



Scenario-based impact analysis of disaster risks exploring potential implications for disaster prevention strategies in spatial and urban planning

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The project deals with scenario techniques to assess, estimate, and communicate the potential consequences of natural disasters on risk governance arrangements. It aims to create a methodology which allows the development of disaster scenarios for different types of natural hazards. This enables relevant stakeholders to derive planning strategies to prevent harmful damage to the community through adequate adaptation.

Some main questions in the project are:

- How do changing boundary conditions in economic, social and ecological systems influence the significance and the benefit of existent risk analysis as a basis for spatial planning decisions?
- Which factors represent or influence the forecast uncertainty of existent extrapolations within the scope of risk analysis?

Which of these uncertainties have spatial relevance? (Which go beyond sectoral considerations of risk? Which refer to reservations concerning spatial development? Which influence a community as a whole?)

- How can we quantify these uncertainties? Do they change according to altered hazards or vulnerabilities?
- How does the explored risk vary, once quantified uncertainties are integrated into current extrapolations? What are the implications for spatial planning activities?
- Which software application is suitable to visualize and communicate the scenario methodology?

The work is mainly based on existing results of previous hazard analysis and vulnerability studies which have been carried out by the Center of Disaster Management and Risk Reduction Technology (CEDIM) for the federal state of Baden-Württemberg. Existing data concern the risk of damages on residential buildings, industrial and traffic infrastructure, social and economic vulnerability. We will link this data with various assumptions of potentially changing economic, social and built environments and visualize those using Geographical Information Systems (GIS). Although the scenario methodology is conceived as a multi-hazard oriented and transferable instrument, it may be helpful to demonstrate the methodology for one hazard (e.g. flooding hazards) and with special local conditions in Baden-Württemberg.