The governance gap: Balancing innovation and ecological responsibility in a world at risk

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Florian Rabitz, chief researcher at the Civil Society and Sustainability research group. Credit: Kaunas University of Technology

"The world isn't doing terribly well in averting global ecological

collapse," says Dr. Florian Rabitz, a chief researcher at Kaunas University of Technology (KTU), Lithuania, the author of a new monograph, "Transformative Novel Technologies and Global Environmental Governance," recently published by Cambridge University Press.

Greenhouse gas emissions, species extinction, ecosystem degradation, chemical pollution, and more are threatening the Earth's future. Despite decades of international agreements and countless high-level summits, success in forestalling this existential crisis has remained elusive, says Dr. Rabitz.

In his new monograph, the KTU researcher delves into the intersection of cutting-edge technological solutions and the global environmental crisis. The author explores how international institutions respond (or fail to respond) to high-impact technologies that have been the subject of extensive debate and controversy.

"Some of the proposed solutions are more intrusive than others: they might offer a boon for environmental sustainability but they might also create considerable problems for the global environment and human societies. Such Transformative Novel Technologies remain unrealized: whether they will eventually deliver on their promise, and whether their associated perils can be avoided or at least minimized, depends to a large degree on the availability of adequate governance mechanisms," explains Dr. Rabitz.

Biotechnology to fight biodiversity loss

For example, one of the chapters in the monograph focuses on the broader field of biotechnology, and the potential role of novel biotechnologies in nature conservation. The ongoing biodiversity loss, provoked by invasive alien species (non-native organisms, disrupting the

ecosystems into which they have been introduced due to human activities) is one of the characteristics of the current planetary crisis. The world's leading scientific and policy organizations have been grappling with the urgent need to address this issue.

"The UN acknowledges that target 15.8 of the Sustainable Development Goals, aiming to prevent and significantly reduce the impact of biological invasions on land- and water ecosystems by 2020, has so far not been reached," says Dr. Rabitz.

He goes on to explain that scientists are currently exploring a variety of biotechnological countermeasures, including so-called gene drive systems that might effectively counteract invasive alien species through rapid and ecosystem-wide genetic engineering.

However, the use of these technologies introduces unprecedented risks and challenges that demand careful consideration and international collaboration. Gene drive systems, in particular, have become the subject of intense political scrutiny on the global stage, engaging institutions such as the Convention on Biological Diversity and the World Health Organization.

The problem with novel technologies is their unprecedented nature

Dr. Rabitz believes that transformative novel technologies, such as those currently under consideration for combating climate change through large-scale manipulation of planetary reflectivity, require adequate governance solutions to reap their potential benefits or to reduce their potential harm. Yet, these solutions are unreachable so far.

"What I show in my book is that effective international responses are

few and far between, while there is a broad range of international institutions that could, in principle, provide governance solutions for the challenges and opportunities which those technologies pose, in practice, they often fail to do so," says Dr. Rabitz.

He presumes that there are different reasons why this might be the case, one of them being the unusual and partially unprecedented nature of those technologies, which leads to a significant governance gap at the international level. According to him, this is not just the case in the environmental domain. Artificial Intelligence is another example, where the absence of international regulatory activity stands in stark contrast to the political, economic and social stakes.

"We might well disagree on what precisely should be done with these and other types of transformative novel technologies—for instance, whether to restrict them, to ban them or to facilitate their responsible development and use. But in one way or another, the absence of appropriate international solutions for a wide range of momentous, contemporary technological developments is bound to create problems sooner or later," says Dr. Rabitz.

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