

Bulletin of the Atomic Scientists

Why the world needs a fire department

By [Douglas P. Fry](#) | March 20, 2023



A wildfire in Greece. (Felton Davis/Flickr, CC BY 2.0)

The threats posed by extreme wildfires are a global challenge that require a global response. Wildfires are [increasing](#) in frequency and severity on all inhabited continents. Writing in [Science](#) this month, Bo Zhang and colleagues note that an “increase in fire emissions poses a widening threat to climate.” For example, the record-breaking 2020 fire season in [California](#) negated more than 18 years of carbon dioxide reductions in the state.

Wildfires fuel climate change, and climate change fuels wildfires. This accelerating [feedback loop](#) means that extreme wildfires are [projected to increase](#) by 14 percent by 2030, and by 50 percent by 2100, if nothing is done. Meanwhile, this burning issue remains largely unrecognized and unaddressed. The global community needs a collaborative, synchronized strategy to protect the planet from wildfires and the immense amount of [greenhouse gases](#) they emit, the [toxins](#) they produce, the [ecosystems](#) they ravage, the [species](#) they endanger, and the [health](#) toll they exact. Of course they also cause [billions](#) of dollars in damage and [kill](#) people as well.

An international threat. Wildfires anywhere have safety and security relevance to countries everywhere. Loss of the Earth's biodiversity and habitats endanger all of us. Likewise, the effects of carbon dioxide emissions from wildfires hold the potential to eradicate gains in greenhouse gas reductions made in other sectors, adversely affecting every nation and every person on the planet.

David Lapola and colleagues pointed out recently in [Science](#) that “preventing further deforestation remains a key objective for stabilizing the climate system, preserving biodiversity, and ensuring sustainable development; deforestation is itself a major driver of greenhouse gas emissions and biodiversity loss.” Record-breaking burning of [boreal forests](#) in Eurasia and North America is a cause for concern, as boreal habitats contain two-thirds of the carbon in forests worldwide. The executive director of the United Nations Environmental Programme, [Inger Andersen](#), has called for global action on this issue: “We have to minimize the risk of extreme wildfires by being better prepared: invest more in fire risk reduction, work with local communities, and strengthen global commitment to fight climate change.”

The success of the [Montreal Protocol](#) offers some hope that coordinated global action is possible when a common danger looms. In the 1980s, the dire predictions that the Earth would lose its protective ozone layer spurred multilateral action. Spearheaded by United Nations Environmental Programme, the Montreal Protocol ushered in unprecedented international teamwork on a global environmental challenge. The Montreal Protocol represents a resounding success story of coordinated international cooperation, through which the nations of the world headed off a major global threat. Now, wildfires [threaten the ozone layer](#) once again. The Earth needs a similar collaborative approach to wildfires—and, of course, to the climate crisis more generally.

Cooperation is the way forward. The many harms of wildfires cross national borders, so the wildfire problem must be addressed wherever there is a need, from [Alaska](#) to [Zimbabwe](#). As with the threat of ozone depletion, everyone has a self-interested stake in preventing wildfires in the first place and augmenting the mechanisms to extinguish wildfires when they occur. Countries often lack the

resources to control fires, not only because the conflagrations have become so extreme, but also due to underfunding and understaffing in proportion to the severity of the rapidly growing problem. This is true of extreme wildfires even in wealthy nations such as Australia and the United States.

The world already has an institutional structure in the United Nations Environmental Programme, which has been highly successful in coordinating large-scale environmental programs such as the [Mediterranean Action Plan](#) and the Montreal Protocol. Thanks to the rapid enactment of the Montreal Protocol, the Earth's protective ozone layer likely will be fully [restored](#) by mid-century. And because emergency global action was taken, greenhouse gas emissions were dramatically reduced by around [11 gigatons per year](#). The United Nations Environmental Programme stands ready as an existing, effective global institution to take a leading role in cooperative wildfire prevention and containment worldwide.

Adequate resources should be provided to accomplish the goal. Rich countries should pay relatively more than poor countries, along the lines of [nationally determined contributions](#) or a [multilateral fund](#). Scientific knowledge should be shared, and [technological innovations](#) brought to bear on the problem. By taking a global approach, fire prevention and containment strategies can be employed efficiently around the planet—and quickly in the case of fire emergencies. Currently, many countries help each other with wildfire containment, but relying on such good will alone is inadequate to address the extent of the firefighting tasks at hand.

A modest proposal. Imagine instead a “Global Fire Safety Network,” that is adequately funded, fully trained, professionally staffed, centrally coordinated, technologically advanced, and well-equipped—sort of like a city fire department but on a grander scale. As David [Lindenmayer](#) and colleagues advocate, the dual approach of minimizing flammability in certain high-risk ecosystems and implementing early fire detection and containment technologies can significantly enhance wildfire prevention and firefighting capabilities. The world needs a fire department.

By processing satellite [LiDar data](#) from around the globe, a Global Fire Safety Network could focus on the early detection of wildfires in remote regions worldwide, caused, for instance, by lightning strikes. The Global Fire Safety Network would have in place the resources and logistics to quickly mobilize a “shock and awe” fire containment response, drawing upon regional and global firefighting resources strategically placed around the globe and coordinated by a Global Fire Safety Network.

“Immediate identification of fires increases containment options,” write [Lindenmayer](#) and colleagues. In boreal forests, the peaks in area burned [lag behind](#) in time peaks in fire ignitions by several weeks, suggesting that rapid containment responses could

play a major key role in preventing fire spread. As with fires generally, time is of the essence when confronting wildfires before they become extensive and extreme.

Working together globally to solve a common problem can have spin-off benefits, such as increasing amity and trust among nations and paving the way for [further cooperation](#) in other areas. [Jean Monnet](#), in approaching the behemoth challenge of European integration after World War II, advocated taking a series of small steps on the path to a larger goal. In a world where humanity faces multiple serious, existential challenges, taking a leaf from Monnet's playbook and focusing specifically on the important task of global wildfire prevention and containment could be one concrete step toward achieving the larger goals of climate change mitigation, the protection of Earth's biodiversity, and the maintenance of ecosystem health.

Whether the challenge involves extreme wildfires or more generally existential threats facing humanity, the costs of doing nothing, or of not doing enough soon enough, will far exceed the price of implementing a well-funded, concerted global fire prevention and firefighting strategy. The necessity of maintaining community fire departments, to save lives and minimize property damage, is taken for granted as important and beneficial. Now the fire threat has truly gone global. A collaborative global approach is urgently needed to systematically address this climate-related challenge.