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Farmers' decision-making strategies for dealing with hydro-climatic risks in the Kilombero Valley, Tanzania

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At present, the seasonally flooded wetland of the Kilombero River is mainly used by small-scale farmers who predominantly produce rice and maize during the wet season. Some community-based irrigation systems do exist, which reduce the consequences and risks of climate variabilities regarding e.g. the onset of the rainy season and which allow year-round farming. Like other sub-Saharan wetlands, the Kilombero Valley floodplain is a highly dynamic environment, which is amplified due to increasing variability in the onset and intensity of the wet season.

In this study, we identify drivers of change and farmers' decision-making strategies using focus group discussions with different types of farmers. In particular, we examine the differences between farmers from rain-fed and irrigated agriculture in terms of their agricultural practices and decision-making strategies for dealing with hydro-climatic risks. The results map the perceptions and visions of the people whose actions shape this highly dynamic environment and identify a range of options for action that go beyond the optimality paradigm.

Understanding how aspirations and visions about the future shape agricultural practices and hence human-water interaction is crucial to understand possible changes and dynamics of coupled socio-ecological systems. Therefore, this study is embedded into a wider multi-method approach integrating qualitative and quantitative data to inform and modify hydrological modelling. Here, the qualitatively collected data and findings of this research provide ground for developing additional scenarios for hydrological models and allow for contextualizing model results. Thus, human-water interactions can be better represented and the local populations' perception and reactions to hydro-climatic risks can be assessed.

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