The military threat to the climate

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(All references listed in final slides)

How do militaries and war fuel climate change?

[image credit: DoD]

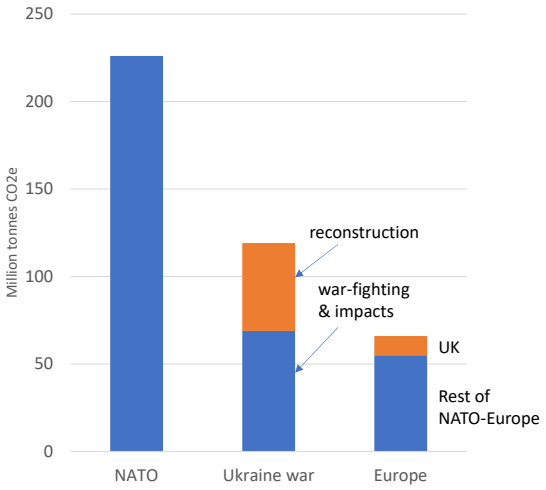
What is the military's role in carbon emissions?

- Difficult to estimate due to reporting exemptions etc:
  - Exclusions from national reports to UN (& most targets)
    - e.g. military aviation & shipping in international areas
  - Concealment under civilian categories
    - e.g. military bases classified under public buildings
  - Key suppliers counted as industrial, e.g. arms industry
  - Impacts of war
    - counted under other categories, e.g. fugitive emissions, land-use change, healthcare, construction (post-war)
    - or not counted at all…
- Virtually no mention of military/ war emissions in UN climate reports
- US govt led efforts to conceal these emissions

- For example, IPCC assessment reports have included virtually no mention of military/ war-related emissions – and have made no estimates of these emissions. Indeed, the whole areas has been avoided by climate scientists.
- In 1997, at negotiations on Kyoto Protocol, exemptions were agreed from national targets of all military emissions classified as 'international' – following lobbying by US govt - this was agreed by all govts (Lorincz, 2015)

Carbon footprints: NATO/ European militaries and Ukraine war

- NATO footprint up 15% in 2y
  - No war impacts included
- US footprint twice rest of NATO
- Ukraine war emissions
  - Data on first year
  - War-fighting & impacts emissions similar to European footprint
  - Post-conflict reconstruction over several years
- Uncertainties high



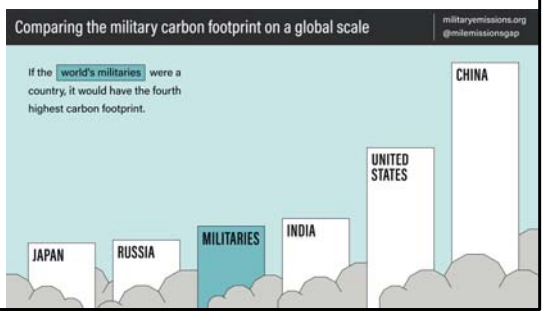
Sources: Transnational Institute et al (2023); de Klerk et al (2023)

- NATO data estimates for 2023 based on economic and supply chain data (Transnational Institute et al, 2023)
- Ukraine war data for one calendar year from 24 Feb 2022 (de Klerk et al, 2023)

Global estimate: military carbon footprint

- Global total (best estimate): **2,750 MtCO2e/ 5.5%**
- **Larger than Russia's** total carbon footprint
- Extrapolated from US/UK/EU data, using proxy data
- Uncertainty range
  - 3.3% to 7.0% of global GHG emissions
- Incomplete estimate (no war impacts)

SGR/CEOBS (2022)

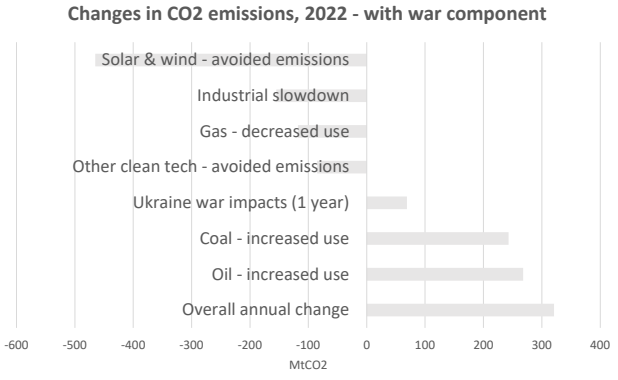


- Data from 2019 (i.e. before COVID-19 pandemic and Russian invasion of Ukraine)
- Proxy data includes: number of military personnel; ratio of stationary to mobile emissions
- NB Supply chain multiplier significantly higher than in country-level studies due to discovery of gaps in earlier data
- Source: SGR/CEOBS (2022)

War in Ukraine: wider impacts on carbon emissions (1)

- Major increase in oil & gas prices
- Rising carbon emissions due to:
  - Switch to higher carbon fossil fuels, esp. coal, liquified natural gas (LNG)
- Falling carbon emissions due to:
  - Reduction in energy demand
  - Switch to solar, wind etc

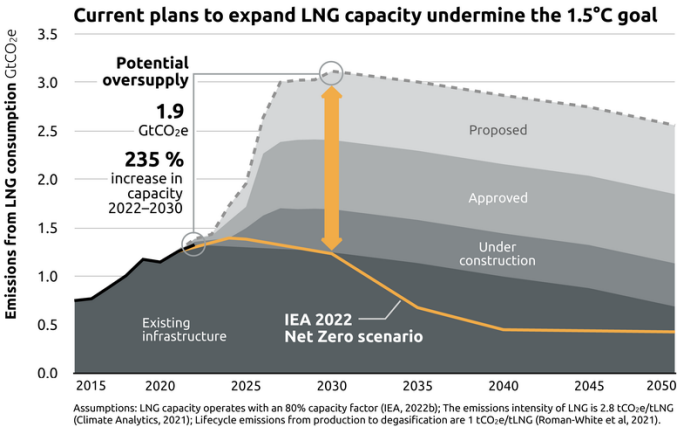
IEA (2022); de Klerk et al (2023)



Sources: IEA (2022); de Klerk et al (2023)

War in Ukraine: wider impacts on carbon emissions (2)

- Investment in high-carbon energy supply
  - New coal, oil & gas
    - e.g. new North Sea oil (Rosebank etc), new Cumbria coal mine
  - LNG supply-chains
- Military expansion
  - Major budget increases in NATO, Russia, China etc fuelling military emissions rise



- Graph from: Climate Action Tracker (2022)
- Examples of UK fossil fuel expansion – BBC (2022)
- Examples of recent increases in military spending/ expansion – Transnational Institute et al (2023)

Nuclear war → Climate disruption

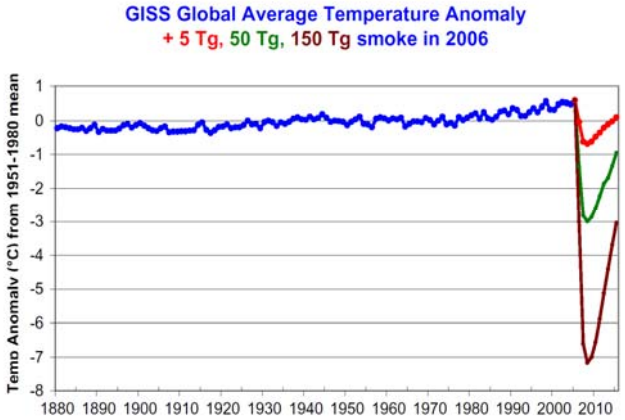
[Image credit: Gerd Altmann]

Nuclear winter: the key steps

- For a summary of recent research on nuclear winter, see: Parkinson (2022)

[Image credit: Alicja via Pixabay]

Nuclear war: global temperature scenarios



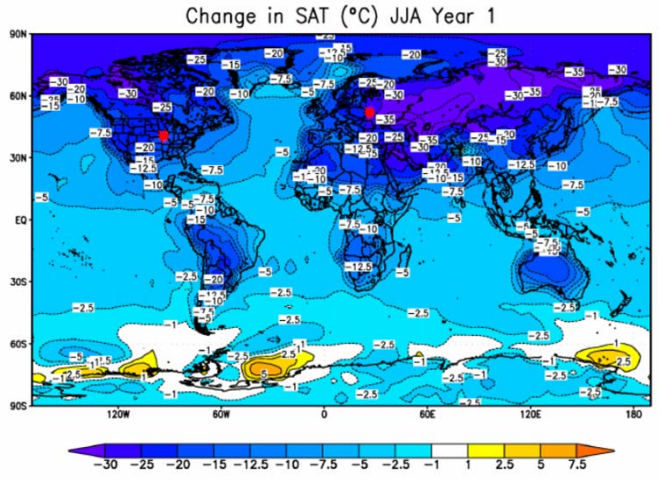
Robock et al (2007)

Scenario 1 (Red) – 'regional' nuclear war, e.g. India-Pakistan, **UK arsenal**
Scenario 2 (Green) – 'global-low' nuclear war, e.g. all current 'active' US-Russian weapons
Scenario 3 (Brown) – 'global-high' nuclear war, e.g. mid-2000s weapons level

- 3 nuclear war scenarios and the resultant 'global cooling'
    1. 5 million tonnes (Mt) of black carbon (soot) injected into stratosphere
    2. 50 Mt of black carbon
    3. 150 Mt of black carbon
- Even a 'regional' nuclear war (scenario 1) could cause massive crop loses leading to a global famine affecting 2 billion people (1/4 of world population) – IPPNW (2013)
- From research led by Prof Alan Robock, Rutgers University, USA, published in 2007
- Blue line is measured global temperature change 1880-2006 (relative to 1951-1980 average level)
- For UK nuclear scenarios, see: SGR (2015).

Nuclear winter scenarios

- ‘Global-high’ USA-Russia war scenario



Robock et al (2007)

- Graph: Surface air temperature changes (degrees Celsius) for the ‘150 Tg case’ – i.e. a major nuclear war between USA and Russia using arsenals available in mid-2000s leading to emissions of 150 million tonnes of black carbon into the upper atmosphere, mainly in the form of smoke – averaged for June, July, and August of the year of smoke injection and the next year. Effects are largest over land, but there is substantial cooling over oceans, too. The warming over Antarctica in Year 0 is for a small area, is part of normal winter interannual variability, and is not significant. Also shown as red bursts are two example locations for nuclear weapon explosions.
- ‘Global-low’ war scenario – reductions in temperature are about half the magnitude, but follow a similar geographical distribution

‘Greening’ the military?

Military approaches to tackling climate change

- UK Ministry of Defence climate document
  - Aim: “seek to use the green transition to add to [military] capabilities”
  - Aim: “fight and win in ever more hostile and unforgiving physical environments”
- Reducing carbon emissions
  - Major focus on controversial tech
  - Use of biofuels/ synthetic fuels especially in military planes
  - More drones/ robotic/ cyber tech
  - More nuclear power in warships/ at bases
  - Use of offsetting – e.g. more trees on military land
- No consideration of alternative approaches to improving security
- No mention of climatic threat from nuclear weapons

- Quotes and info from (e.g.) MOD (2021)
- Title of US DoD report shows the main motivation for energy saving measures - from: Lorincz (2015)
- Problems with proposals include:
  - Fuelling arms races and risk of war
  - Radioactive waste (nuclear tech)
  - Competition with land for food (biofuels)
  - Unreliability of carbon offsets
  - Use of speculative & energy-hungry tech that may not delivery emission reductions (synthetic fuels)

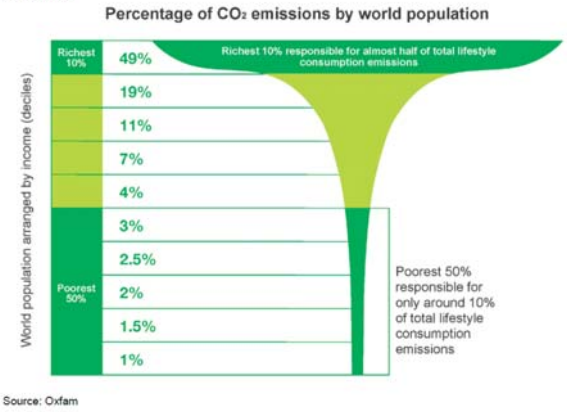
Unspoken strategy:
Militaries helping to preserve global inequalities

Militaries used to secure (e.g.):

- access to limited oil resources
- ability of wealthy to overconsume

"Almost two thirds of EU military missions are linked to fossil fuels"

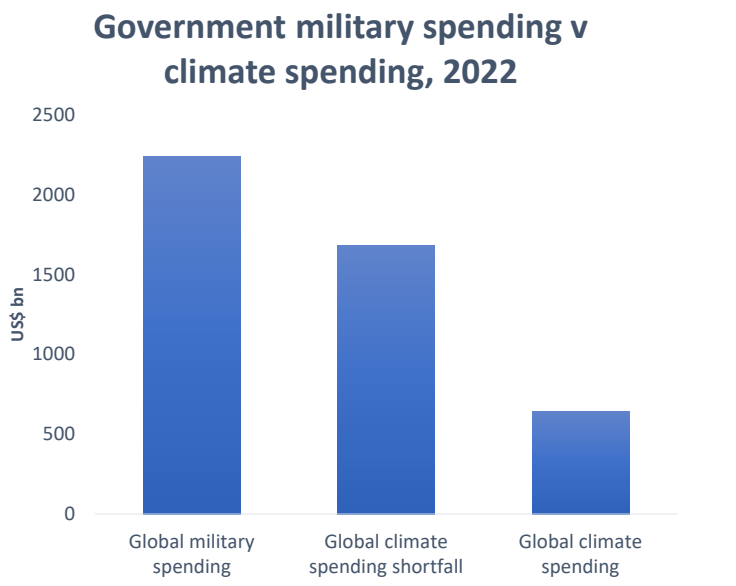
Figure 1: Global income deciles and associated lifestyle consumption emissions



Source: Oxfam

- Analysis of EU military missions from Greenpeace (2021)
- Carbon emissions inequality
  - 'Champagne glass' graph from: Oxfam (2015)
  - This research has just been updated - Oxfam (2021). Their projections, based on existing international policies, show this inequality will persist to at least 2030 – with richest 1% share increasing to 16% of carbon emission by then.

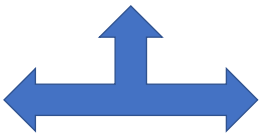
- Huge climate spending shortfall between current levels and those needed to hit 1.5C target
- Private spending on climate action is not shown



SIPRI (2023); CPI (2023)

- Data from: SIPRI (2023); Climate Policy Initiative (2023)
- Shortfall in govt (and private) spending on climate is growing
- Private spending on climate action is roughly equal to govt spending at global level

Changing course



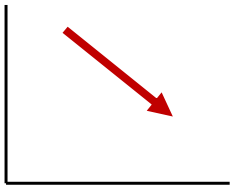
The missing strategy: Demilitarisation for decarbonisation

- More focus on diplomacy and arms control/ disarmament treaties
- Redirect large fraction of military spending to 'just transition'
  - Abolition of military spending targets, e.g. NATO's 2% GDP
  - Including conversion of arms to low carbon industries
- Rapid phase out of nuclear weapons
- Shift focus from 'national security' to 'human security'
- Human security (UN definition)
  - Freedom from fear: including protection from violence and environment crises
  - Freedom from want: including provision of decent food, healthcare & housing
  - Freedom from indignity: including from human rights abuses

- Critical analysis of NATO's military spending target – see: Transnational Institute et al (2023)
- High potential for shift in skilled workers from military tech industries to renewable energy, energy storage, and energy efficiency industries – see (e.g.) SGR (2020); Rethinking Security (2021)
- Rapid phase out of nuclear weapons would be via 2017 UN Treaty on the Prohibition of Nuclear Weapons

How did past demilitarisation affect carbon emissions?

- Historical data shows potential of carbon emission reductions due to demilitarisation
- After end of Cold War (1991-2000)
  - US armed forces emissions fell by 44%
  - UK air force & navy emissions fell by 32%
  - Reductions in Soviet Union/ Eastern Europe probably much larger



- Calculations based on US data from Crawford (2019) and UK data from Parkinson (2023) – both of which are analyses of government data

Campaign goals for military and climate

Peace and environmental campaigners should work together for:

1. Robust, transparent reporting on all military carbon emissions
2. All military activities covered by zero carbon targets compatible with Paris target of 1.5C
3. Demilitarisation/ shift to human security priorities should be key element of zero carbon plans
4. Nuclear weapons abolition

- SGR's suggestions

[image credit: Escif - https://www.facebook.com/Escif-116160785113488/]

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