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Research brief: MYRIAD-EU research agenda: towards disaster risk management pathways in multi-(hazard-)risk assessment



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Highlights

- We have developed a methodology to determine impact-relevant durations for the analysis of climate extremes based upon local context of impacts.
- We identify five challenges that hinder progress towards a more multi-(hazard) risk approach in practice:
 - There exists diverse language on multi-(hazard-)risk and a lack of overview of existing methods and tools;
 - There is a lack of a clear framework and guidelines for multi-(hazard-)risk assessment and management;
 - We have a poor understanding of dynamic feedbacks between hazard, exposure, and vulnerability;
 - Only a few studies assess the effectiveness of Disaster Risk Management (DRM) measures across hazards, sectors, and time horizons;
 - Distinct lack of in-depth case-studies on multi-(hazard-)risk assessment and management.
- To address these challenges, the MYRIAD-EU project argues for an approach that addresses multi-(hazard-)risk management through the lens of sustainability challenges that cut across sectors, regions, and hazards.

Recommendations

- We present a research agenda to help us move towards the aforementioned approach. This agenda is being implemented within the MYRIAD-EU project, and includes the following key components:
 - Establishing a set of common multi-(hazard-)risk definitions and concepts and an overview of existing methods and tools.
 - Co-developing a framework for multi-(hazard-)risk assessment and management.
 - Increasing understanding of dynamic feedbacks between hazard, exposure, and vulnerability
 - Developing future scenarios of plausible multi-(hazard-)risk.
 - Assessing the effectiveness of DRM measures across hazards, sectors, and time horizons
 - Testing of approaches in in-depth case studies on multi-(hazard-)risk assessment and management.

Context

Recent decades have seen a move from managing hazards to managing risks. However, the majority of natural-hazard risk research still focuses on single hazards. Internationally, there are increasing calls for more attention on multi-hazard and multi-risks. Within the

European Union (EU), the concepts of multi-(hazard-)risk assessment and management have taken centre stage in recent years.

This perspective paper was written and published at the start of the Horizon-2020 funded MYRIAD-EU project (Multi-hazard and sYstemic framework for enhancing Risk-Informed mAnagement and Decision-making in the E.U.). It presents several challenges for multi-(hazard-)risk management as outlined in several research projects. It then sets out the MYRIAD-EU team's research agenda for addressing these challenges. We argue for an approach that addresses multi-(hazard-)risk management through the lens of sustainability challenges that cut across sectors, regions, and hazards. In this approach, the starting point is a specific sustainability challenge, rather than an individual hazard or sector, and trade-offs and synergies are examined across sectors, regions, and hazards. We argue for in-depth case studies in which various approaches for multi-(hazard-)risk management are co-developed and tested in practice. This agenda is guiding the work that is being carried out within the MYRIAD-EU project.

Picture of the MYRIAD-EU team at the 3rd General Assembly in Venice





Want to know more?

- **Full reference:** Ward, P.J., 2022. Invited perspectives: A research agenda towards disaster risk management pathways in multi-(hazard-)risk assessment. *Natural Hazards and Earth System Sciences*, 22, 1487-1497, doi:10.5194/nhess-22-1487-2022
- **Link to paper:** <https://nhess.copernicus.org/articles/22/1487/2022/>
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