The paragraphs provided offer a detailed overview of two research projects focused on climate change, extreme weather events, and their impact on local livelihoods, particularly in developing countries like Ethiopia. The first project investigates the sensitivity of statistical models to spatial aggregation choices (most likely to be presented). The second project aims to merge empirical insights on temporary migration after drought shocks with a DSGE model, with a focus on rural-urban migration and government policy implications.

Identifying Extreme Weather Impacts: *a geospatial, randomized aggregation, approach to drought identification (robustness) in economic impact analysis*

In the first project, the challenge of accurately measuring the impact of localized extreme weather events, such as droughts, is addressed. Despite the localized nature of these events, existing statistical models often aggregate weather shocks to match administrative boundaries, leading to potential biases. To overcome this challenge, the study utilizes remote-sensed data on population density and precipitation, along with machine learning techniques, to create fine-grained datasets of drought occurrences and settlement-level population distribution in Ethiopia. A novel algorithm is developed to sequentially aggregate neighboring districts into larger geographical areas, enabling the examination of model sensitivity to different levels of spatial aggregation. The analysis reveals significant biases in estimated drought impacts, with pronounced effects observed at finer spatial scales and diminishing impacts as data is aggregated into larger areas.

These findings have critical implications for weather shock analysis in developing countries, emphasizing the need for methodological standards in spatial aggregation and the importance of considering spatial scale in impact assessments. Overall, the study contributes valuable insights into the economic and societal consequences of extreme weather events, offering a novel approach to evaluating aggregation choices and climate shock analysis.

Climate Shocks and Structural Transformation: *The opportunities of temporary migration after climate shocks to foster structural transformation*

This project stems from insights gained during our initial research. Analyzing migration patterns post-climate shocks, we observed slower growth in rural settlements within treated (drought-affected) districts compared to untreated ones. Conversely, urban settlements in treated districts exhibited faster growth. Aggregating total district-level population revealed no significant differences between treated and untreated areas. This suggests that post-weather shock migration primarily involves local shifts towards urban areas. Notably, we also found a reversal in this pattern three years post-shock, indicating temporary migration tendencies, also known as "jojo-migration". While developing countries aim for structural economic transformation from large agricultural labour shares towards manufacturing and services, migration frictions are often cited to hinder this process. Our goal is to construct a DSGE model exploring the impact of institutional aid on long-term structural transformation in developing countries, focusing on the question if capital investments should be focused on local urban centers or rural infrastructure.