COP26, peace and the carbon bootprint of the military

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These slides will be made available at: https://www.sgr.org.uk/

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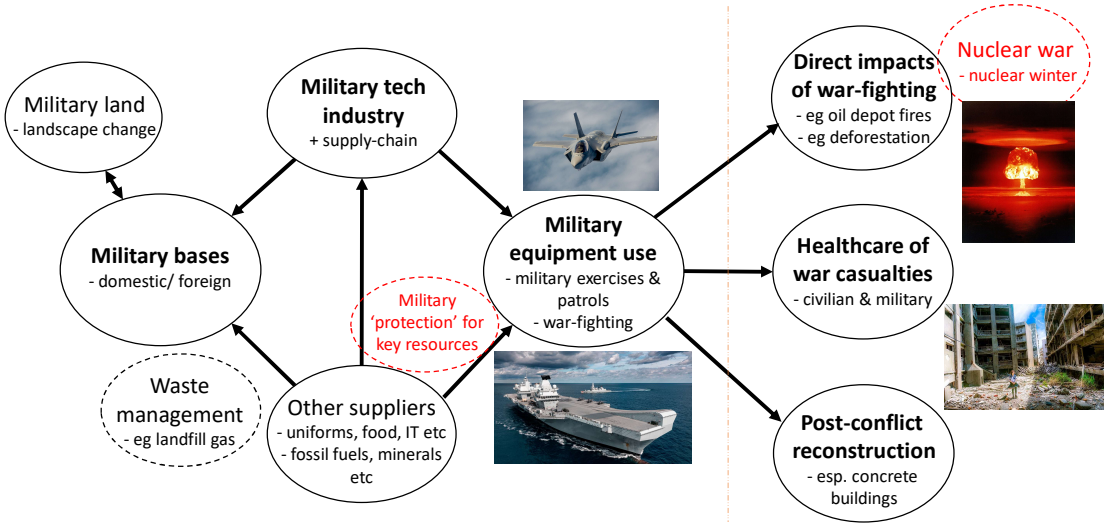
How big is the military carbon bootprint?

Using a range of SGR/ other NGO/ academic/ military reports, chiefly:
SGR (2020); SGR/ CEOBS (2021); Crawford (2019); MOD (2020)
[Image: Clker-Free-Vector-Images]

Military carbon bootprint: key components

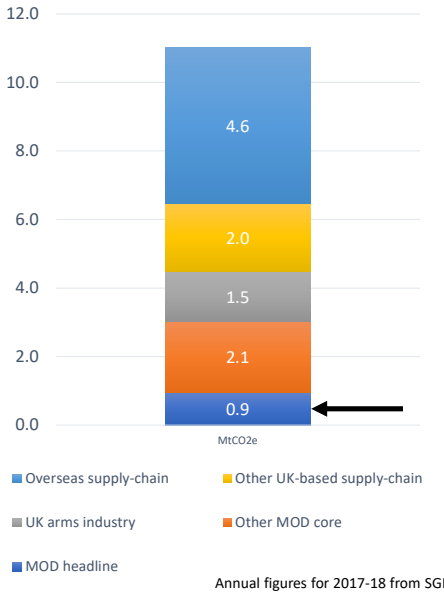


- Carbon footprint covers (black) items to the left of dotted line – and is comparable with civilian sectors
- Carbon 'bootprint' is broader and also includes the items to the right of dotted line
- For more analysis, see (e.g.) SGR (2020).

[image credits: MOD; Gerd Altmann; Free Photos]

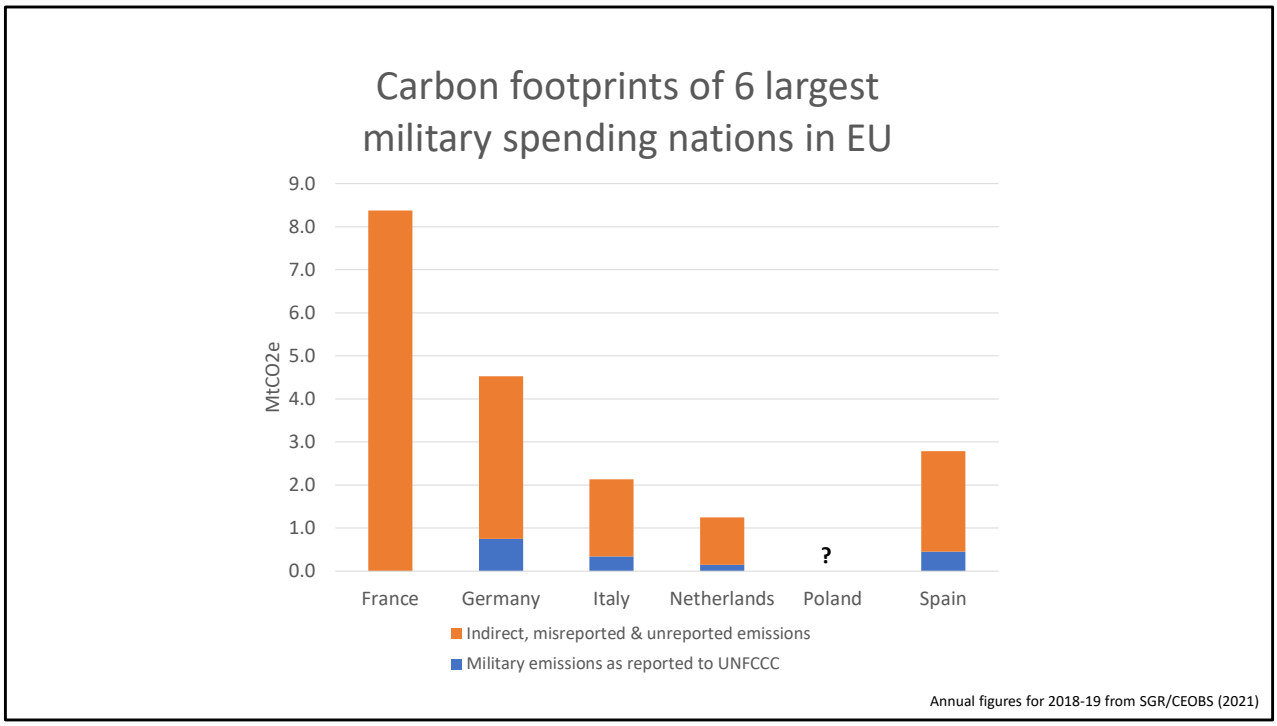
Example: UK military carbon footprint

- Total: 11 million tonnes
  - carbon dioxide equivalent
- MOD 'headline figure' is 0.9 million tonnes
  - Only includes (most) military bases
- MOD total is 3 million tonnes
  - Also includes: air-force, navy, army operations
- UK arms industry: 1.5 million tonnes
- NB Does ***not*** include impacts of war-fighting
- Total is equivalent to **6 million cars**



Annual figures for 2017-18 from SGR (2020)

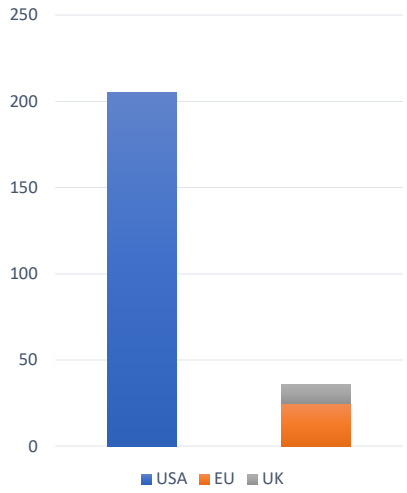
- Arrow indicates Ministry of Defence (MOD) 'headline figure' from its annual report – less than 1/3 of total for MOD and less than 1/10 of total footprint
- Total UK military carbon footprint is approx. equivalent to direct carbon emissions of 6 million average cars
- Figures do not include additional atmospheric heating effects due to high altitude flying ('uplift factor') – which could add a further 10%
- No figures for total 'bootprint' – could be significantly higher
- Data from: SGR (2020)



- Data from SGR/ CEOBS (2021) – United Nations Framework Convention on Climate Change (UNFCCC) figures from 2018; total estimates based on 2019 data
- Some reasons for national differences:
    - Level of military spending – France and Germany especially high
    - Numbers of high-consumption vehicles, especially planes & ships – France especially high
    - Size of military technology industries – France especially high
    - Level of overseas military operations – France especially high
- UK military carbon footprint higher than all other EU/ European NATO nations – both in absolute terms and per head of population

Comparing US/ European military carbon footprints

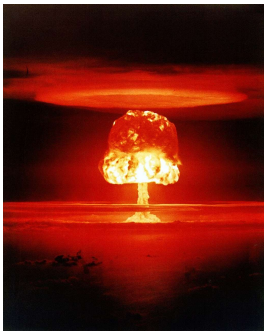
- US total: 205 million tonnes
  - SGR estimate
- DOD is 56 million tonnes
  - i.e. armed forces
- Official figures minimal
- US footprint
  - nearly 6 times EU+UK
- **Global military carbon bootprint**
  - Several % of all carbon emissions
  - Equivalent to large European nation
- *NB All estimates conservative!*



Sources: Brown University (2019); SGR (2020); SGR/CEOBS (2021)

- US military carbon footprint estimated based on US figure (2018) for Dept of Defense (DOD) emissions (56Mt) and scaled up assuming the ratio is the same as for UK military situation (3.7)
- Estimate for global military carbon bootprint – based on USA/EU/UK data, bearing in mind that the rest of the world's militaries are likely to be more carbon intensive (e.g. in China, Russia, India, Saudi Arabia, Japan)
- Data sources: USA: Brown University (2019); UK: SGR (2020); EU: SGR/CEOBS (2021)
- Carbon footprint data for nations: Wikipedia (2021)
- Minimal reporting requirements for militaries – due to historical exemptions – see eg SGR (2020)

Climate disruption ↔ Nuclear war



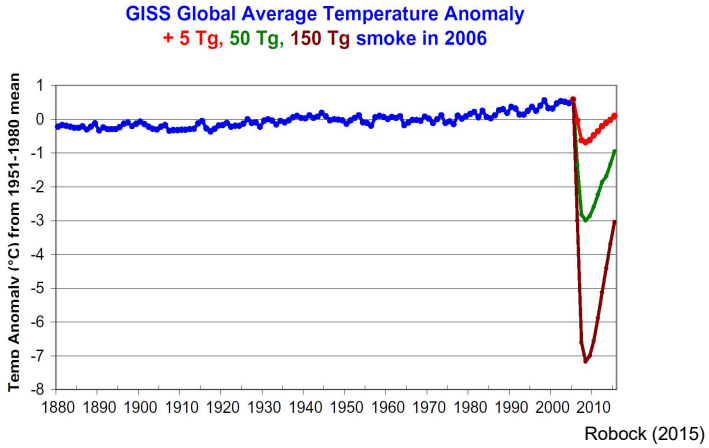
[Image credit: Gerd Altmann]

Risks of nuclear war are increasing

- Nuclear war by accident?
  - Historical evidence shows world has been lucky
    - average of 1 'near miss' every 3 years
  - Cyber attacks increase risk of launch in a crisis
  - Recent deterioration of relations between nuclear-armed nations
    - e.g. Ukraine crisis
  - Climate change causes political instability
    - Pakistan and India particularly vulnerable
- Nuclear winter
  - Recent climatic research shows higher vulnerability to catastrophic global ***cooling*** from smoke from any nuclear conflict
  - Smoke comes from intense fires caused by nuclear explosions, and is injected into upper atmosphere

- Average of 1 'near miss' every 3 years from 1962 to 2002 (Lewis et al, 2014)
- For a summary of recent research on nuclear winter, see: SGR (2015)
- For examples of cyber security threats to nuclear weapons systems, see: Datoo (2017); SGR (2018)

‘Boot-print’ of nuclear war

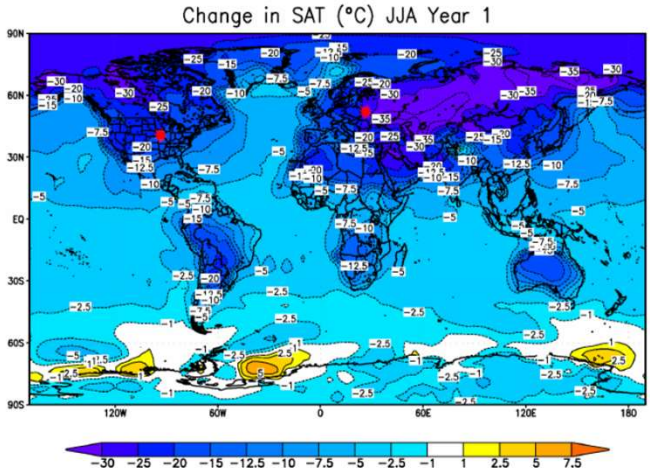


Scenario 1 (Red) – ‘small’ nuclear war, e.g. India-Pakistan, UK arsenal
Scenario 2 (Green) – ‘medium’ nuclear war, e.g. all US-Russian high-alert nuclear weapons
Scenario 3 (Brown) – ‘large’ nuclear war, all deployed weapons

- From research led by Prof Alan Robock, Rutgers University, USA, published in 2007, with further work published in 2015
- Blue line is measured global temperature change 1880-2006 (relative to 1951-1980 average level)
- 3 nuclear war scenarios and the resultant ‘global cooling’
- UK nuclear scenarios – SGR (2015)

Nuclear winter scenarios

- USA-Russia scenario:



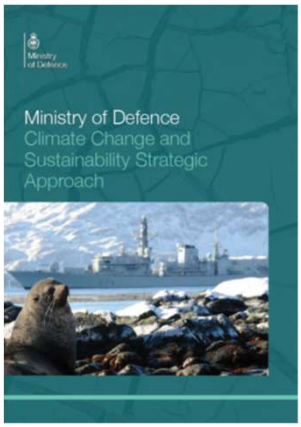
Robock (2015)

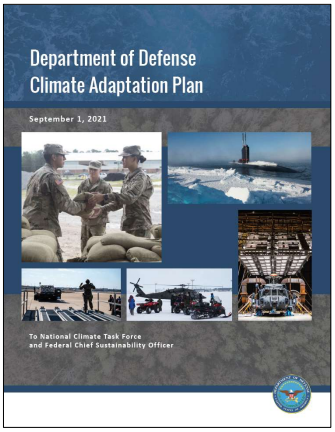
- Graph: Surface air temperature changes (degrees Celsius) for the '150 Tg case' – i.e. a major nuclear war between USA and Russia leading to emissions of 150 million tonnes of black carbon into the upper atmosphere, mainly in the form of smoke – averaged for June, July, and August of the year of smoke 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.

Reducing the military carbon bootprint

[Image: Clker-Free-Vector-Images]

New military reports on climate





- In the run-up to COP26, UK, US and NATO published military climate reports – but none included rigorous strategies for reducing carbon emissions

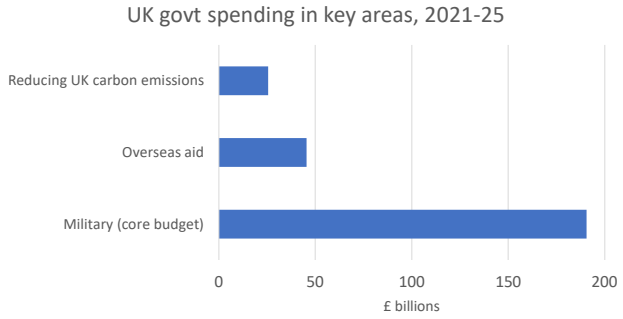
- Sources: MOD (2021); DOD (2021); NATO (2021)

Military approaches to tackling climate change

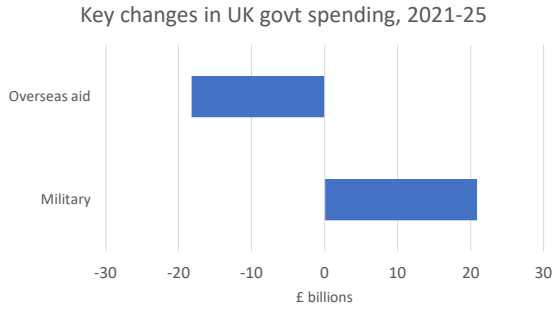
- UK Ministry of Defence climate document
  - Aim: "seek to use the green transition to add to capabilities"
  - Aim: "fight and win in ever more hostile and unforgiving physical environments"
- Reducing carbon emissions
  - Many key proposals problematic
  - Use of biofuels/ synthetic fuels especially 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)
  - Irreversibility and unreliability of carbon offsets
  - Use of speculative tech that may not delivery emission reductions (synthetic fuels)

Comparing military and climate spending



Source: HM Treasury (2021)



Sources: HM Treasury (2021); GCOMS-UK (2021)

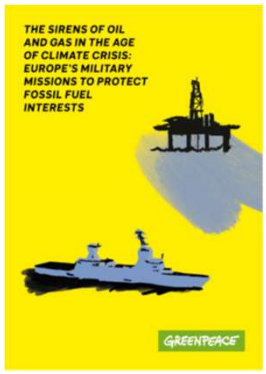
- NATO targets fuelling military spending increases - which often fuels carbon emission rises
- Global military spending nearly **$2,000,000,000,000** per year – money needed elsewhere

- This imbalance in military v climate v aid spending is even worse in many other wealthy nations
- UK govt spending
  - Data analysis summarised in GCOMS-UK (2021) based on data from HM Treasury (2021)
  - Military total does not include Trident contingency fund, military pensions etc
  - 'Reducing UK carbon emissions' covers spending commitments in the UK's new Net-Zero Strategy
  - Calculations on reductions in UK aid budget are based on the reduction from 0.7% to 0.5% of Gross National Income
- Global military spending figures from SIPRI (2021)

Unspoken strategy:
Militaries helping to preserve global inequalities

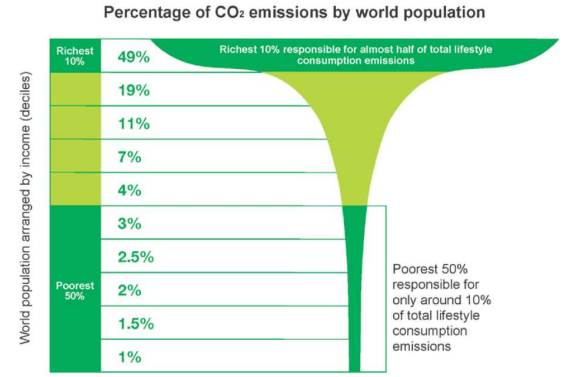
Militaries used to secure (e.g.):

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



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

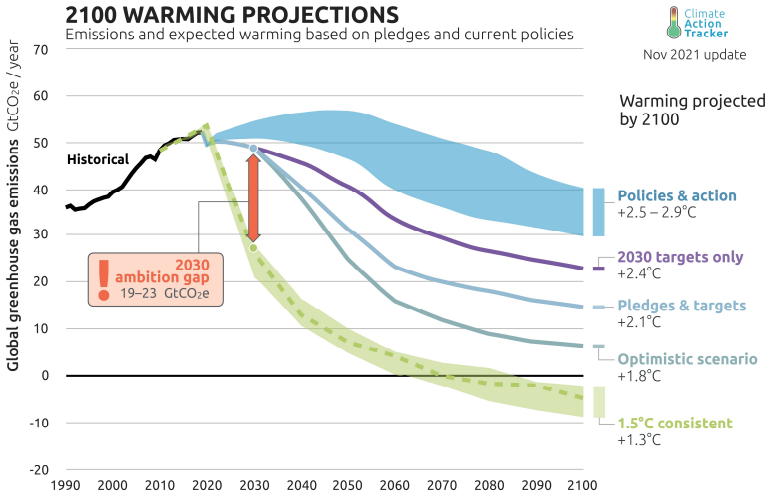
Figure 1: Global income deciles and associated lifestyle consumption emissions



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.

COP26 agreements: how far do they get us?



Climate Action Tracker (2021)

COP26: what are the implications?

- 1.5C still possible – but dependent on…
  - Very rapid emissions reductions in industrialised nations – political unpalatable
  - Low economic activity in developing nations – inequitable
  - Negative emissions technologies – speculative
- Role of the military
  - Unspoken guardians of the status quo
  - Military carbon emissions still only partially included
- Glimmers of hope
  - High profile campaign activity – youth/ environment/ human rights campaigners
  - Peace campaigners much more visible
  - NATO Secretary General spoke on military & climate for first time
  - Growth of key green tech, e.g. wind & solar energy

- For in-depth analysis of 1.5C-compatible transition scenarios, see: Anderson et al (2020)

[image credit: Hermann Traub via Pixabay]

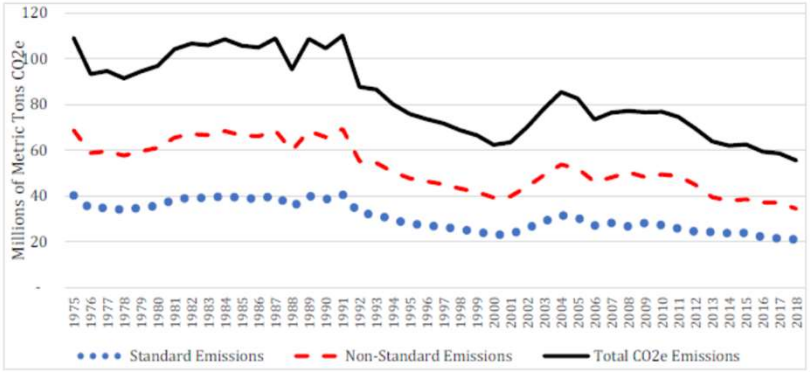
The missing strategy: Demilitarisation for decarbonisation

- More focus on diplomacy and arms control/ disarmament treaties
- Redirect large fraction of military spending to 'just transition'
  - 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

- 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

Example: US military carbon emissions (core)

Figure 8. Estimated Total DOD Greenhouse Gas Emissions, CO2e, FY1975–2018[53]



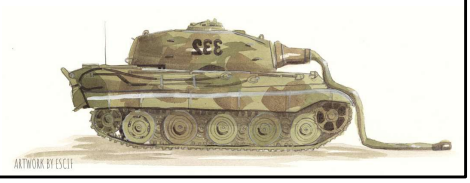
Brown University (2019)

- Largest falls in emissions seen when military operations cut back

- Sharp falls seen at: end of Vietnam War (mid 1970s); end of Cold War (two phases interrupted by Gulf War); end of Iraq War (two phases)
- Military energy efficiency improvements have meant that each peak has been lower than previous one
- Data from: Brown University (2019)

Campaign goals for military and climate

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/]

Actions

- Peace campaigners
  - Educate others about role of military in climate crisis & real solutions
  - Especially climate/ youth/ international development/ health/ trade union
- Climate/ other campaigners
  - Integrate military/ security issues into your campaign work
  - Work with peace campaigners to challenge militarism agenda
  - Integrate arms conversion into just transition work
- Scientists/ researchers
  - Robust emissions estimates for all major military nations/ alliances
  - Estimates for effect of demilitarisation on emission levels
  - Economic analysis of arms conversion/ just transition programmes
  - IPCC special report on military and climate

First step:

- For groups:
  - Join: Arms, militarism and climate justice network
    Email: info[at]sgr.org.uk
- For individuals:
  - Ask your local peace group to join the network above

- Some resources:
  - Scientists for Global Responsibility's climate and military web-pages: https://www.sgr.org.uk/projects/climate-change-military-main-outputs
  - Military Emissions Gap: https://militaryemissions.org/
  - Institute for Policy Studies: https://ips-dc.org/climate-militarism-primer/
  - Transnational Institute: https://www.tni.org/en/publication/primer-on-climate-security

These slides will be made available on SGR's climate and military web-pages

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