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“Development on the margin”

Assessing Best Agricultural Practices to Improve Future Climate Change Adaptation of Agro-landscapes in Tanzania

SEVERIN POLREICH¹, KHAMALDIN DAUD MUTABAZI², STEFAN SIEBER¹

¹*Leibniz-centre for Agricultural Landscape Research (ZALF e.V.), Institute for Socioeconomics, Germany*

²*Sokoine University of Agriculture, Dept. of Agric. Economics & Agribusiness, Tanzania*

Abstract

Scenarios derived from Global Change Models for Emission Scenarios (SRES) indicate temperature rise and water scarcity in most parts of East Africa. Within Tanzania's National Adaptation Programme of Action (NAPA) it was estimated that the mean daily temperature will rise by 3 – 5 °C and mean annual temperature by 2 – 4 °C throughout the country. The predictability of rainfall events and amounts will decrease considerably. The adaptive management of rural communities has to be strengthened and strategies to improve the resilience of their agro-landscapes are needed. It is not yet sufficiently analysed how to downscale the effects of global and regional climate change scenarios to village level. This case study, conducted within the project Resilient Agro-landscapes to Climate Change in Tanzania (ReACCT), presents a scenario-based approach how to select best agricultural practices for local climate change adaptation. Two villages with contrasting agro-ecological and socio-economical frame conditions were selected in the Ngerengere catchment basin in the Morogoro district and factors for future land use scenarios identified and streamlined in a causal chain. Information of past and current trends of these factors was gathered through individual household surveys, focus group discussions and secondary research. Future climate scenarios were obtained from PIK's CCLM (Cosmo)-models and aligned with local stakeholders' perceptions about climate change. Based on frame conditions and assumed changes in drivers of agro-landscapes, baseline scenarios for the year 2030 were created for each village together with local stakeholders. We present how impacts of selected best agricultural practices on local pressures were appraised through including them into the baseline scenarios. In that way it is possible to give explicit recommendations to decrease the local vulnerability of agro-landscapes against negative climate change impacts and to increase food security.

Keywords: Agro-landscape, climate change adaptation, East Africa, land use change, participatory methods, scenario development