What if I told you that nations around the world were ignoring a significant amount of their greenhouse gas emissions by omitting an entire dirty sector from their tally? Would you be horrified? Would you want to close that loophole so that parties to international agreements are required to report these hidden emissions as part of their national climate targets?

That is, of course, the case with the climate costs of warfare. Parties to the Paris Agreement are not required to report their military-related emissions as part of their climate plans and as a result these not-at-all-small emissions are mostly absent from Nationally Determined Contributions (NDCs). Best estimates put military emissions at around 5.5% of total global emissions—but that 5.5% figure only covers the routine emissions that result from maintaining a military and not the emissions from actually dropping bombs, deploying troops, or otherwise waging war.

There is a move afoot to change the reporting framework and conversation around this topic has grown somewhat louder in recent months. That may be because we are starting to learn more about the massive climate consequences of Israel's destruction of Gaza and Russia's war on Ukraine.

Recent analysis by researchers in the UK and US looks at three buckets of military

emissions: 1) immediate, as in day-to-day emissions due to fuel consumption for aerial and ground attacks 2) intermediate, which includes war infrastructure like buildings and tunnels, and 3) long-term, as in reconstruction. Researchers roughly equate these three buckets to Scope 1, 2, and 3 emissions.

In the case of Gaza, a recent report finds that the immediate emissions of aerial and ground attacks during "the first 120 days of the Israel-Gaza conflict were greater than the annual emissions of 26 individual countries and territories." When the researchers added intermediate emissions—war infrastructure built by Israel and Hamas (including the latter's substantial tunnel network)—the total emissions increase to more than that of 36 individual countries and territories. The long-term climate costs of rebuilding Gaza will be far bigger than that of the bombing and ground operations. The research suggests that "reconstruction will entail total emissions figure higher than the annual emissions of over 135 countries, putting on them par with that of Sweden and Portugal" at 60 million tons of CO2 equivalent. To imagine all pre- and post-war activities combined, researchers estimate it's the equivalent of operating 15 coal-fired power plants for a year. This comes from research published on the Social Science Research Network that has yet to be peer-reviewed but that has started to generate news headlines in both the US and the UK. As the Guardian notes, more than 99% of the estimated carbon dioxide emissions generated in the first four months were linked to Israel.

To be clear, none of this is to discount the humanitarian crisis, the attacks and hostage-taking, or unprecedented death toll, but the environmental costs of have been largely overlooked—as they often are. Turning Gaza's hospitals, schools, apartments, universities, and so many trees into an estimated 26 million tons of debris will have an environmental impact for years after the fighting subsides. It comes as the International Criminal Court is in the process of weighing dozens of suggestions for how to go after global environmental crimes.

In the case of Ukraine, a different research study revealed similar findings. These researchers found that carbon emissions from 12 months of the war launched by Russia on Ukraine are roughly equivalent to the annual emissions of Belgium—120 million metric tons of CO2 equivalent. That calculation includes immediate, intermediate, and long-term emissions. The report finds that "reconstruction of civilian infrastructure accounts for the largest share of emissions with almost half of the total emissions." By contrast, only about 20% of the emissions were associated with the day-to-day warfare itself.

"Reconstruction is hugely carbon intensive, and this is visible in Ukraine and it's also notable in the estimations of the impacts of Israel's bombardment of Gaza at the moment

too," said Ellie Kinney, a campaign coordinator with The Conflict and Environment Observatory, a UK-based nonprofit, during a recent panel webinar hosted by Covering Climate Now. "The majority of emissions caused by a war will come from this kind of destruction and reconstruction of urban areas and infrastructure, which means that a green recovery is really key."

The Conflict and Environment Observatory (CEOBS) is one of the organizations urging the UN Framework Convention on Climate Change to change its reporting framework to include the greenhouse gas emissions from military activity. "There is absolutely an effort on this at the moment that we're part of, that lots of other organizations are part of, on recognizing the interconnected nature between war and the climate crisis," Kinney said during the recent panel webinar. Her group helps run a project called the Military Emissions Gap, and joined other environmental groups and academics to write to the UNFCCC in 2023 calling on it to include all military emissions. According to CEOBS, NATO and several countries have acknowledged their contribution to military emissions and have set out climate mitigation policies and strategies. Those countries include Canada, Estonia, France, Germany, Japan, Luxembourg, the Netherlands, Spain, and the UAE, with New Zealand and the UK making partial attempts.

CEOBS says the U.S. has even acknowledged its military emissions in a way: there is a requirement for a reduction plan set out the National Defense Authorization Act (NDAA) for Fiscal Year (FY) 2022. Researchers say with confidence that the US military is the world's biggest emitter due to its outsized footprint, especially from operating more than 700 military bases around the world.

It is no accident that warfare emissions are hidden: the U.S. pushed for military emissions to be automatically exempt from the 1997 Kyoto Protocol (which the U.S. didn't even ratify due to Senate opposition). When countries, including the U.S., joined the Paris Agreement in 2015, they agreed to drop that automatic exemption however they left it up to individual nations whether to report. Apparently, the argument is that the data could be a risk to national security. Unsurprisingly that has left the carbon footprint of the world's militaries elusive.

As the Atlantic reports, minor mentions of the connection between climate change and war did make it into some key briefs in the lead up to COP28 in Dubai. It is possible that military emissions will get a higher profile at COP29 in Azerbaijan. The UN climate talks this month in Bonn, Germany did not result in much consensus on the hardest issues of climate finance and fossil fuel transition. It's possible that there is more consensus on transparency toward military emissions. The topic is also gaining attention now because countries are supposed

to submit new Nationally Determined Contributions by February 2025. CEOBS warns that failing to include them in NDCs this year could delay their inclusion another five years to 2030.

Like with any other sector, the first battle is simply knowing the true climate footprint of war: the combustion of fuels for planes and rockets; the construction of bases; the delivery of aid to displaced people; the leveling of apartments, schools, and hospitals; fires caused by combat; soil erosion and degradation; and the staggering cost of having to rebuild after the bombs stop. Will we wait until 2030 to confront such a nasty source of more than 5% of global greenhouse gas emissions?