



Tropentag, September 11-13, 2024, hybrid conference

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## Agroecological impacts of community-based land rehabilitation and soil fertility enhancement in Madhya Pradesh

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### Abstract

Land degradation is a widely recognised global problem posing significant environmental, social, and economic challenges. Across the world, unsustainable land use practices, deforestation, urbanisation, and climate change have contributed to soil erosion, desertification, and loss of biodiversity. In India alone, about 30% of the land has been degraded with more than 70% of it coming from water and wind induced soil erosion.

Sub-optimal land utilisation reduces farm and livestock productivity thereby having direct implications for food security. In Madhya Pradesh, India with nearly 30% area under forests, agricultural intensification has happened at the cost of commons such as forests, woodlands, and shrub-lands. Yield gains are lower due to poor resource flows from commons that fail to reach small and marginal farmers who lack resources for intensification. The adverse impacts of land degradation are felt most acutely by poor tribal communities who are dependent on commons for fodder, fuel wood, manure, and forest produce, all of which plays a crucial role in regulating nutrient replenishment in soils. The challenges posed by land degradation need localised solutions, and the involvement of local communities through participatory approaches offers a solution through improved social learning, building social capital, and facilitating community-based resource management.

The Foundation for Ecological Security has undertaken community-led land restoration and soil conservation efforts for improving land productivity, rural incomes, and ecosystem services of restored commons in several districts in Madhya Pradesh. By using a multidimensional lens of agroecology, we study the impact of community-based land restoration interventions by FES on environmental, social, and economic outcomes such as biodiversity, agriculture yields, women's empowerment, and household nutrition, resilience, and economic well-being. We use an intra-household survey of 1100 households from more than 70 treatment and control villages, to conduct a rigorous impact evaluation of the interventions, allowing us to study whether and how participatory approaches to land rehabilitation and agroecological approaches can lead to sustainable land use, productive agriculture, and inclusive rural development.

**Keywords:** Agroecology, India, land rehabilitation