Enhancing water security under uncertain climate futures: innovative interdisciplinary approaches connecting practices and cultures in Drylands

George Njoroge

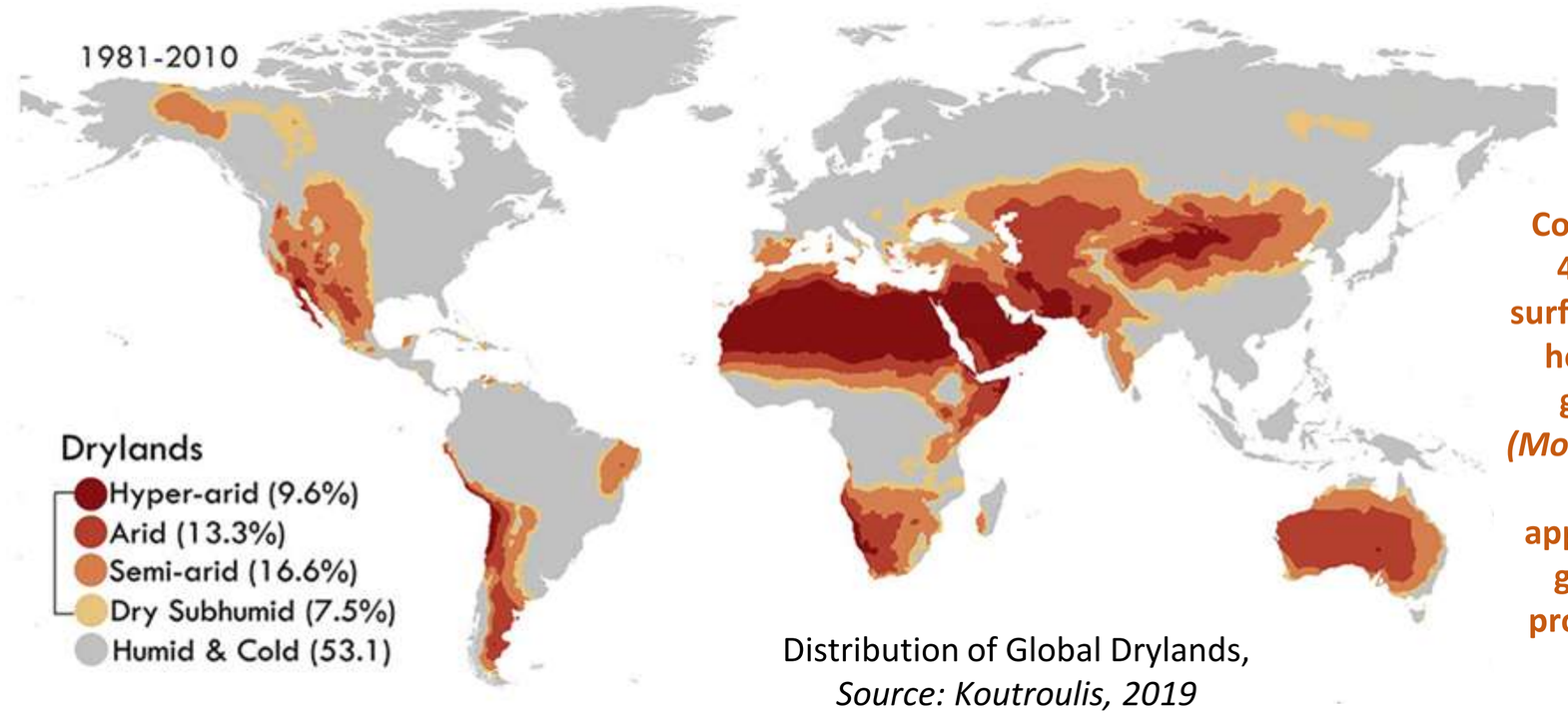
University of Dundee and Stockholm Environment Institute

Problem

Climate change is compounding water security challenges in the drylands. Strategies for enhancing secure and reliable access to water are critical to the livelihoods of dryland communities. However, climate change response models remain underexplored and under-theorized, hence a substantial knowledge gap exists on climate adaptation needs for water resources

Aim

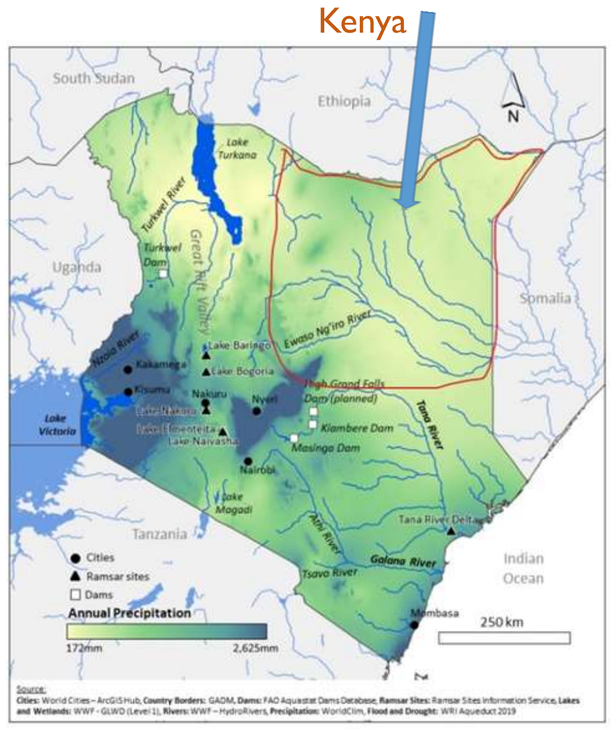
To examine how climate change and risk-based approaches have been built into water resource management aiming to recommend the most appropriate measures for delivering water security in ways that are inclusive and sensitive to the livelihoods and cultures of the dryland commu



Distribution of Global Drylands,
Source: Koutroulis, 2019

Constitute more than 40% of the Earth's surface *(Prăvălie, 2016),* home to 35% of the global population *(Mortimore et al., 2009),* accounts for approximately 40 % of global net primary productivity *(Grace et al., 2006)*

Place-based case study in Ewaso Ng'iro drainage basin, Kenya



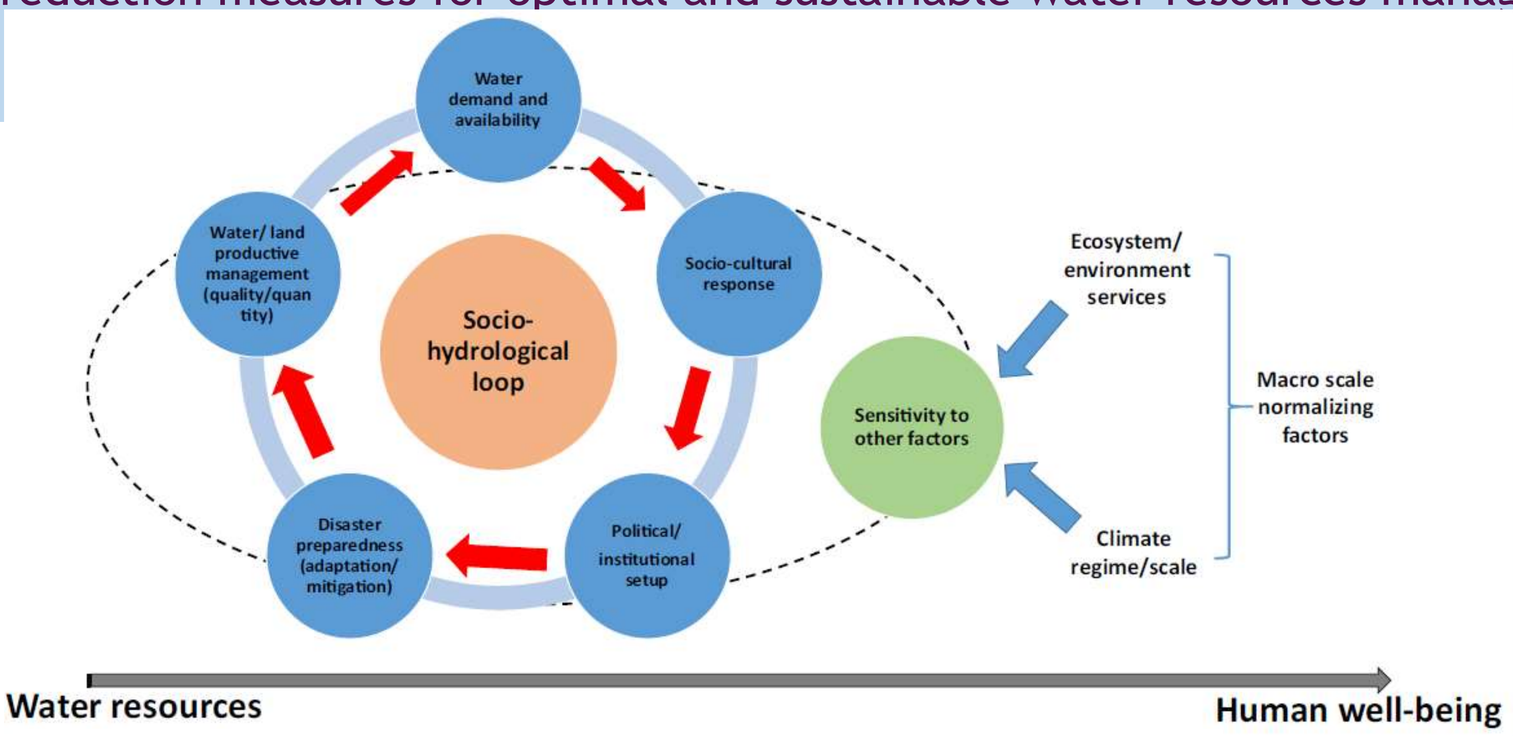
89% of Kenya's landmass is arid/semiarid (Prăvălie, 2016), contains more than 30% of people, 50% of livestock and 75% of wildlife *(Oxfam, 2006)*

Mixed Methods Interdisciplinary Approach

Rapid Review: to situate the fragmented knowledge and conceptualizations on securing water resources into an integrative and rigorous conceptual framework

Ethnography: Grounded theory approach to evaluate and characterize place-based climate hazard preparedness and response strategies and measures being used to secure water resources in the Ewaso Ng'iro drainage basin

Modelling: Serious Games, Agent Based Modeling to simulate the most robust and appropriate climate risk control and reduction measures for optimal and sustainable water resources management under uncertain climate futures



Social Hydrology approach to understanding practices that build resilience to water stresses and shocks (Kumar et al., 2020

Expected outcomes and outputs

- A coherent conceptualization on the critical issues underpinning climate change adaptation needs for water resources
- Synthesis of socio-cultural and technical strategies for adapting water resources used in the Ewaso Ngi'ro drainage basin
- Decision support framework for selecting most appropriate adaptation practices & measures for water resources

References

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