NEGOTIATING CLIMATE CHANGE IN CRISIS

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5. The Carbon Bootprint of the US Military and Prospects for a Safer Climate

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The United States military is the largest institutional consumer of fossil fuels in the world, but until recently accurate data on its fuel consumption were not widely available. Using Freedom of Information Act requests, we compiled data on how much fuel the US military consumes and calculated its 'carbon bootprint.' We explain how the US military's expansive and coupled global logistical networks, hardware, and interventionist foreign policy paradigms help to 'lock-in' future military emissions. Even though they are well-intentioned, calls to 'green' the military are insufficient to rein in military emissions. Instead, the scope of the US military must be dramatically scaled back as part of any serious initiative to maintain a safer climate.

The US Military's Carbon Bootprint

The United States military's carbon bootprint is enormous. Like corporate supply chains, it relies on an extensive global network of container ships, pipelines, trucks, and cargo planes to supply its operations with everything from bombs to hydrocarbon fuels to humanitarian aid. This is no coincidence: historically, many of the parts of complex global logistics networks were developed by the US military (Cowen 2014), including the containerisation of freight (Levinson 2016) and

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even online shopping portals (Fryar 2012). We have traced these global logistical networks and conducted multiple Freedom of Information Act (FOIA) requests on recent US military fuel purchases to understand the extent and intensity of the climate impacts from fossil fuels by sprawling US military operations.

Calculations of greenhouse gas emissions usually focus on civilian energy and fuel use. Recent work also shows that the US military is one of the largest institutional polluters in history, consuming more liquid fuels and emitting more climate-changing gases than most medium-sized countries (Belcher et al. 2019; Crawford 2019).[1] If the US military were a country, its fuel usage alone would make it the forty-seventh largest emitter of greenhouse gases in the world, sitting between Peru and Portugal. In 2017, the US military bought about 269,230 barrels of oil a day and emitted more than 25,000 kilotons of carbon dioxide. It effectively takes the capacity of one medium-sized refinery operating at full tilt to keep up with military fuel demand. These US military fuels are sourced from, and consumed at, thousands of sites around the world: from Hampton Roads, VA, the largest naval installation in the world, now threatened by rising sea levels, to remote forward operating bases throughout Afghanistan in support of the nearly twenty-year-old war there.

Indeed, the US military operates more than 800 bases around the world through its 'lily-pad' network that renders all the globe a potential theatre of war. These bases all house energy-hungry equipment. Regarding specific branches, in 2017 alone the US Air Force purchased US$4.9 billion worth of fuel, and the Navy US$2.8 billion, followed by the Army at US$947 million and the Marines at US$36 million. These figures reflect the overwhelming amount of jet fuel (JP-8) purchased and consumed by both the Air Force and the Navy, which is both the highest among all fuel types in total volume burned, and amongst the most climate damaging in terms of emissions, since nitrogen oxide (NOx)

1 See too the important work by Scientists for Global Responsibility, who have tracked environmental effects of militaries more broadly, especially Stuart Parkison, 'The Carbon Boot-print of the Military' (Sgr.org, 2020), https://www.sgr.org.uk/resources/carbon-boot-print-military.

gases contained in the fuel have greater radiative forcing potential when combusted higher in the atmosphere (Fahey et al. 2016).

It is no coincidence that quantitative assessments of US military emissions tend to be absent in climate change studies, although there is a robust and growing literature on various intersections of militarism and global change (Dalby 2020), itself building on decades of scholarship on the environmental impacts of military intervention, training, and discourse more broadly (see Westing 2008). The absence of military emissions totals stems, in part, from the difficulty of accessing consistent data from the Pentagon and across US government departments. This difficulty is arguably an intended consequence of specific policy positions, given that the US insisted on an exemption for reporting military emissions in the 1997 Kyoto Protocol (Nelson 2015). This loophole was closed by the Paris Agreement of 2015, but reopened when the Republican Trump administration withdrew from the accord in 2017. Although Biden has enlisted the US military to focus on climate change as a recurring threat to US national security, we have seen very little movement in terms of transparency of DoD emission reporting out of the new administration.

We arrived at these volumes of fuel and associated CO_2 emissions through data retrieved from multiple FOIA requests to the US Defense Logistics Agency (DLA). The DLA is the massive, and often shadowy, bureaucratic agency tasked with managing the US military's supply chains, including its hydrocarbon fuel purchases and distribution. As has been well documented (Ali and Stone 2018), it is effectively impossible to audit the US military's budget, and the DLA has recently been embroiled in accounting scandals as the scope of wasteful, or outright reckless, spending throughout the 'War on Terror' has come into focus (Lindorff 2018). The Department of Defense (DoD) is by far the largest of all federal agencies relying on discretionary budget allocations. Despite protestation from a few lonely corners of Congress, the DoD effectively had a blank check for much of the twenty-first century (Lindorff 2018). Even at $8.7 billion, however, fuel comprises less than 2% of the total DoD spending of $523.9 billion in 2017, a figure that does not include other channels through which war is pursued, like the CIA drone programme.

The US military is particularly ideal to study. It is the third largest active military personnel, next to China and India. It boasts over thirteen thousand aircraft, and eleven aircraft carriers—the second closest are China, Italy and UK with two each (GlobalFirepower 2021). It operates one of the largest and most complex material supply chains, responsible for enormous built infrastructure (e.g. forward operating bases, roads and airports), yet its socio-environmental effects remain relatively unexamined in most major climate and environmental policy agreements. The US military is the largest single logistical operation in the world that is still exempt from having to report its carbon emissions (Neslen 2015). To put this another way, although the CO_2 emissions of the US military count very significantly in terms of their global contribution to total emissions, they did not count in global carbon emissions reporting until the US rejoined the Paris Agreement.

Threat Multipliers

While the US military continues to emit globally significant volumes of greenhouse gases, it has also long understood that it is not immune from the potential consequences of climate change—recognising this as a 'threat multiplier' that can exacerbate other risks on top of the possibility of environmental change itself producing new conflicts (Gilbert 2012). In forward-looking public documents, the US military envisions a dangerous future that returns to great-power geopolitics alongside the murky, diffuse, and emergent threats that may be called into being by environmental change (also see Durand-Delacre et al.'s critique in this volume of xenophobic discourses around migration 'floods' attributed to climate change). The military's response in this regard is somewhat tautological. Because climate change will produce new threats, the military will continue to build its interventionist capacity—as can be seen through the massive build-up of US forces across Sub-Saharan Africa (Turse 2018), in turn continuing to burn massive volumes of fuel and thus exacerbating the exact threats to which the military will respond (also see Chapter 11 by Sullivan, this volume). The very discourse of 'threat multipliers' threatens to bring into being the very situation it describes, putting vast swathes of the globe at more, rather than less, risk.

While US climate policy has been inexcusably slow and ineffective due to a politics mired in climate denialism and state capture by oil firms, the military has some degree of autonomy in defining and responding to threats. As far back as the 1990s, climate change has in fact been identified as one of those threats (White House 1991), and many, although not all, military bases have been preparing for climate change impacts such as sea level rise (Mathews 2019). Nor has the military ignored its own contribution to the problem, having dabbled in developing alternative energy sources such as biofuels (generating considerable pushback from lawmakers in oil-producing states in the process). Alternative energy sources comprise only a tiny fraction of military spending on fuels, however, and also may generate their own socio-environmental problems (as explored in more detail in Dunlap's chapter, this volume).

Turn Down the Furnace

The American military's climate policy remains contradictory. There have been attempts to 'green' aspects of its operations by increasing renewable electricity generation on bases (Gardner 2017), but it remains the single largest institutional consumer of hydrocarbons in the world (Bigger and Neimark 2017). It has also locked itself into hydrocarbon-based weapons systems for years to come, by depending on existing aircraft and warships for open-ended operations. The F-35 fighter, for example, a product of one of the most costly and delayed military acquisition programmes in history (Sullivan 2016), could hypothetically run on third generation biofuels were they available at the scale required to power the fleet. But these fuels are not currently, or for the foreseeable future, available at the scale needed (Banerjee et al 2019), plus the large-scale production of feedstock for biofuels already creates serious environmental (Cruzen et al. 2016) and social (Neville and Dauvergne 2016) problems (also see Dyke et al., this volume).

As these new fighters are rolled out and pilots perform regular training missions, despite the complete absence of air battles for the last thirty years, fossil fuels will thus continue to power the DoD's fleet of more than 6,500 airplanes, 6,700 helicopters, untold numbers of HumVees, APCs, base vehicles, non-nuclear ships, and diesel electricity

generators that power a stunning number of bases around the world (Vine 2015). This massive volume of kit, if kept operational, represents a significant level of fossil-fuel lock-in (Unruh 2000; Urry 2003).

It is also worth considering the overarching role of the US military in producing and enforcing a fossil-fueled global economic system (Surprise 2020). At this point, it would be relatively uncontroversial to state that much ongoing US overseas intervention was, at least initially, predicated on securing access to, and the distribution of, fossil fuels from the Middle East. This observation has been confirmed (to whatever extent can be believed) in statements by former US President Trump, claiming that the US should "take" Iraqi oil as recompense for the cost of sixteen years of occupation (Borger 2016). Even leaving this adventurism aside, significant resources—both material and in terms of relationship maintenance—are devoted to maintaining the free flow of oil around the world, especially through key shipping routes. In this way, the US military not only locks-in its own fuel consumption, but also ensures oil supplies remain cheap, plentiful, mobile, and accessible.

Don't Just Green the Military. Shrink It.

While new spending initiatives like Biden's 2021 Infrastructure plan include significant (though still insufficient) outlays for decarbonisation and climate adaptation, the military's contribution to environmental change remains off-radar. Indeed, rather than scaling back military spending to pay for urgent climate-related spending, initial budget requests for military appropriations are actually *increasing* even as some US foreign adventures are supposedly coming to a close (Macias 2021). This includes vast outlays for new or retrofitted fuel-intensive vehicles, from tanks to new fleets of aircraft that will continue to demand liquid fossil fuels for decades to come. For any green initiative of national scope to be effective, the US military's carbon bootprint must be addressed in domestic policy and international climate treaties.

Action on climate change demands shutting down vast sections of US military machinery. There are few activities on Earth as environmentally catastrophic as waging war. Significant reductions to the Pentagon's budget and shrinking its capacity to wage war would reduce demand from the biggest consumer of liquid fuels in the world. This is critical in

a world awash in cheap oil in which the US military continues to have vast resources for its acquisition. Indeed, we might speculate that the US military may function as a buyer of last resort for some fraction of global output (especially given political influence in procurement decisions), so as to delay the closure of marginal production and refining facilities (Surprise 2020).

It does no good in terms of anthropogenic climate change management to tinker around the edges of the US war machine's environmental impact. In considering alternatives, the money spent procuring and distributing fuel across the US empire could instead be spent as a peace dividend, helping to fund a Green New Deal that is international in outlook, and includes significant technology transfer and no-strings-attached funding for adaptation and clean energy to those countries most vulnerable to climate change, who bear little historic or contemporary responsibility for emissions (Belcher et al. 2020). There is no shortage of policy priorities that could use a funding bump. With Lai et al. (2017), we agree that any of these options would be better than continuing to wastefully fuel one of the largest military forces in history.

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