

Review of the paper “Fostering interoperability of data, models, communication and governance for disaster resilience through transdisciplinary knowledge co-production”

The paper discusses how disaster risk management (DRM) and climate change adaptation (CCA) are hindered by a lack of interoperability between data, models, communication, and governance. It provides a comprehensive overview of the technical, legal, operational, communicative and institutional barriers hindering effective responses. To overcome these barriers in the domains of data and models, communication, and governance, the authors suggest a transdisciplinary approach. They introduce frameworks such as a Risk-Tandem Framework or a Data Fabric to improve interoperability and facilitate knowledge co-production, aiming to enhance disaster resilience through integrated systems and governance.

The paper addresses the importance of improving disaster resilience by highlighting gaps in interoperability across various systems, including data, models, communication, and governance. This comprehensive, multi-dimensional approach provides value to a diverse range of stakeholders. However, the paper lacks depth regarding the practicalities of implementation. This is partly due to the fact that tests of the Risk Tandem and the Data Fabric are still pending. However, the transdisciplinary approach is not only costly in terms of resources, but also terms of the willingness of participants on all levels. In practice, securing the necessary resources and fostering cooperation between stakeholders could be challenging, even if highly desirable. The authors should elaborate in more detail, how participants and institutions can be motivated. In general, the paper would benefit from examples or practical instructions on how to overcome the barriers mentioned.

One aspect that could be discussed in addition is that different aspects are often relevant for different stakeholders. For example, a scientifically robust model is based on many parameters. However, only a fraction of these are relevant for political decision-makers. However, this does not mean that the model can be reduced to these few parameters. Note that specific parameters are meaningful without context. Indeed, transdisciplinary product development is a meaningful tool to overcome such challenges.

In addition, I have listed some minor comments concerning different aspects throughout the paper.

Line 33

Please provide a source for the statement made in the sentence “In the absence of historic flood observation or due to a lack of local flood experiences [...]”

Line 199 to 203

The content described here seems repetitive.

Line 313

I doubt that running different models necessarily enhances trust. It can also lead to confusion due to conflicting results that do not always point to different realities but may instead be caused by model effects. To get to the bottom of such effects requires in-depth knowledge of the model. This does not seem to me to be the desirable goal, but rather that trust is built between the different stakeholders.

Line 324

Please specify what you envision by “creative and interdisciplinary approaches”. In the current form, this is very ambiguous.

Line 353

Can you provide an example or specify the “specific roles and capacities needed”?

Line 381

There is something missing at the end of this line.

Line 435

You argue that the process is resource-intensive. In my opinion, this primarily comes from the transdisciplinary approach. Therewith, i) and ii) are at least linked and other reasons for the resource intensiveness should be added.