November 2023

myriad_eu

Research brief: Collaborative systems approaches: Guidance for Pilots on collaborative systems analysis tools and approaches for complex, multi-hazard, multi-sector systems

MYRIAD-EU project has received funding from the European Union's Horizon 2020 Research and Innovation Programme under Grant Agreement No. 101003276

Collaborative systems approaches: Guidance for Pilots on collaborative systems analysis tools and approaches for complex, multi-hazard, multi-sector systems

Highlights

- We highlight findings from a review of promising tools and approaches for collaborative systems analysis.
- We propose a flexible, generic collaborative multi-sector, multi-risk system analysis approach for complex, multi-hazard, multi-sector systems consisting of three principal iterative steps in which the complexity of the system is gradually built up. Suggestions on appropriate methods and tools are provided for each step.
- We highlight how the various activities of the approach relate to the steps of the MYRIAD-EU framework for systemic multi-hazard and multi-risk assessment and management.
- We summarise reflections from the initial deployment of collaborative systems analysis tools and approaches during the first round of pilot workshops in the five MYRIAD-EU pilots.

Recommendations

- **Fit-for-purpose approach:** Based on initial feedback from the pilots, the proposed approach appears fit-for-purpose, but we recognise the complete approach could not yet be implemented in the pilots at this early stage. We look forward to receiving further feedback on the proposed approach, methods and tools as the pilots elaborate these analyses together with their stakeholders during subsequent meetings in MYRIAD-EU.
- **Effective facilitation:** The proposed approach demands strong and effective facilitation to lead discussions and help to synthesise system complexities for stakeholders.
- **Time allocated to systems analysis:** Sufficient time must be allocated to systems analysis activities in order to explore the full complexity of systems and to generate the necessary stakeholder consensus on system functions, objectives, and characteristics.

Context

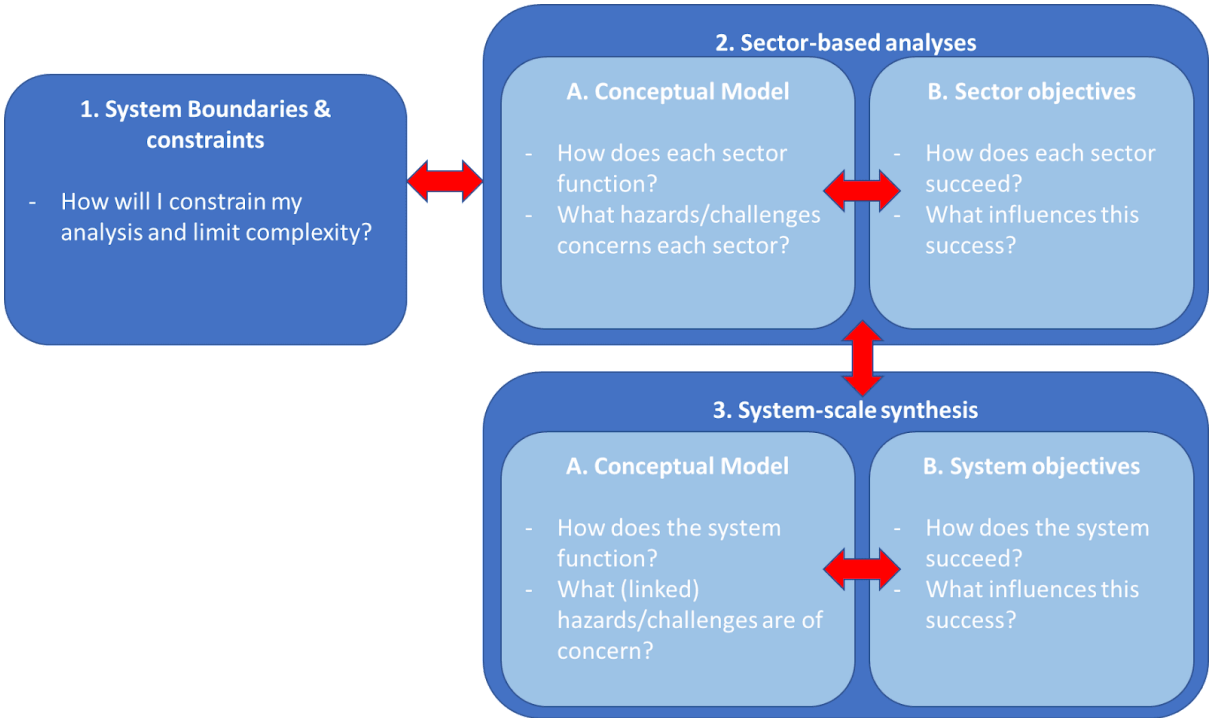
Collaborative systems analysis approaches are needed for forward-looking adaptive multi-risk decision making for a variety of reasons, including (i) to avoid negative consequences when approaching problems through a sector-specific lens, (ii) to aid in the formulation of system-wide objectives that both recognise and balance the inherent trade-offs within our systems, (iii) to ensure a more equitable distribution of system-wide resources, costs and benefits, and (iv) to help reduce the potential for stakeholder conflict.

In this light, the principal purpose of collaborative systems analysis approaches is to help describe decision-making contexts in all their complexity.

Based on the findings of our review, we conclude that systems analysis tools and approaches that permit complete systems analyses offer the most promising avenues for complex, multi-hazard, multi-sector systems. Accordingly, our proposed collaborative systems analysis approach aims to capture full system complexity by gradually building this up across three, iterative steps:

1. Defining system boundaries and constraints
2. Undertaking sector-based analyses
3. Synthesising sector-based analyses into a whole-of-system analysis

Within the approach, particular emphasis is placed upon establishing an agreed set of (measurable) sector and system objectives (i.e., definitions of success), as these are critical ingredients to both assess and evaluate risks via the MYRIAD-EU framework and for the systematic development of multi-risk pathways via the DAPP-MR methodology.



Caption: Proposed collaborative systems analysis approach to be applied in MYRIAD-EU

Want to know more?

- **Full references**: Warren, A., Stuparu, D., Schlumberger, J., Tijssen, A., Dochiu, C., Rimmer, J., 2022. Guidance document for Pilots on collaborative systems analysis approaches. MYRIAD-EU Deliverable 6.2.

- Warren, A., Schlumberger, J., 2023. D6.3. Interim report on collaborative systems and DAPP approaches to develop forward looking DRM pathways. MYRIAD-EU Deliverable 6.3.

- **MYRIAD-EU website: www.myriadproject.eu**
- **X:** @Myriad_EU

- **Contact**: andrew.warren@deltares.nl