Navigating the Complex Intersections of Diverse Global Catastrophic Risks

Risk Experts

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Throughout the past century, leading nations have taken impressive steps to confront global catastrophic risks, creating multilateral governance institutions to mitigate the looming possibilities of nuclear war, climate change, global pandemics, and ecological collapse. Despite achieving significant progress to collaborate on these critical issues, the practice of multilateralism has been rigidly siloed for decades, with stakeholders addressing different existential risks in separate domains of collective action.

Today, global catastrophic risks overlap in critical ways, exacerbating their technical, economic, societal, and ethical implications at the global, regional, national, and individual levels. Such overlaps produce distinct converging risks that typically go unaddressed due to the lack of flexible mechanisms within existing institutions and the absence of a holistic approach to collective action in general. To add to this complexity, a set of rapidly-advancing technologies are generating new types of global catastrophic risks and many more areas of overlap: synthetic biology, artificial intelligence, and autonomous systems. Unlike in the past, it is the private sector rather than governments that are the driving forces behind these military-relevant technologies. Existing multilateral governance institutions were not designed to adapt effectively to emerging risks within their own domain, let alone to address emerging and converging risks across multiple private and public domains. At the Converging Risks Lab, an institute of the Council on Strategic Risks, we aim to investigate these innumerable pathways and develop risk-reducing ideas. To illustrate the intersections of global catastrophic risks in this paper, we examine the linkages between ecological disruption, climate change, global pandemics, and nuclear war.
Despite the cascading effects of ecological disruption, world leaders have paid far less attention to the rapid, novel, and human-caused transformations of multiple Earth systems over the past decades than to climate change or the risk of nuclear war. As a result of lacking mitigation efforts, our planet now teeters on the verge of ecological collapse. Ongoing damage to the Earth’s biosphere threatens to usher in new patterns of disturbance and amplify chaos for people and societies worldwide, straining and sometimes overwhelming countries’ response capacities. As one of many examples, illegal logging not only serves to fund violent conflicts in many regions of the world, it eliminates the carbon-reducing potential of large swaths of forest land, causes further biodiversity loss, and contributes to population migration in response to lost natural resources. Whilst the effects of climate change can also exacerbate trends in ecological disruption, both result in heightened regional instability, leading to a rise in conflict over issues such as mass migration, limited water and natural resources, and diminishing food supplies.

Among its many negative impacts, ecological disruption, especially when intensified by climate change, has the potential to produce global pandemics even more devastating than COVID-19. Over the past two decades, the number of emerging infectious diseases as a result of zoonotic crossover from humans to animals have been on the rise—SARS, H1N1 (Avian flu), MERS, Chikungunya, Zika, and now COVID-19. Although the coronavirus responsible for COVID-19 is highly transmissible and has led to millions of deaths around the world, it has a comparatively low mortality rate relative to other recent disease outbreaks. For example, MERS, also caused by a coronavirus, generated a case fatality rate of 34 percent.

Ecological disruption can be directly linked to global pandemics in multiple ways. One such pathway centers on the conversion of wildlife ecosystems to farmland, increasing the exposure of regional populations to spillover of novel diseases carried by animals and insects. Disease outbreaks that spiral out of control and become a global pandemic have the potential to overwhelm public health capacity, undermine the economic and political stability of affected regions, and diminish public trust in governments for maintaining law and order. These dynamics lead to an increase in the risk of regional and international conflict.

Whilst climate change and ecological disruption set the stage for potential conflict, nuclear energy production, increasingly considered as a way of reducing fossil fuel consumption, may exacerbate the proliferation of nuclear weapons and thereby increase the risk of nuclear war. To mitigate the effects of climate change, more countries are turning to nuclear energy as an alternative source for producing electricity, and some are pursuing a comprehensive nuclear fuel cycle approach, which would leverage technologies that could also be used to develop nuclear weapons. At the same time, nuclear armed nations entangled in geopolitical crises are themselves experiencing extreme climate change impacts—exacerbating national and regional tensions. As such, in some cases, climate change can combine with other issues such as political instability and lead to a greater risk of nuclear conflict over the long-term. Climate change and ecological disruption also raise the risk of nuclear war among existing nuclear weapons states. In regions with pre-existing fissures, there is always a chance that a conflict sparked in part by drought, dwindling food supplies, and cross-border migration could escalate to a nuclear confrontation, including by misinterpretations that these conditions worsen.
Although global catastrophic risks are addressed by multilateral governance, a systemic and dangerous gap exists in collective action for mitigating the complex intersections across these risks and for managing the impact of disruptive technologies largely coming out of the private sector. For this reason, world leaders urgently need to reimagine multilateralism through a converging risks lens and work to prevent global catastrophic risks as part of an interconnected system rather than in separate silos of governance undertaken by nation-states. Given that setting up new governance institutions requires much time and political will, there are three interim steps that world leaders could take today.

First, world leaders should create a global forum for a broad range of stakeholders to discuss the complex intersections of global catastrophic risks and feed the outcomes of such discussions into relevant multilateral governance institutions for climate change, infectious disease, nuclear weapons, and biological weapons. To save on time and effort, they could initially turn to an existing platform for resolving international conflicts across public and private stakeholders such as the World Economic Forum (WEF). In collaboration with the private sector, world leaders could convene such a discussion at the next annual meeting and explore how to institutionalize the goal of collaborating to prevent global catastrophic risks.

Second, to frame the above discussion on global catastrophic risks, organizers should consider developing scenarios and exercises to familiarize diverse organizations and world leaders with complex convergences. In many cases, governments and response teams are ill-equipped to manage emergencies involving intersections across several different risks because they lack sufficient understanding and awareness. By identifying blindspots and flashpoints as well as incorporating predictive technical analysis, participating nations would be able to establish safety nets ahead of time. These experiences would bolster crisis prevention and response capabilities in regions where there is increased probability of converging risks. There is established precedent for conducting exercises at a high level. For example, at the 2014 Nuclear Security Summit in the Hague, Netherlands, world leaders participated in a table-top exercise in which they responded to the threat of a radiological device.

Third, within the different multilateral governance institutions, world leaders should expand multilateral efforts that address the complex intersections of global catastrophic risks. For example, to mitigate converging risks related to nuclear weapons and climate change, countries should consider actions such as: doubling the IAEA budget; expanding nuclear safety and security cooperation; capping and eliminating tactical and low yield nuclear weapons; and integrating extreme climate forecasting into nuclear energy plans. CSR has published multiple briefers highlighting the ways in which countries such as Egypt, Turkey, India, the Philippines, and the U.S. can harness policy action to minimize these threats.

To confront the links between climate change, ecological collapse, and global pandemics, countries should consider: ratifying the UN Convention on Biological Diversity and the Law of the Sea; integrating ecological disruption into climate change mitigation mechanisms; addressing the ecological-biological nexus by enhancing monitoring, understanding of pathogen space and pathogen early warning; and elevating wildlife tracking as a national security threat. Addressing complex, converging risks at the global level is by no means an easy
task—it will require a fundamental shift in security analyses and a subsequent major reallocation of resources. However, it is critical that our global governance mechanisms and organizations incorporate the increasingly intersectional nature of global catastrophic risks. We are well aware of how many of these pathways can and will manifest. Applying that foresight to enhance mitigation efforts is the first essential step in adapting to the evolving risks of the 21st century.