To Take Climate Change Seriously, the U.S. Military Needs to Shrink

By Alejandro de la Garza , February 17, 2022 7:00 AM EST
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(Interjection by Don Chapin: So far, this is the only advantage of climate change... reducing a badly swollen and poorly managed organization! Font changes are strictly mine.)

In November 2020, a flatbed truck pulled onto the Sterling Heights, Mich., campus of military contractor BAE Systems and unloaded two huge, lozenge-shaped Bradley vehicles—a special delivery from the U.S. Army. Workers moved the vehicles into a garage and began pulling them apart, swapping in smaller gasoline engines, electric motors, and **a new lithium-ion battery (the exact battery capabilities are a military secret).** ***(Interjection: But the investment community is all agog about this technology)*** The result, a hybrid-electric troop transport, is best likened to a 28-ton Prius, plus tank treads, a turret, and a 25mm cannon—all with an expected 10% to 20% improvement in fuel economy. "The Army is getting greater capability, dependability, and survivability with hybrid-electric drive," says Jim Miller, head of business development at BAE's combat-systems division. "And then they get the environmental impact."

To be clear, **even a hybrid-electric Bradley is about as friendly to the environment as it is to anyone on the wrong end of its Bushmaster chain gun—the electric upgrade could push fuel economy close to 0.9 m.p.g., from 0.75 before.** But the improvement could amount to substantial fuel savings—and accompanying emissions reductions—across all U.S. forces, especially if BAE is able to apply its hybrid technology to other armored vehicles, as the company hopes.

Military vehicles, along with the forces that use them and the industries that supply them, represent a huge climate problem, accounting for 5% of the world's carbon emissions every year. And there's no bigger actor in that space than the U.S. military, which sucks up more petroleum than any other institution on earth to fly jets, heat buildings, and ferry food and supplies to 750 bases spread across the world, a process that, all told, produces an emissions footprint greater than that of the entire country of Sweden.

That might be changing, though. The Department of Defense (DOD) has embarked on a decarbonization push in recent months, claiming to be in the process of building a greener American fighting force. But many

environmentalists and academics say that fully decarbonizing the country's current military and its vast network of overseas bases simply isn't realistic. Carbon cuts, they argue, will come with trade-offs, and at some point we will have to make a difficult choice to scale down our armed forces to avert ecological catastrophe.

The U.S. military has actually been talking about climate change for a long time, even as the issue has fallen in and out of political favor. Almost two decades ago, for instance, when the Bush Administration was still denying that human-caused climate change was real, the DOD's Office of Net Assessment commissioned a controversial 2003 report on how rising temperatures could affect U.S. national security. Many more reports have followed, with strategists and planners routinely studying how a changing climate will impact the military's mission.

In general, most of those initiatives have focused either on climate adaptation—finding ways to protect military installations like Navy bases from rising seas and extreme weather—or on a changing geo-strategic landscape—like new theaters of conflict in newly opened Arctic waterways. **What hasn't been discussed much is the prospect of actually reducing the DOD's own substantial carbon footprint.**

During the Obama Administration, Congress created a new Pentagon office that seemed positioned to do just that: the Assistant Secretary of Defense for Operational Energy. But though the purview of the new role did touch on climate change, its primary impetus was to reduce fuel expenses during the costly Afghanistan and Iraq wars, as well as to cut the required number of fuel-transport convoys, which were vulnerable to attack by the Taliban and other enemy insurgents. Sharon Burke, appointed to the position in 2010, worked on incorporating new renewable energy technologies into field operations, and tried to get issues of energy usage factored into military planning and strategies, though **she was sometimes stymied by a military structure resistant to change.** "I used to call it 'affable noncompliance,'" she says.

The operational energy position lost influence under the Trump Administration. But some important Obama-era initiatives remained in place, including a 2016 DOD directive outlining internal policies and roles to "assess and manage risks associated with the impacts of climate change." Not much happened under that directive during the Trump Administration, but it was still technically in effect. And **when the Biden Administration came in, it provided an institutional framework to build on to turn the military bureaucracy's attention toward climate change.**

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Now, a year into the Biden presidency, the military's emissions messaging has undergone an unprecedented shift. Defense Department appointees have started talking about emissions cuts, while the Pentagon has sent out inquiries to companies about emissions accounting and reporting and supplying government facilities with renewable energy. In September, the DOD released a climate-adaptation plan that stated the need to begin considering emissions in "all the Department's strategies and policies."

Still, the Biden Administration has avoided imposing hard limits on DOD emissions. In a December Executive Order, President Biden pledged to cut the federal government's carbon footprint to zero by 2050, but exempted anything related to national security. Some liberal lawmakers objected to the carve-out, pointing out that the military has accounted for between 77% and 80% of federal energy use over the past two decades. And **to make matters even less certain, a future GOP Administration could reverse any of Biden's green efforts**.

Still, some military branches are pushing ahead. The Army, for instance, released a new climate strategy on Feb. 8 declaring its intention to go net zero by 2050. Some green-technology projects have picked up steam, with military contractors building out new offerings in hopes of cashing in on the climate momentum—**though some projects are still only in the early stages of a long and complex process of actually integrating them into the military's operations**. In May, the Army hosted a demonstration at Fort Benning, Georgia, for potential electric reconnaissance-vehicle concepts; the branch is planning for all noncombat vehicles to be electric by 2035, and to start using electric tactical vehicles by 2050.

The Air Force, meanwhile, has started querying suppliers about providing new, more efficient adaptive cycle engines for its combat fighters. **In many cases, though, the military's impetus for rolling out greener technologies is really less about climate concerns than about getting better at the armed forces' main job: fighting.** Those adaptive cycle engines, for example, will give Air Force fighters a 25% range boost. And while new hybrid-electric drive systems being developed for naval warships could have some fuel-economy benefits, they also help supply more electricity to power new laser weapons and powerful radar systems. EVs and concepts like the hybrid Bradley could cut Army emissions, but they also reduce its reliance on vulnerable fuel-supply lines to support its far-flung bases.

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In some sense, it's a good thing that some of those green technologies are a win-win for fighting ability and the climate. But it also shows that the military isn't interested in emissions reductions that run counter to its broader aims. Jack Surash—who serves under the unwieldy title of "senior official performing the duties of assistant Army secretary for installations, energy, and environment"—has hinted as much. "Climate change and its effects obviously pose a very serious threat," he said, speaking at the annual meeting of the Association of the U.S. Army in October. "But I want to stress that … climate change does not alter the Army's overall mission, which is to deploy, fight, and win." Joe Bryan, senior climate adviser to the Secretary of Defense and the Defense Department's chief sustainability officer, was more blunt. "DOD's mission is to provide the military forces needed to deter war and ensure our nation's security," he wrote in a statement to TIME. "We will never compromise on that."

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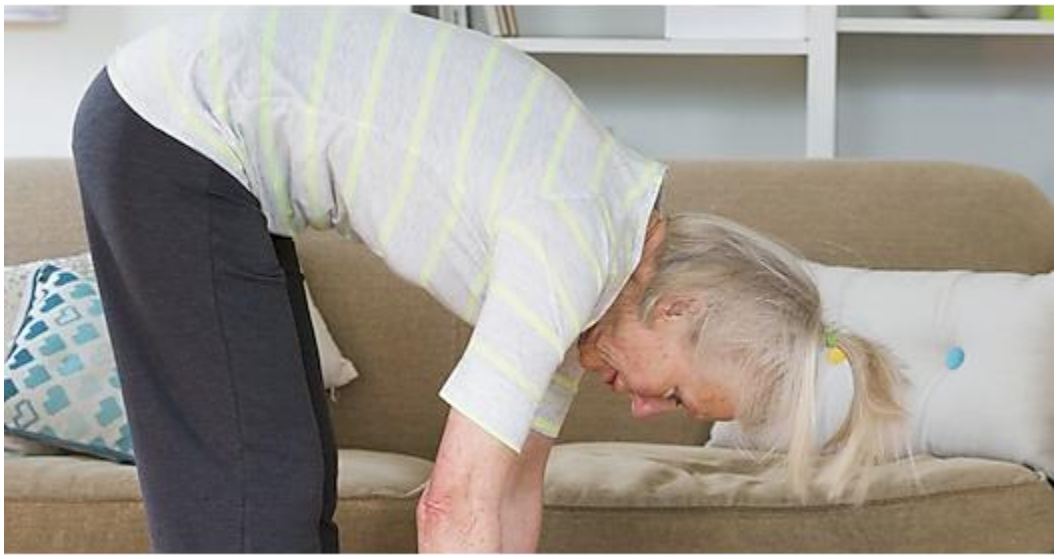

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Defense contractors are developing lower-emission offerings like this EV concept from GM Defense

Courtesy of GM Defense

Still, **some** military branches are pushing ahead. ***(Interjection by Don Chapin: From personal experience, the Navy is the most hide-bound in "tradition" than any of the other branches***)The Army, for instance, released a new climate strategy on Feb. 8 declaring its intention to go net zero by 2050. Some green-technology projects have picked up steam, with military contractors building out new offerings in hopes of cashing in on the climate momentum—though some projects are still only in the early stages of a long and complex process of actually integrating them into the military's operations. In May, the Army hosted a demonstration at Fort Benning, Georgia, for potential electric reconnaissance-vehicle concepts; the branch is planning for all noncombat vehicles to be electric by 2035, and to start using electric tactical vehicles by 2050.

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On a video call, Kenneth Agee held up a plastic cylinder filled with a white waxy substance. "You think of crude oil as black," he said. "But this is synthetic crude—it's white as snow." Agee is founder and president of an Oklahoma-based company called Emerging Fuels Technology, which helped produce jet fuel from carbon dioxide in the air as part of an Air Force demonstration project last August.

For the project, engineers at a startup called Twelve shipped Agee a tank of carbon monoxide that they had made using atmospheric CO2 and electricity. Emerging Fuels Technology then fed that gas through its own process, combining it with hydrogen (which can be produced either from methane or from water using electricity) to generate synthetic crude, full of long hydrocarbon strings like those found in crude oil. To produce a mixture of hydrocarbons similar to those in jet fuel, they put that substance through a "cracking" process akin to a miniature oil

refinery, then poured a gallon of it into a glass jar and shipped it off to scientists at the Air Force for further study.

The Air Force says a 50-50 mix of that fuel and petroleum could be used in aircraft, and has expressed optimism that units in the field could use synthetic jet fuel made in this way—though it says there are still "unanswered questions," like where those soldiers would get the electricity needed to power the process in the field. Another fuel plant using EFT's part of the technology and supported by the Air Force (but with biomass instead of carbon monoxide as a primary input) is under construction in Oregon, but the project has endured multiple delays and financing problems.

If it's completed, that plant would be able to turn out **16 million gallons of fuel a year—less than 1% of the approximately 2 billion gallons of jet fuel that the Air Force uses annually**. Supplying the whole Air Force, not to mention Army and Navy aircraft, and a commercial aviation sector, would require many hundreds of such plants—an entirely new industrial sector, built from scratch.

Jet fuel made from CO_2 could power military aircraft. But scaling the tech could be a serious challenge

Courtesy of EFT and Twelve

Military aviation accounts for about 70% of all the DOD's energy use, and to some researchers, the implications are obvious. "The only way to reduce [fuel use] is to reduce how often jets are flying," says Heidi Peltier, director of programs at Brown University's Costs of War project. **That, she says, means the military cannot maintain its globe spanning presence and become carbon neutral at the same time. A sustainable military will have to be smaller, with fewer bases, fewer troops to feed and clothe, and fewer ships and airplanes ferrying supplies to personnel from Guam to Germany. That reduction could have climate co-benefits, with all the public money currently being spent on EV Hummers and hybrid tanks potentially redirected to projects to help build America's sorely lacking green infrastructure, like renewable energy production, EV charging stations, and public transportation**.

Doug Weir, research and policy director at the U.K.-based Conflict and Environmental Observatory, says the military will have to bite the bullet eventually and start reducing fuel use in ways that don't necessarily have strategic upsides. "There's going to have to be a point where they [make] emissions cuts because there's a climate emergency which is going to destabilize the planet and human civilization," he says.

That idea—making emissions cuts that run counter to U.S. strategic interests—is laughable to some military strategists, since it would amount to an intentional weakening of military strength abroad. "Electrification for the military has to be something that's operationally valuable, rather

than being strictly for the purposes of climate change," says Bryan Clark, a fellow at the conservative-leaning Hudson Institute. "Your opponents are not going to unilaterally disarm."

From the Pentagon's point of view, the U.S. doesn't have a choice but to maintain a powerful force to engage in international confrontations, like the current standoff in Ukraine. "Nobody wants war, but you don't always get to choose," says Burke, the former Obama Administration official. "They say in the military, 'The enemy gets a vote.'"

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Some researchers say that emissions implications of conflict need to be a bigger consideration as the U.S. chooses how to meet those threats. But as climate change ratchets up tensions around the world, some worry that nations will further militarize in response, creating a vicious cycle of military emissions. "You can't win a climate change war," says Nick Buxton, a researcher at the Amsterdam-based Transnational Institute. "Our atmosphere observes no boundaries. It's just obvious that that nationalist approach in the end won't serve us."

The U.S. can choose one of two courses: to completely recast its military mindset for the sake of emissions cuts, or else just slot some greener tech into its massive war machine—like a $700 billion Bradley tank with a new hybrid engine. And for now, it appears set on the latter—**defense budgets are sacrosanct in Congress, and in the most recent defense authorization bill, passed in December, legislators forbade the Defense Department from closing even U.S. bases that the Pentagon had deemed to be unnecessary.** Even if some representatives agreed to give up economically precious bases in their districts, it's not as if anyone in the White House or the DOD is talking seriously about pulling back deployments to counter a bellicose Russia and an increasingly powerful China.

Still, in recent months, emissions moves from the Defense Department have at least come as a long-overdue acknowledgment that the military's climate footprint is a serious issue—even if they don't seem to be quite getting to the root of the matter. "I liken it to Alcoholics Anonymous," says Weir. "The first step is admitting that you have a problem."

Correction, Feb. 17

The original version of this article misstated the feedstock of Twelve's process. The input is atmospheric CO2 and electricity, not atmospheric CO and electricity.

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