Understanding the multiple linkages between climate risks and water supply: a case study of Southern Sweden

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There are numerous studies of the impacts of climate-related natural hazards, such as droughts, heatwaves and wildfires, to water supply. These range from the global mapping of water scarcity to local-level evaluations of damages to production and distribution infrastructure. However, comprehensive and dynamic assessments of climate impacts to water supply that consider both fast (e.g., floods, landslides) and slow onset risks (e.g., drought) as well as changes in water consumption are still lacking, especially in regions perceived as “water-rich”.

This study reviewed climate change impacts to water supply in northern temperate climates which, in recent years, have been exposed not only to multiple floods but also to seasonal droughts despite predicted increases in average precipitation. By adopting an extended risk framework, we developed a conceptual overview and visualization of the linkages between climate, water, and society in the context of Southern Sweden.

The results highlight the multiple knowledge gaps in the Swedish water sector related to climate change uncertainties at local scales, compound and cascading risks, and the challenge of implementing adaptation measures in practice. When acknowledging intersectoral connections, the conceptualization becomes increasingly complex, emphasizing broader implications for a functional society as a whole.

This research contributes to a sparse literature on the impacts of climate change to water supply in northern regions. We argue that conceptual and systemic approaches can benefit water utilities and municipalities where drought risk tends to be overlooked and discuss possible venues for moving adaptation forward.