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Biodiverse resilient forest landscapes as engines for sustainable agriculture and food security

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Abstract

Expanding agri-food production puts pressure on forests globally and pushes their fragmentation and degradation, at times up to the point of deforestation. Biodiverse forests are essential prerequisites for the provision of ecosystem functions and services, which are vital for food production and thus food security in the surrounding areas. Considering the drastic effects of climate change, especially the increased frequency and intensity of extreme weather events such as droughts, floods and storms, the ecosystem functions of biodiverse forest are becoming increasingly vital for food production systems.

The present study aims at comparing three forest landscapes in three countries, Mozambique, Madagascar and Brazil, to explore the possibility to enhance local food security and sustain productivity of agriculture systems close to forests. These three forest landscapes each consist of forest areas put under pressure by surrounding agricultural areas. Factors affecting the level of encroachment on the remaining forest areas are compared such as the level of primarily need driven invasion from local settlements for extractive uses. As potentially favorable factors, the comparative analysis will look into identified forest ecosystem functions and services, the respective protection status of the forests as well as possible strategies for more sustainable agriculture and food security in the surrounding areas. To specify these potentials more precisely, selected strategies will be reviewed, like forest conservation measures, nature based solutions for disaster mitigation and evolving marketing options for sustainable value chains of neglected and underutilised species (NUS) in the forest-agricultural landscape will be explored, and for each forest landscape, an integrating portfolio for agroecological transition pathways can be proposed.

Keywords: Agroecological transition pathways biodiverse resilient forest landscapes, food security, sustainable agriculture