

Press Release

Humanity Faces Grave Challenges, but They Are Manageable

Global heating, pandemics, cyberattacks, and large-scale forced migrations are among the increasingly interconnected and mutually reinforcing challenges faced by humanity over the last decades. A team of scientists has taken a look at the triggers and consequences of overlapping crises (*polycrises*), investigating what processes facilitate the interaction of crisis-triggering events as well as how this interaction can be prevented, or mitigated. The team has also developed an analytical framework that helps identify complex and interrelated crises.

Since the management of individual global systemic risks – such as pandemic disease, Russia's invasion of Ukraine or climate heating – has so far tended to be inadequate, often even catastrophically so, the situations is even worse when several crisis occur at the same time. Authors Thomas Homer-Dixon, Johan Rockström, Jonathan F. Donges, Scott Janzwood, and Ortwin Renn advocate to identify overlapping crises early on based on systemic risk research, and to take effective countermeasures. They are concerned r that the previous strategy of considering each risk separately and then making crisis provisions for each individual risk is no longer adequate in today's interconnected and interdependent world. We are dealing with more than just a random occurrence of individual crises: The overlapping of crises is a logical and expected consequence within the context of a globalised economic system and unsustainable resource consumption.

The authors point to two trends that are contributing to risk acceleration and the amplification of overlapping crises: The first is the growing consumption of resources and increasing pollution output beyond the limits of planetary boundaries . The other is that human systems are now far more interconnected, which permits a higher volume and velocity of long-distance flows of matter, energy, and information. According to the authors, these trends do not fully explain the current moment's seemingly sharp amplification, acceleration, and synchronisation of systemic interconnected risks.

Weather events trigger chain reactions

The authors cite extreme weather events caused by climate change as one example of a systemic risk that is becoming a major crisis: Extreme weather events exacerbate economic inequalities within and between societies. These inequalities lead to mass migration, strengthening populist nationalism and in turn weakening global emissions controls, which causes the climate problem to worsen further. This creates cascades of mutually reinforcing crises that cannot be controlled with conventional management strategies.

These feedbacks involve three macro-categories of systems – biophysical, socio-metabolic, and cultural-institutional. The authors argue that we urgently need more research on the interactions between these three dimensions because unrecognised, interconnected processes could trigger a runaway macro-crisis of Earth's interconnected vital natural and social systems. At the moment, because the national and international institutions that manage systemic risks tend to operate in isolated silos, humanity is not equipped to manage the emerging risk of mutually reinforcing crises.

Yet, according to the authors, these complex, interconnected structures also harbour opportunities for effective risk mitigation. Once the central nodes of interconnecting systems have been identified, their



dynamics could be leveraged to produce a cascade of positive feedbacks across the entire chain of consequences, with small interventions impacting across numerous subsequent stations.

Authors call for a global consortium

The authors conclude by proposing a worldwide scientific collaboration to identify mechanisms that are amplifying, accelerating, and synchronising global systemic risks. They also call for efforts to develop appropriate systemic interventions that trigger positive effects across the entire network of effects. In their view, a future of cascading catastrophes is not inevitable: Targeted intervention could leverage global systems' nonlinear dynamics to create "virtuous" cascades of risk reduction. To this end, the authors propose a global consortium to bring together research groups worldwide. This consortium would be a good match for the UN Futures Lab proposed by the Secretary General, which could identify megatrends and risks across sectors and borders and develop appropriate interventions to address them.

Publication:

Homer-Dixon, Thomas; Renn, Ortwin; Rockström, Johan; Donges, Jonathan F. and Janzwood, Scott: A Call for An International Research Program on the Risk of a Global Polycrisis. Available at SSRN: <https://ssrn.com/abstract=4058592> or <http://dx.doi.org/10.2139/ssrn.4058592>

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