



Foreword to the Special Issue on Polycrisis and Systemic Risks

Hans Joachim Schellnhuber¹

Accepted: 27 March 2025
© The Author(s) 2025

The global landscape of the twenty-first century is increasingly shaped by an intricate web of interconnected crises. Such a system of crises—the *polycrisis*—is characterized by mutual amplification of nested and intertwined risks and requires novel approaches to analysis, assessment, and governance.

This special issue of the *International Journal for Disaster Risk Science* emerges from the *Symposium on Systemic Risk and Polycrisis Governance*, held at Beijing Normal University in May 2024, co-hosted by that university and the International Institute for Applied Systems Analysis (IIASA) in Laxenburg, Austria. As director general of IIASA, it is both an honor and a duty to reflect on the symposium's contributions and the critical insights presented within this special issue.

Recent years have laid bare the escalating complexity and severity of entangled systemic risks. Such risks transcend individual sectors, affecting societies, economies, and ecosystems worldwide. The hallmark of a polycrisis lies in its cascading and compounding effects, where seemingly separate crises amplify one another to generate impacts far greater than the sum of their individual effects. From pandemics and climate disasters to economic shocks and geopolitical disruptions, these challenges overwhelm traditional governance models and necessitate integrated and interdisciplinary response strategies.

The symposium in Beijing provided a perfect platform for leading experts from diverse disciplines to address the multifaceted nature of polycrisis. Through intense discussions and deep knowledge exchange, participants explored the latest advancements in risk analysis and governance frameworks. The resulting special issue encapsulates these efforts, offering both academic rigor and practical guidance for navigating the relevant fields. It includes:

- A comprehensive review of the state-of-the-art literature on polycrisis and systemic risks, highlighting foundational theories and emerging trends.
- The presentation of innovative methods and tools for analyzing the interactions between social, natural, technological, and cultural domains.
- Case studies that illuminate practical approaches to assessing, managing, and communicating systemic risks.
- Policy recommendations aimed at fostering resilient, ethically defensible trade-offs and strategies to address conflicting goals.
- Insights into stakeholder engagement, emphasizing inclusive decision-making processes and the co-creation of solutions under time-sensitive conditions.

This issue underscores the urgent need for *interdisciplinary scholarship* and *inclusive governance*. Traditional cause-and-effect models fall short in a world of hyperconnectivity and interdependence. Effective responses require systemic approaches that embrace complexity, rather than shying away from it, and acknowledge the interrelatedness of risks across domains. Particularly in the field of developing new models, simulations, and scenarios addressing complex and interconnected events and developments, IIASA has become an international leader in the academic world. We are proud that we could insert our insights and methods into the symposium and the special issue it generated. This is completely in line with the commitment to transparent, comprehensible communication and the active involvement of stakeholders in shaping solutions, which is a major part of IIASA efforts to provide feasible and effective policy advice.

IIASA has been privileged to play a central role in organizing the symposium and contributing to the special issue. Apart from actively engaging in the discussions, our researchers presented two key papers addressing critical aspects of systemic risks and polycrisis governance. These contributions reflect IIASA's mandate to bridge academic research and policy application, fostering actionable insights that benefit both scientific communities and decision makers in the global theater.

✉ Hans Joachim Schellnhuber
schellnhuber@iiasa.ac.at

¹ Director General, International Institute for Applied Systems Analysis (IIASA), A-2361 Laxenburg, Austria

Looking ahead, the insights presented in this special issue lay the groundwork for future research and innovation in systemic risks governance. Apart from developing integrated models that capture the dynamics of polycrises, there is an urgent need to invest in capacity-building initiatives that equip policymakers and stakeholders with the tools to respond effectively. Equally, fostering collaborations across disciplines and sectors will be critical for advancing our collective understanding and preparedness.

This special issue represents a significant step towards meeting the polycrisis challenge. By integrating cutting-edge research with practical strategies, it provides a valuable resource for academics, practitioners, and policymakers alike. As we confront an increasingly complex world, IIASA remains committed to advancing systemic approaches that

promote resilience, sustainability, and equity in the face of entangled risks.

Open Access This article is licensed under a Creative Commons Attribution 4.0 International License, which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons licence, and indicate if changes were made. The images or other third party material in this article are included in the article's Creative Commons licence, unless indicated otherwise in a credit line to the material. If material is not included in the article's Creative Commons licence and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder. To view a copy of this licence, visit <http://creativecommons.org/licenses/by/4.0/>.