments and, ultimately, compromises the ability of ground forces to operate efficiently in real combat situations. Moreover, soldiers are unable to simulate real-life conditions if weather forces them to deviate from intended training scenarios (Parsons et al., 2019).

In actual military operations, extreme weather conditions introduce various logistical and operational challenges. Ground forces often experience limited mobility when roads become impassable due to floods or heavy snowfall, hindering the rapid movement of troops and supplies. Coordination between units becomes more difficult as extreme weather affects communications infrastructure and forces delays in transportation. Heatwaves in particular, present a unique set of challenges as high temperatures can cause equipment to overheat, leading to malfunctions and failures.

In addition to operational challenges, extreme weather events significantly hinder logistics and supply chains. The transportation of military supplies and the movement of equipment are often delayed due to damaged infrastructure or dangerous conditions (European Commission, 2015). Flooded roads, disrupted air traffic, and impaired sea routes complicate the supply chain, making it difficult to deliver necessary equipment and provisions to operational areas (Rodrigue, n.d.). The need for alternative routes or delayed shipments have increased both costs and risks (ReMuNet, 2024, p. 14). Additionally, extreme weather events can often cause damage to critical infrastructure, such as roads, bridges, and ports, which further slows down the procurement and deployment of essential military resources (ReMuNet, 2024, p. 14).

The financial implications of these disruptions are significant. Delays in procurement, the need for more robust equipment and the maintenance of climate-resistant infrastructure all lead to increased costs (Tavares da Costa et al., 2023, p. 14). European militaries should not only invest in equipment that is capable of withstanding harsher environments but also in enhancing their logistics systems to ensure that supply chains can adapt to a changing climate (Tavares da Costa, et al., 2023). These challenges underline the importance of building climate resilience in every aspect of military planning, from operational readiness to logistical frameworks.

As extreme weather becomes more common, the disruptions to military operations and logistics will only intensify. Adapting to these new realities requires forward-thinking strategies that account for both the short-term disruptions caused by extreme weather and the long-term impacts on military readiness and defence capabilities.

III. Rising Demand for Military Involvement in Disaster Response

The rising demand for military involvement in disaster management is mostly pushed by the increasing occurrence of extreme weather events (NATO, 2024, p. 14). Across Europe, floods, wildfires and severe storms have been more common, requiring large-scale responses (European Commission, 2024). The military's logistical capabilities and ability to mobilise quickly make them an essential part of the national disaster response frameworks. For example, during the 2021 floods in Germany, the Bundeswehr (German armed forces) deployed thousands of troops to assist in rescue operations, clear debris, and restore critical infrastructure (Ullrich, 2021).

While the military's capacity to provide immediate and large-scale assistance in the face of these types of disasters is invaluable, it also comes at a cost. As natural disasters become more frequent, militaries are increasingly diverted from their primary focus on national defence and security operations (NATO, 2024, p. 14). This growing emphasis on disaster relief strains both personnel and resources, forcing military leadership to make difficult decisions about resource allocation. Military units typically focused on training, maintenance or readiness are often pulled into disaster response missions, leading to a reduction in overall combat preparedness.

The cumulative effect of these demands significantly strains military readiness (Charbonneau, 2024, p. 6). With more frequent deployments to manage climate-related crises, there is less time and fewer resources available for traditional defence operations such as conducting large scale exercises, maintaining equipment or preparing for external threats. This creates a strategic challenge for military planners who must balance the need

to provide immediate disaster relief with the imperative to sustain high level operational capacity.

Achieving balance requires careful planning and strategic foresight. Militaries must adopt flexible strategies that allow for rapid deployment in the face of natural disasters without compromising their core defence functions (European Union, n.d.). This may involve creating specialised units or enhancing civil and military cooperation frameworks that enable quick transitions between disaster relief and defensive roles. Additionally, the concept of the “green military” emphasises integrating environmental sustainability into military strategies and operations (European Defence Agency, 2012). By reducing their environmental footprints through renewable energy, sustainable technologies, and eco-friendly policies, militaries can better align with climate goals while maintaining operational readiness (Barry, 2022). Long-term investments in climate resilience, both for military infrastructure and broader societal response systems, can aid in alleviating the burden on armed forces, ensuring they are not perpetually stretched thin by the demands of disaster response (Barry, 2022). This dual approach not only strengthens the military’s capacity for disaster relief but also positions sustainability as a strategic imperative in modern defence planning.

Conclusion

This paper explored the way climate change has emerged as a critical factor in shaping the future of ground defence strategies, impacting every aspect of military operations, from readiness and logistics to infrastructure and resource allocations. Extreme weather events disrupt training, degrade operational capacity, and create logistical challenges, while rising sea levels threaten vital coastal installations. Additionally, the increasing frequency of natural disasters has expanded the military’s role in disaster relief, diverting resources away from traditional defence tasks. As these climate-induced pressures grow, militaries are faced with the dual challenge of maintaining readiness while responding to an evolving security landscape.

Adapting military strategies to address the impact of climate change is not just a matter of operational necessity but one of national and collective security. Militaries need to become more flexible, developing strategies that ensure they can continue to operate effectively in a more unpredictable environment. Climate-conscious planning, both for the short-term disruptions and long-term vulnerabilities, is necessary to safeguarding military capabilities.

In the future, forward-thinking and collaborative military planning will be necessary to

manage the challenges that are posed by climate change in Europe. Coordination across NATO, the EU, and individual nations is necessary to create unified strategies that address climate change's immediate and systematic risks. By investing in climate change resilience now, European militaries can better position themselves to meet the complex security challenges of the future.

Bibliography

Amakrane, Y. & Biesbroek, R. (2024). How is the military and defence sector of EU member states adapting to climate risks? *Climate Risk Management*, 44, 100609–100609. <https://doi.org/10.1016/j.crm.2024.100609>

Barry, B. (2022). The International Institute for Strategic Studies Green Defence: the defence and military implications of climate change for Europe with contributions from Shiloh Fetzek and Lieutenant Colonel Caroline Emmett. Retrieved from <https://www.iiss.org/globalassets/media-library---content--migration/files/research-papers/2022/green-defence---the-defence-and-military-implications-of-climate-change-for-europe.pdf>

Charbonneau, B. (2024). The Era of Climate Security. Retrieved from <http://www.journal.forces.gc.ca/PDFs/CMJ241Ep5.pdf>

Dunne, A. (2024, June 20). Mediterranean migration and its lessons for Europe | Research and Innovation. Retrieved October 16, 2024, from [projects.research-and-innovation.ec.europa.eu website: https://projects.research-and-innovation.ec.europa.eu/en/horizon-magazine/mediterranean-migration-and-its-lessons-europe](https://projects.research-and-innovation.ec.europa.eu/en/horizon-magazine/mediterranean-migration-and-its-lessons-europe)

European Commission. (2015, November 23). Management of weather events in transport system. Retrieved October 1, 2024, from [CORDIS | European Commission website: https://cordis.europa.eu/project/id/314506/reporting](https://cordis.europa.eu/project/id/314506/reporting)

European Commission. (2024). Consequences of climate change. Retrieved October 1, 2024, from [climate.ec.europa.eu website: https://climate.ec.europa.eu/climate-change/consequences-climate-change_en](https://climate.ec.europa.eu/climate-change/consequences-climate-change_en)

European Commission. (2024). THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS A new European Defence Industrial Strategy: Achieving EU readiness through a responsive and resilient European Defence Industry. Retrieved from https://defence-industry-space.ec.europa.eu/document/download/643c4a00-0da9-4768-83cd-a5628f5c3063_en?filename=EDIS%20Joint%20Communication.pdf

European Defence Agency. (2012). Green Military 2012. Retrieved from https://eda.europa.eu/docs/default-source/news/proceedings_military-green-2012_v3_low.pdf

European Economic and Social Committee. (2024, January 17). Addressing the impact of climate change and environmental degradation on peace, security and defence. Retrieved October 1, 2024, from European Economic and Social Committee website: <https://www.eesc.europa.eu/en/news-media/press-summaries/addressing-impact-climate-change-and-environmental-degradation-peace-security-and-defence>

European Environment Agency. (2022, December 16). Extreme sea levels and coastal flooding. Retrieved October 1, 2024, from [www.eea.europa.eu](https://www.eea.europa.eu/en/analysis/indicators/extreme-sea-levels-and-coastal-flooding) website: <https://www.eea.europa.eu/en/analysis/indicators/extreme-sea-levels-and-coastal-flooding>

European Union. (n.d.). A strategic compass for security and defence. Retrieved from https://www.satcen.europa.eu/keydocuments/strategic_compass_en3_web6298d4e4601f2a0001c0f871.pdf

Goff, L., Zarin, H., & Goodman, S. (2012). Climate-Induced Migration from Northern Africa to Europe: Security Challenges and Opportunities. *JSTOR*, 18(2), 195–213.

Heise, R. (2021, April 1). NATO Review - NATO is responding to new challenges posed by climate change. Retrieved October 1, 2024, from NATO Review website: <https://www.nato.int/docu/review/articles/2021/04/01/nato-is-responding-to-new-challenges-posed-by-climate-change/index.html>

Jayaram, D., & Brisbois, M. C. (2021). Aiding or undermining? The military as an emergent actor in global climate governance. *Earth System Governance*, 9, 100107. <https://doi.org/10.1016/j.esg.2021.100107>

Kerry, V., & Murthi, M. (2024). The climate crisis is driving a global public health emergency. Retrieved September 27, 2024, from World Bank Blogs website: <https://blogs.worldbank.org/en/investinpeople/climate-crisis-driving-global-public-health-emergency#:~:text=The%20impacts%20of%20climate%20change>

Lazarou, E., & Tothova, L. (2022). Climate change considerations for EU security and defence policy. Retrieved from [www.europarl.europa.eu/RegData/etudes/BRIE/2022/729467/EPRS_BRI\(2022\)729467_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/BRIE/2022/729467/EPRS_BRI(2022)729467_EN.pdf)

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

https://www.nato.int/nato_static_fl2014/assets/pdf/2023/7/pdf/230711-climate-security-impact.pdf

NATO. (2024). NATO Climate Change and Security Impact Assessment The Secretary General's Report Third Edition 2024. Retrieved from https://www.nato.int/nato_static_fl2014/assets/pdf/2024/7/pdf/240709-Climat-Security-Impact.pdf

Nguyen, T. T., Grote, U., Neubacher, F., Rahut, D. B., Do, M. H., & Paudel, G. P. (2023). Security risks from climate change and environmental degradation: implications for sustainable land use transformation in the Global South. *Current Opinion in Environmental Sustainability*, 63, 101322. <https://doi.org/10.1016/j.cosust.2023.101322>

Parsons, I. T., Stacey, M. J., & Woods, D. R. (2019). Heat Adaptation in Military Personnel: Mitigating Risk, Maximizing Performance. *Frontiers in Physiology*, 10. <https://doi.org/10.3389/fphys.2019.01485>

Pasricha, H. (2024, June 5). Climate-Induced Migration and the Opportunities for Youth | Environmental Migration Portal. Retrieved October 16, 2024, from IOM.int website: <https://environmentalmigration.iom.int/blogs/climate-induced-migration-and-opportunities-youth>

ReMuNet. (2024). Analysis of effects of disruptive events on the European freight transport network and resulting societal impact Hanken School of Economics. Retrieved from https://remunet-project.eu/wp-content/uploads/2024/06/D1.5_Social-effects-of-disruptive-events-HANKEN.pdf

Rodrigue, J.-P. (n.d.). 9.4 – Transportation and Disasters | The Geography of Transport Systems. Retrieved October 1, 2024, from The Geography of Transport Systems website: <https://transportgeography.org/contents/chapter9/transportation-and-disasters/>

Tavares da Costa, R., Krausmann, E., & Hadjisawas, C. (2023). Impacts of climate change on defence-related critical energy infrastructure. Publications Office of the European Union. Retrieved from Publications Office of the European Union website: <https://eda.europa.eu/docs/default-source/brochures/climate-report.pdf>

Ullrich, K. (2021, July 20). Germany's army of THW volunteers – DW – 07/20/2021. Retrieved October 1, 2024, from dw.com website: <https://www.dw.com/en/thw-germanys-army-of-volunteers-for-disaster-relief/a-58320465>

United Nations. (2012). Land and Conflict The United Nations Interagency Framework Team for Preventive Action - Toolkit and guidance for preventing and managing land and natural resources conflict. Retrieved from https://www.un.org/en/land-natural-resources-conflict/pdfs/GN_Land%20and%20Conflict.pdf

United Nations. (2023, June 13). With Climate Crisis Generating Growing Threats to Global Peace, Security Council Must Ramp Up Efforts, Lessen Risk of Conflicts, Speakers Stress in Open Debate | UN Press. Retrieved October 1, 2024, from [press.un.org website: https://press.un.org/en/2023/sc15318.doc.htm](https://press.un.org/en/2023/sc15318.doc.htm)