

# Environmental Change and Human Migration – A Vicious Cycle?

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## About Us

We strive to understand the **causalities between environmental change and human migration** in the Global South. The **close relationships between environmental factors and political, economic, and social factors driving migration** make it challenging to understand the role of the environment in migration processes.

### We aim at

- identifying and explaining **spatial patterns** of migration and environmental change
- understanding the **causality between environmental change, population pressure, human migration, and environmental consequences of migration**

## Our Approach

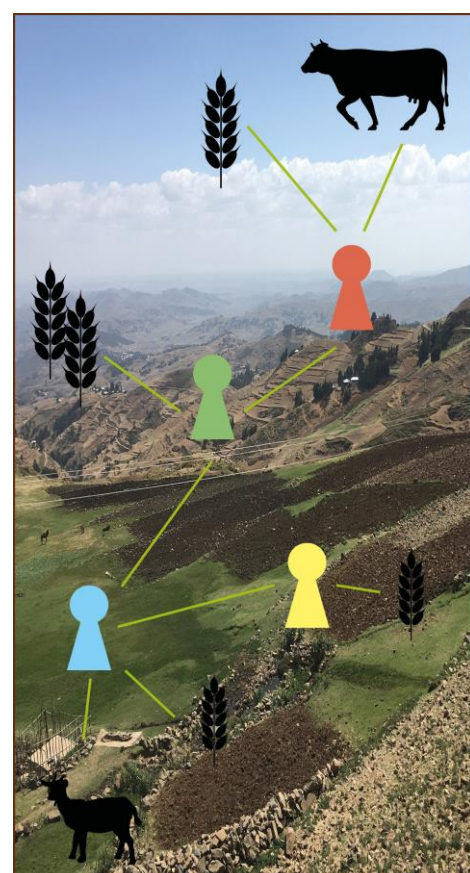
### Place-based Research

- We use **multisite qualitative and quantitative approaches**, including semi-structured farmer interviews, standardized surveys, focus group discussion and workshops for our data collection
- This allows us to dive deep into rural migrant sending and receiving places and to integrate the concerned population
- Qualitative comparative analysis (QCA) and regression models serve to disentangle the multiple and complex pathways on which the environment influences rural livelihoods, migration and vice versa



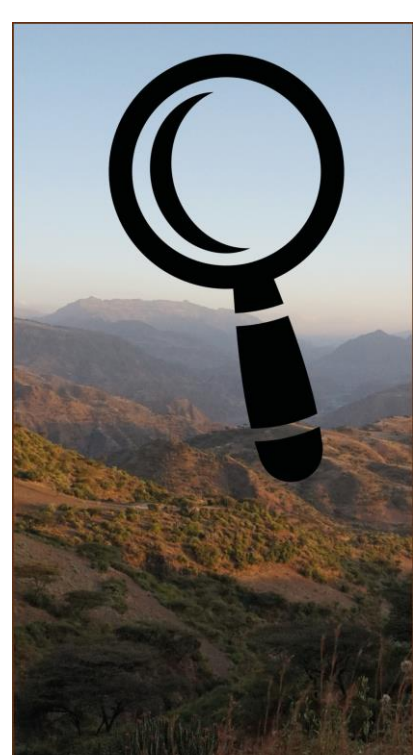
## Modelling

- We use **agent-based modelling and Bayesian networks (BN)** to simulate natural resource use and migration decisions of subsistence farmers in the Ethiopian highlands
- In these models, farmers' individual decisions and their social interactions on the micro-scale lead to the emergence of regional patterns of resource use and migration
- Modelling enables to analyze the complex interplay of multiple influence factors and the impact of migration on the environment and the livelihood of migrants



## Meta-Analysis

- We apply **meta-analytic approaches** (including systematic literature review and QCA) to integrate a wealth of existing qualitative and quantitative data and provide a trans-regional perspective on the topic



- This is focused on the relevance of migration as household adaptation strategy and the role of environmental factors in migration decisions of individuals.
- We also examine relevant scope conditions for resource use conflicts in various immigration areas in the Global South

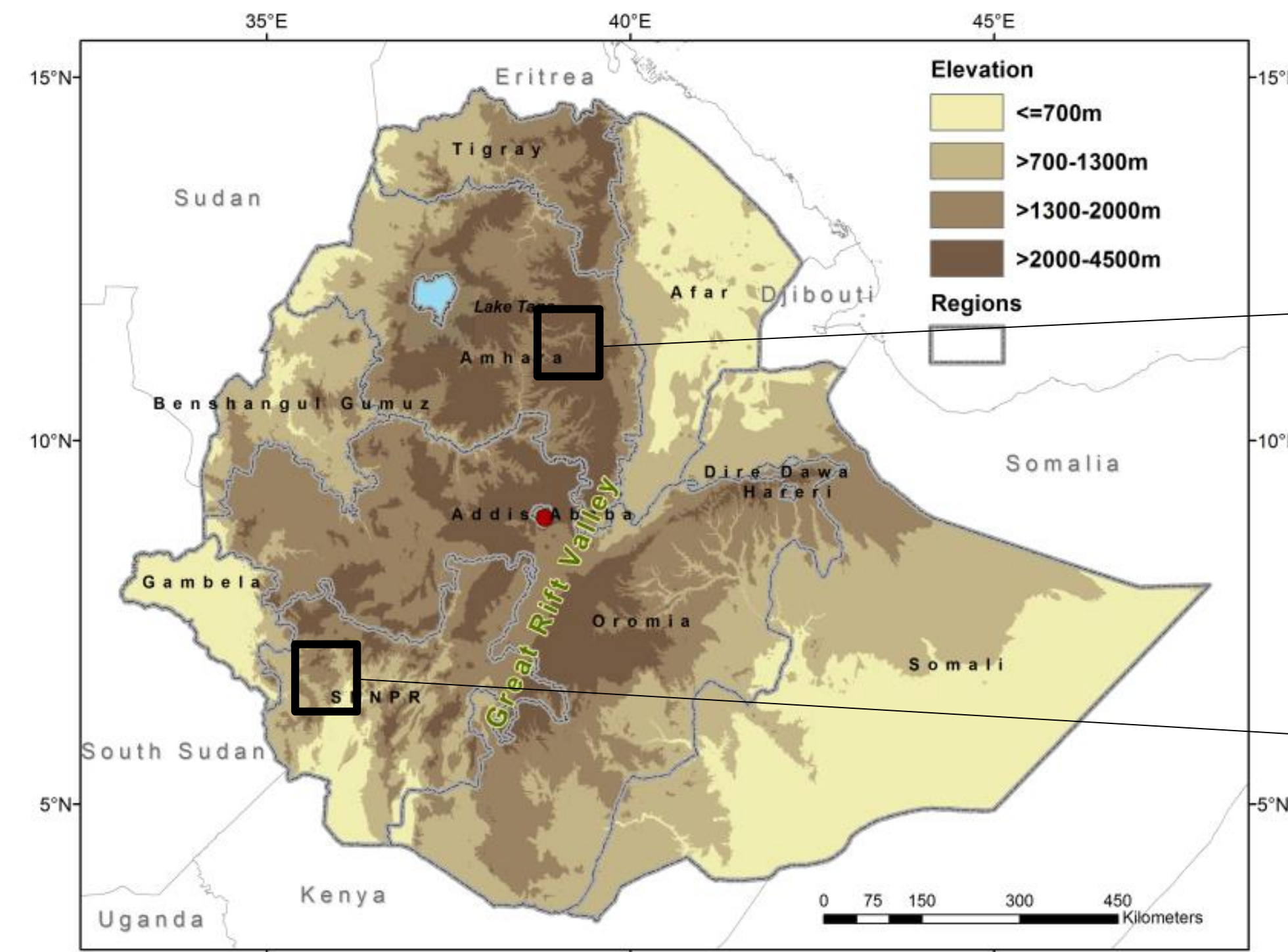


Figure 1: Research sites in South Wollo and Bench Maji (indicated with rectangles) based on elevation data obtained from the Shuttle Radar Topography Mission (SRTM) at 250-meter resolution (Farr et al., 2007)



Out-migration hotspot: Northern highlands, **South Wollo**



In-migration hotspot: Southwest Ethiopia, **Bench Maji**

## First Results

### QCA study on interwoven drivers of environment-related migration in the Northern Ethiopian highlands

- Interlinked economic resources and migrant networks are crucial for the ability of households to engage in migration
- Migration is an important adaptation strategy, but cannot be adopted equally among households

### Our stakeholder workshop in South Wollo and the region- specific BN

- A household's agricultural production influenced by environmental conditions and non-farm activities are essential for migration in South Wollo
- Environmental stress increases migration, either through higher migration needs due to low agricultural production and/or through increased non-farm activities which enables migration through financial means

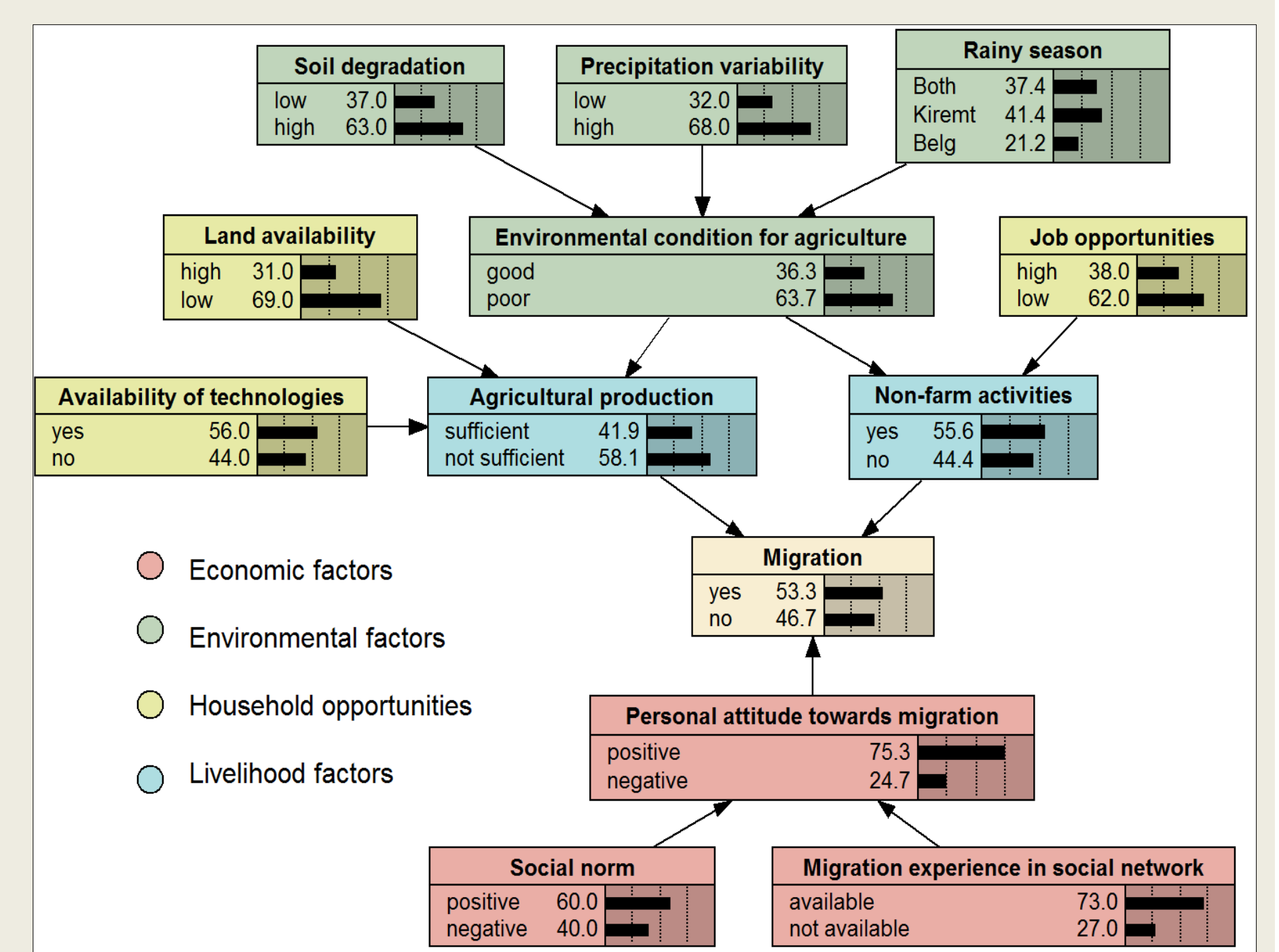


Figure 2: BN of current state of environment-related migration in South Wollo.

### Systematic review of 15 agent-based models of environmentally-induced migration

- Existing ABMs are mostly applied in tropical contexts, serve a wide range of purposes, and cover diverse temporal and spatial scales
- Models tend to lack fully integrated feedbacks between the social and the environmental system

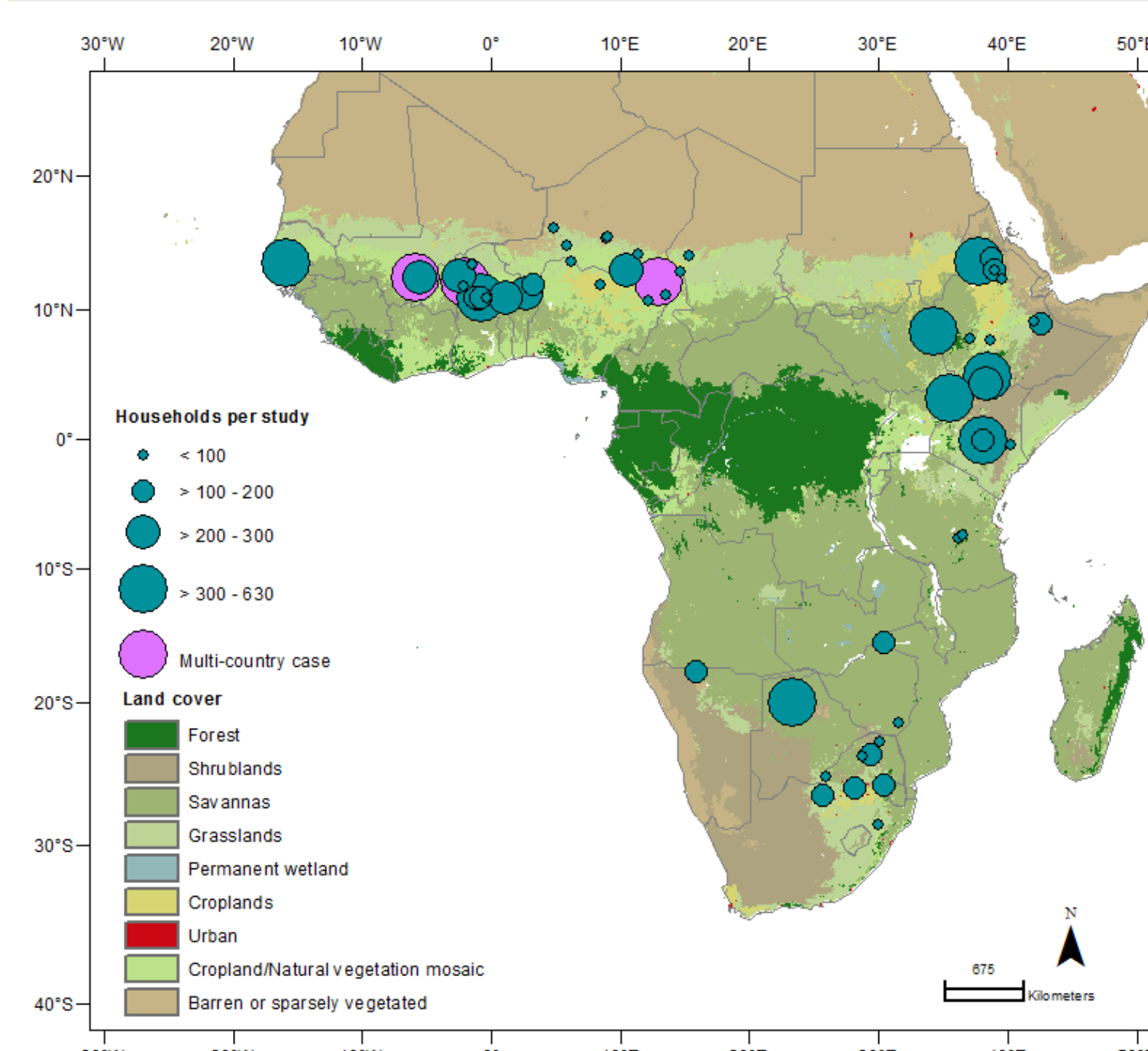


Figure 3: Geographical distribution of the 63 reviewed studies.

### Meta-Study on rural household adaptation strategies in Sub-Saharan drylands

- Covering approx. 10,000 households
- Crop and livestock management and soil and water conservation measures are the most common strategies to deal with environmental change, followed by various forms of migration (reported by ca. 23% of households) and income diversification