

RISING MILITARY EXPENDITURE INCREASES FOSSIL FUEL USE

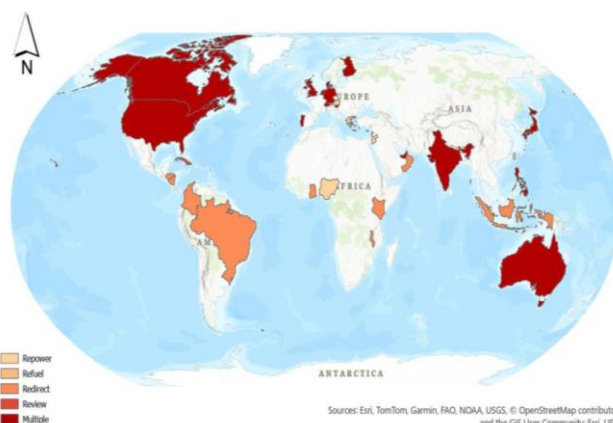
Jitske Fransens and Joyeeta Gupta

KEY MESSAGES

1. Military use of fossil fuels is substantial
2. New NATO norm increases likelihood of doubling emissions
3. Climate security and military security (readiness) should be integrated
4. Reform funding mechanisms to become a decarbonization multiplier
5. Mandate minimum quotas for sustainability investments
6. Design fossil fuel exit scenario
7. Embed climate security and energy autonomy in defence strategy

INTRODUCTION

The national military worldwide contributes an estimated 5.5% to global greenhouse gas emissions and is almost entirely fossil-fuel-based. However, it is not obliged to transparently report on its emissions (Parkinson & Cottrell, 2022: 8). Global military expenditure is rising. In 2024, global combined spending reached USD \$2718 billion, which is a new record (SIPRI, 2025). Furthermore, for every 1% increase in per capita military investment, there is a predicted increase of 0.05% in greenhouse gas emissions (Tarczyński et al., 2023:1). However, current decarbonization efforts are skewed toward low-impact solutions. Figure 1 shows that repower efforts (i.e., infrastructure upgrades and renewable energy use) are the most widely adopted globally, while refuelling (i.e., alternative propulsion systems and fuels), redirecting emissions (i.e., offsetting emissions), and reviewing (i.e., reassessing the size of the military, its scope, and emissions) military operations remain limited. Since the NATO meeting of June 2025, member states have agreed to increase their military expenditures from the norm of 2% of GDP to 5% (Kirby 2025). This will have possibly a more than doubling effect on fossil fuel emissions given the sector's fossil fuel dependence and the single fuel norm (i.e., only one fuel can be provided in the battlefield context for all vehicles and users of fuel) used by the sector. Although, in principle, we are opposed to increasing defence expenditures, we argue that if they are to be increased they should align with climate goals. Our case study of The Netherlands reveals that military investments align military readiness with decarbonization when: (a) they focus on infrastructure modernization and operational reviews; (b) proven innovations are scaled across departments; (c) strategic fuel planning supports alternative fuel development without fossil lock-in; and (d) climate goals are integrated into operational priorities rather than treated as external compliance. Based on this research and interviews we present four recommendations for aligning military investments with both decarbonisation and military readiness.



CLIMATE AND MILITARY SECURITY SHOULD GO HAND-IN-HAND

Military security is important, but climate security affects everybody, also for the next several centuries. It is critical that a combined perspective on these securities is adopted, not just in terms of the impacts of climate change on military security, but also on how military security impacts on climate change.

REFORM PROCUREMENT AND INFRASTRUCTURE FUNDING MECHANISMS TO TREAT DECARBONISATION AS A READINESS ENABLER

Such combined security requires that defence infrastructure investment criteria include energy use, energy performance and resilience to fuel disruptions and carbon footprint metrics to reduce fossil fuel dependence and logistical vulnerabilities. Infrastructure upgrades including energy-efficient buildings and local renewable energy generation need to be treated as technologically feasible, cost-effective core mission enablers, not auxiliary sustainable goals integrating Trias Energetica principles (limit energy demand, use sustainable energy, and if necessary, make fossil fuel use clean and efficient). Funding should prioritise local generation, insulation, and smart grids and procurement guidelines should evaluate lifetime energy use and emissions.

MANDATE A MINIMUM QUOTA FOR SUSTAINABILITY INVESTMENTS ACROSS DEPARTMENTS AND INSTITUTIONALISE SUCCESSFUL INNOVATIONS

The military could consider a mandatory (e.g., 10%) quota of its budget to enhance its sustainability through e.g., system-wide use of smart grids, hybrid generators, and circular logistics (e.g.,

recycling uniforms). Such use of the quota needs to be monitored and evaluated and lessons learnt need to be integrated.

REQUIRE MAJOR FUEL SYSTEM INVESTMENTS TO INCLUDE A FOSSIL FUEL EXIT SCENARIO AND A DECARBONISATION COMPATIBILITY PLAN

Climate security would also require that future investments in fuel infrastructure or platforms include credible fossil fuel exit scenarios and decarbonization compatibility analyses. This enables avoidance of long-term lock-ins. The refuel pathway currently is fossil-dependent although there is exploration of expensive and technologically immature synthetic and alternative fuels. To achieve readiness and decarbonisation, fossil fuel exit scenarios and roadmaps, supported by supply chain reform and industry co-ordination, are needed.

EMBED CLIMATE RESILIENCE AND ENERGY AUTONOMY STRONGLY INTO THE DEFENCE DOCTRINE AND THE DEFINITION OF READINESS

Climate security requires climate resilience and energy autonomy in strategic military doctrine and must counter existing 'military security only' organisational culture with sustainability perceived as a politically imposed add-on. By reframing such measures as operationally relevant, supporting energy autonomy, contributing to stealth, cost savings, and independence, they may become legitimate. Institutional champions are needed who promote and update military doctrine and strategic documents to frame sustainability not as a moral/legal issue but as integral and contributive to a broader security mission.

CONCLUSION

Though we prefer demilitarization, this policy brief has argued, while recognizing that military emissions are high, scarcely reported, and increasing to a 5% of GDP NATO-norm, it is vital that climate and military security, at minimum, are merged in a broader strategic understanding of security. Military readiness and decarbonisation can align in military investments if directed towards infrastructure investments, scaling of innovations, future-proof fuel decisions, and cultural and strategic doctrine sustainability integration.

REFERENCES

- Fransens, J. (2025). Footprints and firepower: Conditions for military decarbonisation and readiness, [Master's thesis, University of Amsterdam]
- Kirby, P. (2025, June 25). Nato agrees spike in defence spending and stresses 'iron-clad' security guarantee. <https://www.bbc.com/news/articles/cj4en8djwyko>
- Ministerie van Defensie. (2023, January 31). Defensie zet structureel in op duurzame krijgsmacht. Defensie. Retrieved May 19, 2025, from <https://www.defensie.nl/actueel/nieuws/2023/01/31/defensie-zet-structureel-in-op-duurzame-krijgsmacht>
- Parkinson, S., & Cottrell, L. (2022). Estimating the Military's Global Greenhouse Gas Emissions. Scientists for Global Responsibility (SGR) and the Conflict and Environment Observatory (CEOBS). Parkinson, S., & Cottrell, L. (2022, November). Estimating the Military's Global Greenhouse Gas Emissions. Scientists for Global Responsibility (SGR) & Conflict and Environment Observatory (CEOBS). 978-1-8383986-1-3
- SIPRI. (2025, April 25). Unprecedented rise in global military expenditure as European and Middle East spending surges. SIPRI. Retrieved April 28, 2025, from <https://www.sipri.org/media/press-release/2025/unprecedented-rise-global-military-expenditure-european-and-middle-east-spending-surges>
- Tarczyński, W., Roman, Ł., Rejman, K., Salahodjaev, R., & Azam, S. (2023). Military Spending and CO2 emissions: Empirical findings from countries with highest per capita military spending. *Journal of International Studies*, 16(2), 211-221. Fundacja Centrum Badań Socjologicznych.
- The Military Emissions Gap. (2025). View your government's military emissions data. Militaryemissions.org. Retrieved 26, 02, from <https://militaryemissions.org/>