# Navigating through poly-crises towards One Health: Mirage or tangible prospect?

## Insights from the Transatlantic Research Lab on Complex Societal Challenges

*Navigating today's crises requires transcending one-dimensional, exclusively science-centered approaches. This article advocates a transdisciplinary strategy, integrating diverse perspectives to address complex issues like poly-crises. It emphasizes the potential of mutual learning and knowledge co-generation between science and society for fostering creative, sustainable solutions within a multilayered innovation system.*

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### The challenge of poly-crises and systemic risks

Global readiness to manage simultaneous crises (poly-crises) remains inadequate. The complex and interconnected nature of crises such as climate change, biodiversity loss, civil unrest, armed conflict, inequality, economic instability, and health threats like COVID-19 requires holistic, non-linear responses.

Crises occur at varying temporal scales: climate change and biodiversity loss progress over decades, while sudden events like viral outbreaks, earthquakes, fires and floods can rapidly trigger reciprocal effects between subsystems and their environment. Traditional risk management falls short in addressing these systemic risks due to their intricate and transgressive nature.

Systemic risks involve high complexity, uncertainties, and cascading impacts across ecosystems, health, infrastructure, and the food sector. Complexity increases exponentially when multiple crises intertwine. Addressing these poly-crises requires:

1. a systems and complexity perspective that enables comprehensive knowledge integration;
2. proactive adaptation that transforms vulnerabilities into innovations;
3. establishing multilevel governance structures and fostering science-diplomacy collaborations that are crucial for tackling global challenges;
4. effective transdisciplinary collaboration and communication in(to) society, contributing to transformative strategies for resilience and, ultimately, One Health, as a concept that integrates all aspects of our planet's well-being.

### One Health as framework for poly-crises

The One Health paradigm recognizes the interdependence of human, animal, and environmental health. It underscores that issues such as emerging infectious diseases, climate change, and food security cannot be viewed in isolation. One Health implies a nuanced understanding of these interactions, leading to more effective prevention and management strategies. Collaboration across disciplines and sectors, including public health, veterinary medicine, agriculture, environmental science, and policy, is essential.

Furthermore, One Health addresses challenges such as biodiversity loss, pollution, and antibiotic resistance. Its holistic approach facilitates the development of sustainable solutions, considering the interconnected nature of these issues, making it a fitting framework for dealing with today's poly-crises and complexity challenges.

### One Health calls for integration of diverse knowledge but faces obstacles

Complex systems are interconnected, dynamic, fuzzy, coupled, open-ended, and

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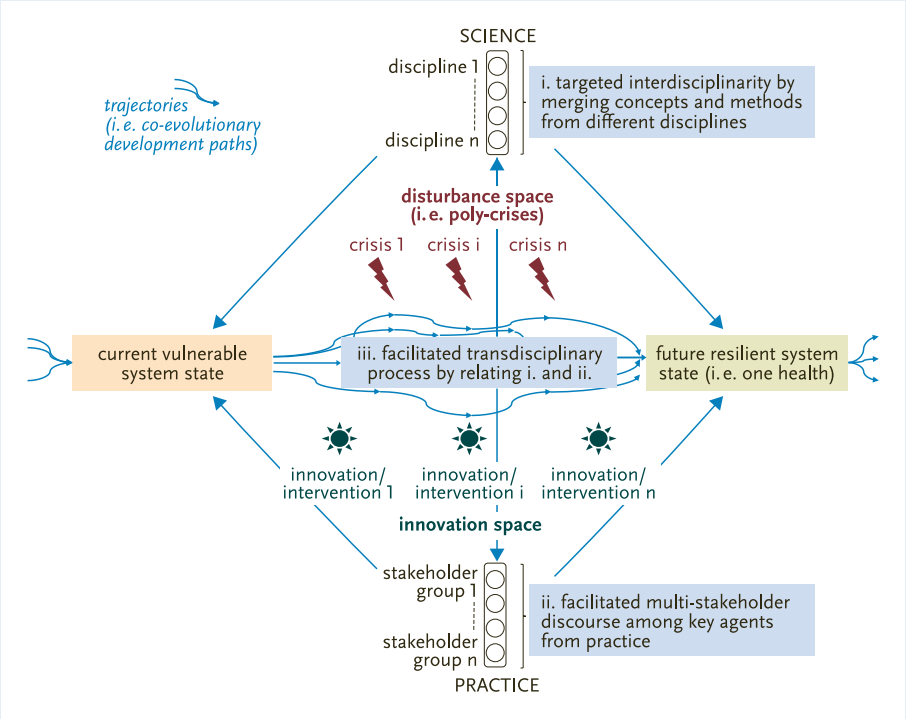


**FIGURE 1:** A transdisciplinary process for moving through poly-crises towards One Health (as a conceptual extension to Scholz and Steiner 2015).

adaptive. Therefore, solving problems solely through deterministic approaches from individual disciplines or practices is inadequate. Rather, it demands the utilization and integration of all available knowledge. Establishing One Health as a vital future goal requires collaboration among science, practice, society, and politics. We[1] outline the peculiarities of transdisciplinarity as a mutual learning process between science and practice, or society at large, based on equal footing of both sides.

To tackle current poly-crises, we must first understand their complexity, then find potential co-evolutionary development paths (figure 1) and, eventually, establish a supportive environment (i.e., innovation habitat) for generating necessary interventions and innovations. As a prerequisite, transdisciplinarity aims to facilitate the integration of knowledge across boundaries by bridging interdisciplinary scientific knowledge with practical insights and experiences and by encouraging mutual learning of involved agents from diverse scientific fields and practical domains in a co-creation process. Such a transdisciplinary process provides a foundation for socially robust perspectives on real-world challenges such as poly-crises, thus facilitating consensus-building on shared transition paths towards One Health. By that logic transdisciplinarity also serves as a tool for mediation, conflict resolution, and, when possible, preventive management of conflicts and crises.

Embracing inter- and transdisciplinarity for knowledge integration, though logical, faces challenges like divergent perceptions, collaborative difficulties among scientists from various fields (characterizing interdisciplinarity), and divergent preferences and aims of scientists and practitioners. Further – and perhaps most significantly – it is also challenged by the reluctance to invest the extra effort essential for a sophisticated cross-boundary knowledge integration process, demanding specific competences, resources, and a well-designed process.

## Integration of transdisciplinarity in education

Integration of complexity thinking in education, and the need for collaboration with practitioners can address the demand for nuanced problem-solving in crises, fostering societal engagement. European joint master's programs like *Transition, Innovation and Sustainability Environments (TISE)*[2] exemplify such approaches. Besides, in our interconnected world, cultivating meta-competences alongside specialized skills is vital to tackle emerging challenges effectively. These competences empower understanding of broader contexts, making concepts like One Health actionable guiding principles.

## References

Scholz, R.W., G. Steiner. 2015. The real type and ideal type of transdisciplinary processes: Part I – theoretical foundations. *Sustainability Science* 10/4: 527–544. https://doi.org/10.1007/s11625-015-0326-4.

1 All authors are part of the Transatlantic Research Lab on Complex Societal Challenges. The lab collaborates with practitioners in transdisciplinary setups to deepen understanding of current system states and explore scenario-based transition paths. The ultimate goal is to improve decision-making quality in real-world situations. For more information: *www.donau-uni.ac.at/en/university/faculties/business-globalization/research/lab_complex-societal-challenges.html*.

2 *www.donau-uni.ac.at/en/research/project/U7_PROJEKT_4294970211*