

LAND4FLOOD Summer School

“Build Back Better” – How to Learn from Flood-Affected Regions

10-11 September 2026, Bad Neuenahr-Ahrweiler, Germany



Organizers

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THW – German Federal Agency for Technical Relief	Daniel Gronwald
Deutsche Bahn AG – German Railway	Stefan Frank

1. Objectives of the summer school

The PhD Summer School “Build Back Better – How to Learn from Flood-Affected Regions” was organized to create a space for exchange on flood recovery, climate change adaptation, and long-term resilience. Recent flood disasters have shown that recovery is not only about rebuilding damaged infrastructure and housing, but also about making difficult decisions on future land use, risk reduction and the organization of recovery processes. The summer school therefore focused on how flood-affected regions can learn from past experiences and how these lessons can support more resilient recovery in the future.

A particular aim was to connect academic perspectives with practical experience. Using the Ahr Valley as a real-world case, the summer school provided an opportunity to discuss ongoing recovery processes directly with local actors. It also aimed to compare different approaches to recovery, identify key challenges and encourage mutual learning between researchers and practitioners.

2. Participants and approach

The summer school brought together 12 early-career researchers from universities in Germany, Türkiye, India, Brazil and Italy. The participants came from a wide range of disciplinary backgrounds, including spatial planning, geography, geomatics, environmental and civil engineering, law and economics. Their research interests covered topics such as flood risk and land-cover change, post-disaster land policy and property rights, nature-based and water-based solutions, urban water security, hydromorphological change, critical infrastructure and systemic vulnerability, legal and compensation issues after disasters, and hydrological, hydraulic, and GIS-based approaches to flood resilience and climate adaptation.

The participants worked together with academic facilitators from RPTU Kaiserslautern and TU Dortmund University and practitioners involved in different aspects of disaster recovery. THW (German Federal Agency for Technical Relief) contributed perspectives on disaster response and emergency management, IQIB brought expertise on the recovery and resilience of critical and sensitive infrastructures, and Deutsche Bahn AG provided insights into the reconstruction of railway infrastructure in the Ahr Valley.

The summer school followed an interactive and practice-oriented approach. The excursion on the first day allowed participants to observe recovery processes directly in the valley, while the second day was dedicated to moderated thematic sessions in which these observations were discussed together with research perspectives and practical experience.

3. Learning from the Ahr Valley: Excursion

The first day of the summer school was dedicated to an excursion through the Ahr Valley. Visits to the newly reconstructed railway station in Altenahr (Figure 1 & Figure 2), the railway line near Mayschoß, and several locations in Ahrweiler provided direct insights into the ongoing and completed reconstruction process. Particular attention was given to the rebuilding of the railway infrastructure, where participants learned about the challenges of reconstructing under considerable time pressure and within a defined budget. At the same time, parts of the land surrounding the railway infrastructure are privately owned, adding another layer of complexity to reconstruction decisions. Restoring the railway connection is especially important for the valley, not only for everyday mobility but also for tourism and events such as the region’s wine festivals.



Figure 1: Altenahr Railway Station



Figure 2: Hotels and residential buildings along the river

In the afternoon, a town walk through the heavily flood-affected inner city of Bad Neuenahr-Ahrweiler focused on how the city has been rebuilt since 2021. The walk provided an opportunity to discuss which reconstruction measures have worked well, where challenges remain and how recovery efforts can contribute to greater resilience against future flood events.



Figure 3: THW Local Branch Sinzig

The excursion also created space to discuss what Build Back Better can mean for major infrastructure projects. One important point concerned the role of existing planning and approval procedures, particularly the formal planning approval procedure for major infrastructure projects (*Planfeststellungsverfahren*) and the extent to which such procedures allow for adaptation or changes

during post-disaster reconstruction. The discussions highlighted that disasters can require institutions and planning systems to operate under very different conditions from those for which they were originally designed. At the same time, making substantial changes during recovery becomes more difficult if the necessary legal, institutional and planning conditions have not been considered beforehand. The day concluded at the THW local branch in Sinzig (Figure 3), where participants learned more about the 2021 flood response and the role of emergency management during and after the disaster.

4. Thematic sessions, key insights and reflections

The second day started with a welcome presentation by Bert Droste-Franke from IQIB, introducing the role of the institution and its work. This was followed by a short introduction to the LAND4FLOOD IWRA Task Force by Thomas Hartmann from TU Dortmund University. During the opening remarks, all participating researchers briefly introduced themselves and their research topics, providing an overview of the different disciplinary perspectives represented in the summer school.

Thematic session 1 – Flood recovery on private land: Planning, risk management and property rights

The first thematic session was moderated by Thomas Hartmann. The session started with B. Ayça Ataç-Studt from TU Dortmund University introducing the concept of post-disaster land policy as a way of understanding flood recovery at the intersection of flood risk management, spatial planning and private property rights. Participants then discussed three questions in small groups regarding this concept: (1) what this perspective could add to existing approaches to flood recovery; (2) how the three fields interacted in practice based on observations from the excursion; (3) how post-disaster land policy could be better prepared in advance.



Figure 4 and 5: Results from the first thematic session

The groups wrote their ideas on cards and presented them in the plenary discussion (Figure 4 and 5). Topics included the transfer of development rights, incentives for relocating from high-risk areas, the importance of pre-disaster risk-sensitive planning, land scarcity and the difficulty of expropriation, weak coordination between spatial planning and flood risk management, the non-binding character of some

flood risk management plans and the need to connect recovery more closely with prevention and recovery financing.

Thematic session 2 – Build back better? Recovery of railway system in the Ahr river valley

The second thematic session was moderated by Stefan Frank from Deutsche Bahn AG. The discussion focused on the extent to which the reconstruction of the railway system after the 2021 flood can be understood as Build Back Better. Participants discussed what “better” should mean in this context and how it could be assessed. Suggested dimensions included a higher capacity to withstand future impacts, lower vulnerability and fewer service disruptions in the event of another flood. The discussion also highlighted the need to define the objectives of reconstruction in advance and to develop suitable criteria for evaluating whether these objectives have been achieved. This led to a broader discussion of resilience, different understandings of resilience and trade-offs between competing recovery goals. In particular, rapid reconstruction may reduce the time available for more fundamental risk reduction and long-term planning.

Thematic session 3 – Resilience in the interaction of various sensitive and critical infrastructures

After the lunch break, the third thematic session was moderated by Bert Droste-Franke. The session introduced different characteristics of systems having influence on their resilience and asked participants to reflect on these using six criteria for systems elements, interconnections and infrastructure used, looking closer into flexibility/alternatives, complexity and interference. In small groups, participants discussed how these characteristics could apply to different infrastructure systems, including transport, water, energy and communication networks. The results were then brought together in a plenary discussion, with particular attention to interdependencies between systems and the consequences that failures in one system can create for others.



Figure 6: Plenary session

The summer school concluded with a plenary reflection session (Figure 6). Participants were invited to reflect on their experiences over the two days and to assess how relevant the summer school had been for their own research. The interactive discussion also explored whether the excursion and thematic sessions had introduced new perspectives, changed how participants viewed their research or confirmed the direction of their current work.

5. Conclusion

The summer school showed the value of bringing together academic perspectives and practical experience from a flood-affected region. The combination of field observations, thematic discussions and exchange with practitioners made it possible to reflect on flood recovery from different disciplinary and institutional perspectives. Across the sessions, a recurring theme was the need to connect recovery more closely with long-term risk reduction and preparedness, while also considering the institutional, legal, spatial and social conditions that shape what can be achieved after a disaster.

The discussions also highlighted that Build Back Better cannot be understood as a single approach or predefined outcome. What constitutes “better” depends on the system, the objectives of recovery and the local context. Continued exchange between researchers, practitioners and institutions can help strengthen learning from past events and support better preparation for future recovery processes.

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Photo credit: *B. Ayça Ataç-Studt*