Performance of coordination-based incentives for biodiversity conservation: Application of framed field experiments in Tanzania

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Introduction

Payment for Ecosystem Services (PES) programs have been used to incentivize conservation, but their effectiveness is often limited by land inequality and perceptions of unfairness, which can undermine cooperation among landowners. Coordinated approaches that promote collective action offer a way to strengthen ecological connectivity and reduce fragmentation. Integrating socio-economic and psychological factors into conservation design is therefore essential for achieving durable, landscape-scale outcomes.

Objectives:

- ✓ Evaluate the effectiveness of coordinated incentives (threshold bonus and payment) among small farmers.
- ✓ Compare conservation behavior under symmetric and asymmetric land distribution.
- ✓ Examine how relative deprivation and emotional responses (anger) influence participation.

Fig 4. Group discussion among participants on land-use choices

Fig 5. End-of-session compensation for parcel conserved

Discussion

- ✓ Conservation incentives are most effective when social and psychological factors are considered.
- ✓ Both threshold bonus and payment schemes improved land conservation outcomes.
- ✓ Perceptions of fairness and emotional responses, especially relative deprivation, significantly influenced participation.
- ✓ Farmers feeling disadvantaged or perceiving unfairness were less likely to cooperate.
- ✓ Addressing land inequality and social trust is crucial for sustainable, long-term conservation efforts.

Fig 3. Overview of the experimental explanation phase to participants.

Take Home Message

- ❑ Conservation strategies should move beyond individual parcel incentives and foster coordinated landowner actions.
- ❑ Addressing social inequalities and emotional responses is essential to improve participation and trust.
- ❑ Context-specific policies that consider land distribution and social perceptions are more likely to succeed in enhancing landscape connectivity.

Methodology

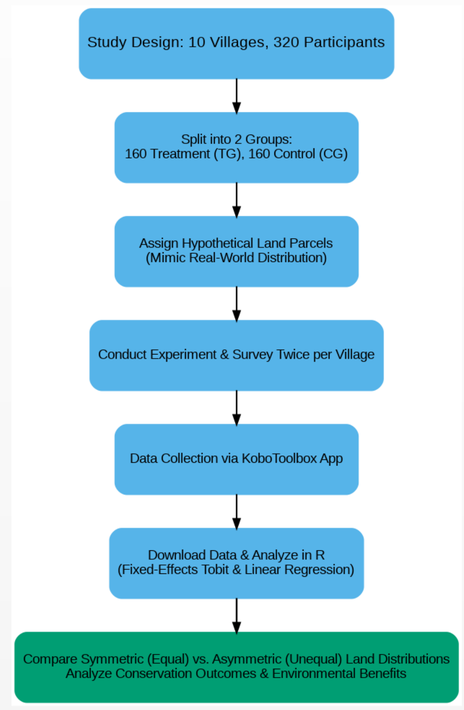

Fig 1. Overview of the research design and data collection process.

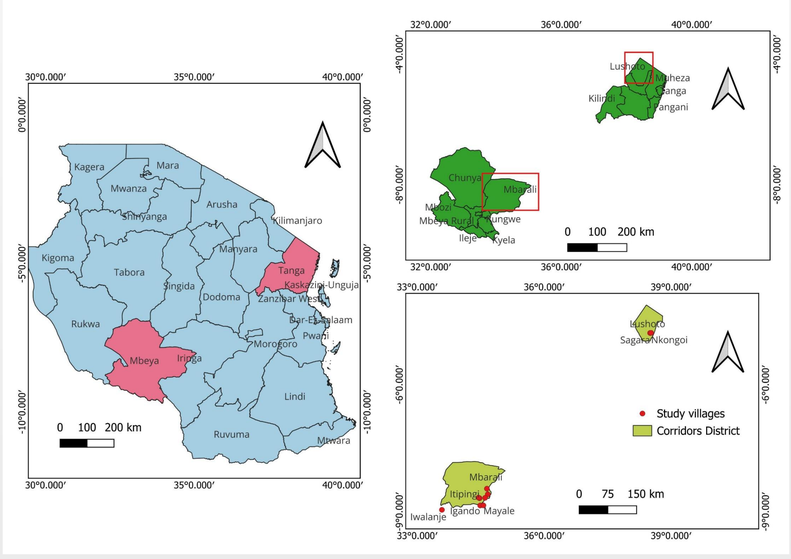

Fig 2: Study area map showing regions (pink), focal ecological corridor (green with red rectangle), and sampled villages (red dots)

Results

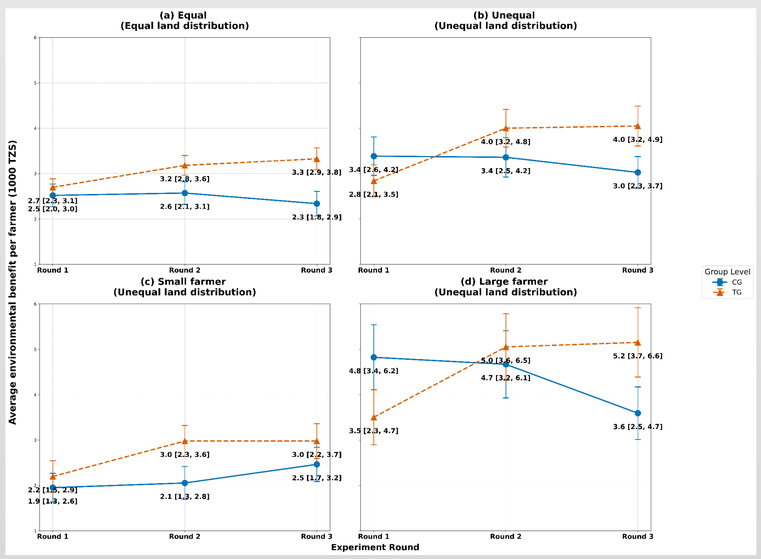

Fig 6: Average environmental benefits derived from parcel conservation decisions by participants.

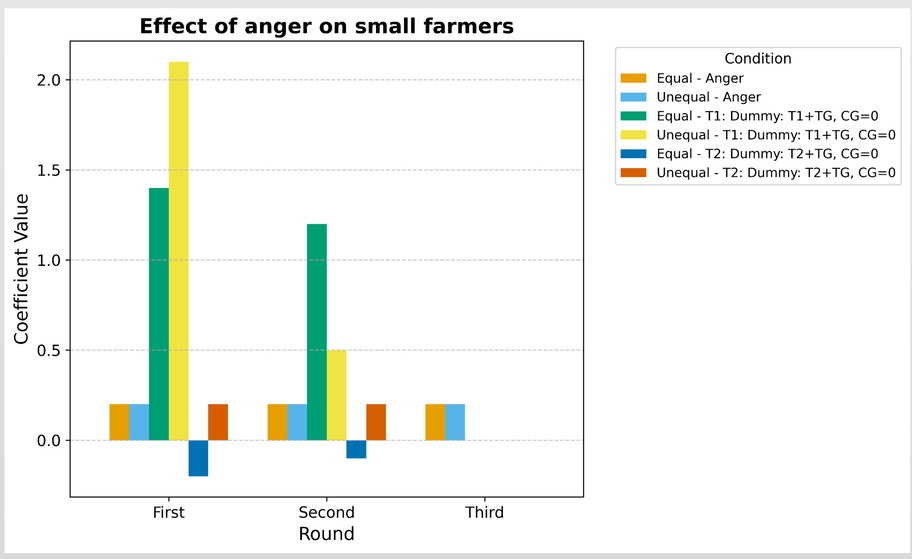

Fig 7: Impact of anger on small farmers' conservation choices across equal and unequal land distributions

Variables	Full sample	Eq. left	Eq.right	Eq both	Sm.left	Sm.right	Sm. both	Full sample	Lg. left	Lg.right	Lg.both
Belief: left retire = 1	1.270 (0.157)	1.286*** (0.243)			2.544*** (0.660)			0.835 (0.121)	2.510 (0.616)		
Belief: right retire= 1	1.288 (0.158)		1.482*** (0.254)			2.191*** (0.574)		0.848 (0.121)		2.510 (0.616)	
Belief: both retire = 1	1.319 (0.160)			1,454*** (0.254)			2.191*** (0.574)	0.865 (0.121)			2.510 (0.616)
Num.Obs.	120	80	80	80	40	40		40	40	40	
RMSE	0.43	0.39	0.39	0.39	0.34	0.34		1.15	1.73	1.73	

Table 1: shows the effect of one's belief in whether neighbors will conserve H parcel or not on conservation decision

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