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Challenges and approaches in transdisciplinary climate change adaptation projects

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Climate risks and the appropriate climate change adaptation (CCA) strategies and solutions are highly localized, as they are dependent on the local climate signal, normative assessments on associated risks and the capacities and motivation of municipalities to plan and implement adaptive measures. Research projects trying to explore and pilot applied local solutions therefore need to co-develop recommendations with local practitioners and stakeholders.

Even though a diverse landscape of climate information (CI) is already available and many municipalities know which risk they may face, knowledge and skills on how to interpret, apply and integrate this information in adaptation action is regarded as necessary. Different, albeit non-representative surveys among municipalities in Germany show that more cities are engaging in developing concepts and strategies (Hasse & Willen, 2018; Hagelstange et al., 2021; Handschuh et al., 2020), but that more practice-oriented information on how to identify regional and local vulnerabilities, evaluate efficient adaptive measures, and identify and build up adaptive capacities is needed (Handschuh et al., 2020; Kahlenborn et al., 2021; BBSR, 2016).

Based on an extensive literature analysis of journal articles, research project reports and strategic policy document as well as the experience of accompanying six transdisciplinary research projects, the following categorization of challenges will be presented:

- Governance
- Adaptive capacities
- Integrative assessment of adaptive measures
- Climate model data and information
- Transdisciplinary work in applied research projects

Drawing on insights on the challenges, a list of recommendations for increasing the use-value of climate information and knowledge for CCA in municipalities is outlined. Tackling these five challenges through co-creating and inserting CI and services into municipal procedures and systems can then address the “last mile problem” (Celliers et al., 2021) of CI and support the lagging implementation of CCA.

In order to conduct impactful transdisciplinary research projects, the specific governance context of municipalities needs to be explored. A survey shows that spatial planning not environmental departments implement most CCA measures (EEA, 2020), whereas planning often lacks climate awareness (Skelton, 2020), signifying the need for cross-departmental approaches. Likewise, the understanding and possible usages of CI needs to be conveyed through appropriate transdisciplinary methods.