

Article

# Does Land-Use Policy Moderate Impacts of Climate Anomalies on LULC Change in Dry-Lands? An Empirical Enquiry into Drivers and Moderators of LULC Change in Southern Ethiopia

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**Abstract:** The study set out to understand drivers of Land-Use Land Cover (LULC) changes in dry-land areas and investigate factors helping mitigate the adverse impacts of climate anomalies on LULC changes. By employing a mixed-methods design, it combined LULC data with socioeconomic and climatic data, to analyze the pattern of LULC changes and its socioeconomic and climatic driving forces along with moderating factors. It was found that rangeland decreased by 764 km<sup>2</sup> (13% of total area) between 1986 and 2015. The results from the Seemingly Unrelated time series regression models confirmed preliminary evidence that climate variability, as well as adaptive land-use policies lacking components of sustainability increase the likelihood of degradation and contraction of rangelands. We also found an indication from the qualitative data that a widening power gap between the customary and statutory governance system reinforces unsustainable land use by obscuring the values of the customary land governance system. However, those policies encompassing economic and natural resource development objectives abate adverse effects of climate variability on land degradation and shrinkage of rangelands. The results suggest that a land governance system with natural resource development objectives fitting to the local context could be an effective policy instrument to lessen the adverse effects of climate anomalies on LULC changes. Although this study focused on analyzing the LULC changes and its drivers in dry-land area, the findings may well have a bearing on the formulation and implementation of effective adaptation and sustainable land-use policies.

**Keywords:** climate change; drivers; LULC; moderators; pastoralism; policy; sustainable

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