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**NAVIGATING THE GREEN HORIZON:
NATO'S EMISSION REDUCTION
INITIATIVES AND THE PURSUIT OF
SUSTAINABILITY**

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Introduction

Climate change is widely acknowledged as one of the most pressing issues today. As time passes, the environmental repercussions and global impact of greenhouse gas emissions grow increasingly apparent, leaving no alternative but to act. All industrial and commercial sectors must work together to drastically minimise their effect on our planet and avoid a global disaster. This encompasses the long-ignored global military industry, including its supply chain, which uses enormous amounts of fossil fuels and accounts for a significant portion of government spending. As a result, military greenhouse gas (GHG) emissions must be thoroughly documented and subject to emission reduction targets. While NATO is crucial for global peace and security, the environmental consequences of its military actions must be recognised. NATO, with its obligations and convening power, may be able to push its partners to agree on enforceable emissions targets and report on them, but only if it sets a good example in and by itself. Recent geopolitical tensions have removed the need to consider the creative energy industry and adapt to various fuel types. Indeed, fuel shortages resulting from the Russian-Ukrainian war and Russia's use of gas as political leverage have emphasised the urgency to address this issue.

Given these concerns, a climate security plan that turns this crisis into an opportunity for adaptive and constructive action is required. This paper delves into NATO's strategies for achieving and mitigating emission goals, scrutinising the implementation of these plans. The analysis aims to identify the gaps in the current approach and propose potential enhancements to further advance the emission reduction objectives.

Current measures and plans to reduce emissions

Incorporating climate change mitigation into NATO's military planning and operations was a gradual process that has taken considerable time. After recognising the need to address the threat posed by climate change, governments and NATO have been trying to pursue several goals to tackle the issue. One of them, arguably the most important, is to reduce emissions to net zero by 2050 and consequently avoid rising global temperatures by 1.5 degrees (IPCC, 2023, p. 80). In 2021, following the Brussels Summit, NATO acknowledged the need to integrate climate change within its scope, adopting a Climate Change and Security Action Plan, setting to become "the leading international organisation when it comes to understanding and adapting to the impact of climate change on security" (NATO, 2022, p. 11).

At the recent Vilnius Summit held this summer, NATO reaffirmed its commitment and released three consequential reports, crucial in implementing the Allies' understanding of climate change's ramifications on NATO's strategic landscape (NATO, 2023b). Notably, the Greenhouse Gas Emission Mapping and Analytical Methodology report provided comprehensive guidelines for assessing emissions from civilian and military facilities, offering a clear roadmap to achieve emission reduction targets (NATO, 2023a). Furthermore, at the COP28 United Nations Climate Change Conference in Dubai on December 1, NATO announced its ambition to reduce greenhouse emissions by at least 45 % by 2030 and reach net zero by 2050 (Stoltenberg, 2023).

The “Greenhouse Gas Emission Mapping and Analytical Methodology report”

NATO embraces the results of the Intergovernmental Panel on Climate Change’s AR6 reports and notes that the magnitude of emissions reductions requires significant adjustments across all sectors. The methodology proposed in this report is based on the Greenhouse Gas Protocols (GHG Protocol) and best practices from NATO members. As with most military approaches to reporting, the NATO methodology is built on relevance, completeness, consistency, transparency, and accountability. The methodology clearly states its purpose and applies only to NATO bodies and structures, not to NATO members. Surprisingly, it excludes emissions from NATO-led operations and missions and other activities like training and exercise (NATO, 2023a, p. 5). Numerous other gaps persist for instance, the evaluation prioritises NATO’s military effectiveness, even when this aim clashes with its mitigation goals (NATO, 2023a).

Furthermore, there is no explanation for this significant omission nor timetable for when or even if it will be rectified. Another important gap is that the methodology does not set any targets nor forecast future emissions; it just supports the decision-making process for NATO’s goal of assessing the feasibility of reaching net zero GHG emissions by 2050 (NATO, 2023a, p. 3). Finally, there is no mention of modifications in defence policies and deployments to lessen the members’ impact on the environment, but merely a recognition of the link between climate vulnerability, potential challenges, and conflict.

Challenges and the need for interoperability

As mentioned in the previous paragraph, the publication of the methodology is a significant recognition of the importance of reporting military emissions. However, considerable adjustments are needed to transform this objective into a catalyst for promoting the overall decarbonisation process. In the past three years especially, NATO has shown efforts to move towards decarbonisation, but the journey needs to be more concrete. Decarbonisation is a challenging task, especially for armed forces, as the main obstacle lies in substituting fossil fuels with cleaner alternatives for their operations and exercises (Trakimavičius, 2023). Military emissions account for over two-thirds of total emissions, mainly attributable to operational fuel use (Farhan et al., 2023). Mitigating the military’s reliance on fossil fuels is a far-reaching task, yet the combined inventions of numerous NATO nations offer various options for addressing this issue. One relative solution is to enhance the energy efficiency of internal combustion engines (ICEs) used in military vehicles, which can achieve even more considerable fuel savings (Trakimavičius, 2023). Depending on driving circumstances, these vehicles can easily switch between internal combustion engines (ICE) and electric motors. This dynamic capacity improves fuel economy, decreases noise, and lowers the overall emission levels (Trakimavičius, 2023).

The Introduction of liquid biofuels is another potential solution—however, it is crucial to recognise the challenges that impede their widespread adoption. Several countries have demonstrated promising innovations in this regard. For instance, the Italian Navy’s successful 2014 trial showcased H.V.O. (Hydrotreated Vegetable Oil) fuel in a 50% blend with conventional fossil-derived diesel, a practice they have consistently maintained (Ministry of Defence of Italy, 2019). In particular, the Swedish Armed Forces have recently conducted trials with biofuels in fighter aircraft (Swedish Armed Forces, 2020), and the Netherlands is also taking substantial steps towards environmental sustainability as it adopts biokerosene for its Air Force, with the long-term goal of completely transitioning to biofuel-based operations. By 2030, the Dutch Air Force aims to achieve a 20 per cent reduction in fossil fuel dependency and an even more ambitious target of a 70 per cent reduction by 2050 (Ministry of Defence of the Netherlands, 2021). Biofuels face significant limitations in scaling up production, especially for sectors like aviation, due to restricted feedstock supplies and technological barriers (Trakimavičius, 2023).

Economic viability, high production costs, and fluctuating commodity prices further hinder the widespread adoption of cleaner alternatives to fuel; moreover, this expansion could impact food security due to competition for land use (Trakimavičius, 2023). Therefore, meeting the growing demand for biofuels in sectors like aviation and the military is expected to be challenging. It is estimated that in 2027 bio-jet fuel will constitute only 1-2% of overall jet fuel use, underscoring the need for a broader strategy (International Energy Agency, 2022).

Incorporating flexibility into NATO’s single-fuel concept can help solve this problem and is crucial for an effective energy transition process (Farhan et al., 2023). The different rates at which each member state is moving away from carbon-based fuels and the escalating consequences of the Ukraine crisis highlight the importance of this transformation. The practicality and usefulness of sticking to a unified fuel policy become increasingly tricky as member nations diversify their fuel sources and supply networks. As a result, it is imperative to investigate and invest in additional creative solutions while using interoperability to adapt to changing energy environments (Farhan et al., 2023).

The path forward

While NATO has contributed with some preliminary moves to combat climate change, more concrete initiatives and a more active stance are required. Despite reports highlighting and stressing that transparency is essential, NATO must substantially reduce its large carbon footprint; confronting and minimising environmental consequences could improve NATO's credibility in the climate sector. Indeed, early investments by NATO and its partners in climate change adaptation can create long-term resilience, minimise the financial impact of climate-related disasters, and improve military performance. Even though this mission appears challenging, numerous technologies for decarbonising the armed forces already exist, with the possibility for future improvement. Realistically, a balanced strategy must be implemented, including the reduction of CO₂ emissions, the preservation or improvement of operating capabilities and the minimisation of energy transition costs. A forward-thinking approach acknowledges that comprehensive decarbonisation requires a combination of methods and interoperability. In other words, despite the significant hurdles of decarbonising the armed services, a sustainable future is still within reach via collaborative efforts. However, it is vital to approach this responsibility critically, recognising the necessity for transparent action and measurable outcomes. The need for nations to collaborate, with NATO playing a pivotal role, stems from the need to translate goals into practical policies, thus reducing our environmental impact and increasing security.

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