



## Combining quantitative and qualitative risk aspects for adaptive and flexible climate risk assessment

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With increasing frequency and severity of climate risks, communities must further adopt Climate Risk Management (CRM) strategies. As a key component, Climate Risk Assessments (CRA) identify and evaluate climate risks across hazards, areas and sectors. Various CRA frameworks have been proposed and implemented by research, policy and practice. One key gap identified is the effective integration of quantitative and qualitative aspects in CRA to develop comprehensive results as well as ensure integration of various perspectives. For this, it is necessary to understand how quantitative and qualitative risk aspects come together in combined approaches to support and balance each other.

In the context of the EU Horizon 2021 project CLIMAAX, we developed a comprehensive CRA framework adapted for the European regional and community level. The Framework unites approaches for risk quantification (provided in the CLIMAAX Handbook) and at the same time encourages qualitative risk input through participation of experts, stakeholders and vulnerable groups. Our approach seeks to respond to needs, recent advancements and best practices in the CRA field by integrating insights from European National Adaptation Plans and Strategies, peer-reviewed literature, as well as existing CRA frameworks and international standards. The framework was collaboratively developed with five European pilot regions and considers survey responses from the CLIMAAX Community of Practice to ensure feasibility and applicability while upholding adaptive flexibility.

The CRA Framework is operationalized through a five-step assessment cycle (*Scoping, Risk Exploration, Risk Analysis, Key Risk Assessment, Monitoring & Evaluation*). These steps are supported by principles of social justice and equity, participatory processes, and technical considerations such as future scenarios. In the quantitative Risk Analysis step the Framework is strongly supported by multiple risk workflows estimating climate risk. The other four steps provide entry points for qualitative risk assessment perspectives, thus requiring translation and interdisciplinary thinking. We innovatively contextualise the risk analysis outcome as quantitative

and qualitative aspects are processed together. Through an indicator-based evaluation of risk severity, risk urgency and *resilience capacity* we consider *Key Risks* in a multi-hazard risk context.

By collecting data from users within the CLIMAAX project, we will assess how qualitative as well as semi-quantitative risk perspectives can benefit and complement quantitative risk estimations as applied in the risk workflows. Further, by effectively integrating diverse perspectives, the framework aims to bridge the translation gap between risk assessment and CRM practices towards fostering resilience.