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"Management of land use systems for enhanced food security: conflicts, controversies and resolutions"

Sustainable Management of Rangelands — Integrating Practitioner´s Knowledge

Jenny Bischofberger[1], Katharina Brüser[2], Stefan Liehr[1], Oliver Schulz[1]

[1] *Inst. for Social-Ecological Research, Dept. of Water Resources and Land Use, Germany*
[2] *University of Bonn, Inst. Crop Sci. and Res. Conserv. (INRES), Germany*

Abstract

Arid and semi-arid rangelands provide a living for more than 370 million people worldwide and about 80 per cent of the nutrition for livestock. Resource degradation, fostered by climate change and maladapted land use, has become a serious challenge in such rangelands, negatively impacting ecosystem function, livestock production and the livelihoods of the people worldwide. In Namibia, the driest country of sub-saharian Africa, 45 percent of the national land area can only be used as rangeland and the livelihoods of a majority of Namibians directly or indirectly depend on natural rangeland vegetation and related water resources.

Thus, to prevent further degradation of natural resources the implementation of adapted sustainable management techniques becomes vital. However, these ecosystems are very complex with regard to the close interactions between vegetation dynamics, soil moisture, groundwater recharge, and soil erosion, posing challenges for good management choices. Furthermore, altered management options may be impeded by social or economic incentives, believes and preferences.

Within the interdisciplinary Optimass project, we focus on management options of commercial livestock farmers in Namibia. Their opportunities for action were identified and the impact on the ecosystem and the societal utilisation interests analyzed. We aim to better understand the link between actors and rangeland ecosystems by applying participatory modellingtechniques, taking local knowledge and experience into consideration. Conducting qualitative interviews with farmers and other experts, their practical knowledge will be combined with scientific knowledge from a process-based eco-hydrological model in iterative steps. While process based models can improve the understanding of the complex links between water and soil, qualitative and quantitative assessments with resource users are required to elucidate drivers for management.

We will present preliminary results from interviews, workshops and models on management options, challenges and impacts in Namibian rangelands. Our final aim is to derive recommendations for policy and practice while new possibilities of knowledge exchange will be created within the process. Progress in rangeland ecology can be achieved by integrating local and scientific knowledge with regard to the drivers and the impact of land use and environmental variability on the natural resources.

Keywords: Local knowledge, Namibia , participatory modelling, rangeland management, Savannah

Contact Address: Jenny Bischofberger, Inst. for Social-Ecological Research, Dept. of Water Resources and Land Use, Hamburger Allee 45, 60486 Frankfurt, Germany, e-mail: bischofberger@isoe.de