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How to stabilise a rangeland social-ecological system: Case study from the Waterberg area, Namibia

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Abstract

The freehold farming sector in the Waterberg area, Namibia, is characterised by a decreasing carrying capacity of the land due to desertification and bush encroachment. As a response freehold farmers, which were originally cattle farmers, started to diversify their farm income especially through wildlife management and tourism. From a social-ecological system (SES) approach, these are signs for an SES approaching a tipping point, in which a reorganisation is already taking place. We pose two questions: 1) To what extent does the feedbacks and capital types in the rangeland SES in the Waterberg area show a proximity to a tipping point? 2) How can the Waterberg rangeland SES be stabilised? Using a SES approach, we identified natural, human, social and financial capital and their feedbacks in the Waterberg rangeland SES through semi-structured interviews with freehold farmers. The interviews also included questions on how to stabilise the Waterberg rangeland SES especially in the context of climate change.

We detected the following aspects in the Waterberg rangeland SES: 1) The majority of feedback loops are reinforcing amplifying external disturbances within the SES and driving the system closer to a tipping point. 2) Several feedback loops are based on coping strategies, which show that farmers are already starting to rebalance the system. 3) Natural and financial capital are diminishing, indicating that the system is approaching a tipping point. 4) Shifts within human, social and financial capital hint to a reorganisation of the system. We detected the following aspects to stabilise the social-ecological system: support for farm income diversification and off-farm income, support for bush biomass value chains, strengthening of social interaction and collective learning, make farm life more attractive to reduce migration to urban centres, support interaction between commercial, communal and resettlement farmers, establish demonstration areas and model farms to show how restoration measures (e.g. via holistic management) can be successfully implemented, reduce risk aversion in the implementation of sustainable restoration measures through subsidies and targeted training.

Keywords: Cattle farming, income diversification, social interaction, social-ecological tipping points