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Landscape Functioning

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Forest landscape restoration adoption factors in Diana region (Madagascar)

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Introduction

- Degradation in Africa impacts over 132 million hectares.
- Degradation leads to lower agricultural productivity, food insecurity, biodiversity loss, and climate change
- Madagascar, has set a goal to restore 4 million hectares of degraded forest landscapes
- Lack of evidence relating to factors affecting or influencing the adoption of forest landscape restoration practices (FLR).

Objective

- Identify the different FLR practices implemented by communities and those being promoted,
- Identify the factors influencing adopting these practices in the Diana region.

Study location

- The Diana region faces significant deforestation and landscape degradation
- The increase in deforestation is due to intensive agricultural activities
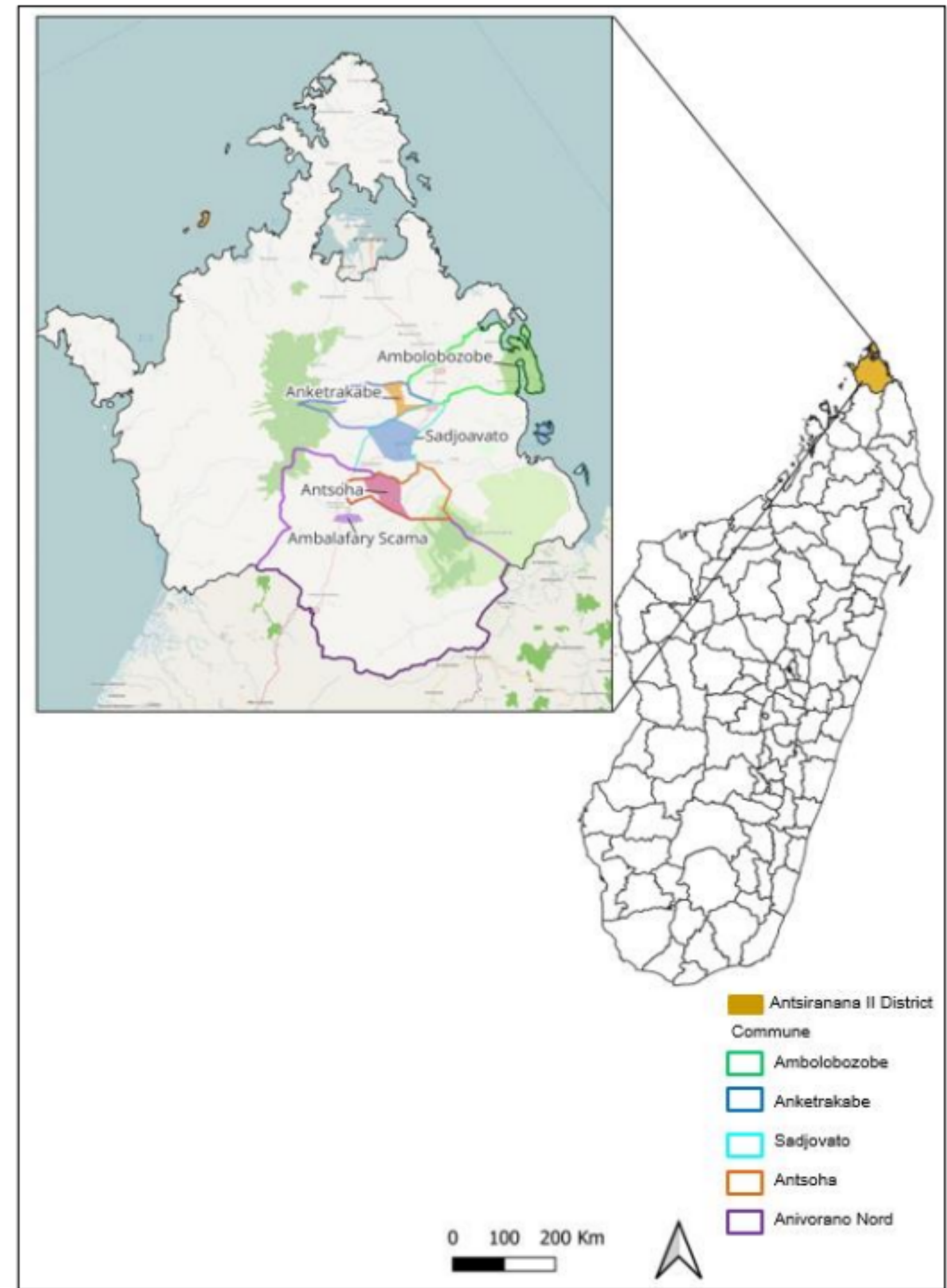
Source: Raharinaivi, 2024

Methods and materials

- Quantitative data: survey data of 492 household interviews,
- Qualitative data: 5 focus groups
- Descriptive analysis
- Probit regression model
- Household Factors in Table 1

Results

- FLR practices in the localities are categorized into forestry, transversal, and agricultural options, with most practices being Indigenous but promoted by the project, except in Ambolobozobe and Antsoha, where no FLR initiatives have been implemented yet (Table 1)
- Composting is identified as a newly adopted practice in the locality of Sadjovato.
- Factors influencing FLR adoption primarily include household income and characteristics, access to training in agricultural ecology, and water scarcity.

Table 2: Determinants of local and promoted FLR practices

Variables	Coef.	St. Err.	z	p-value	[95% Conf Interval]		Sig
Access to agricultural training	2.235	.797	2.80	.005	.672	3.798	***
Group/association belonging	.7	.275	2.55	.011	.161	1.239	**
Household size	.033	.073	0.46	0.644	-.109	.176	
Source of water for crop irrigation	1.661	.517	3.21	.001	.648	2.674	***
The importance of Land Tenure Security	-.809	.254	-3.18	.001	-1.308	-.31	***
Indicators of land degradation	.897	.253	3.54	0	.401	1.393	***
Use of external labor	.390	.315	1.24	0.215	-.226	1.00	
Necessity or urgency to plant trees	1.431	.544	2.63	.008	.365	2.498	***
Geographical situation of the plot	-.014	.263	-0.05	0.956	-.531	.502	
Motivation for gender in FLR practices	-1.795	.309	-5.80	0	-2.401	-1.188	***
The benefit rate of FLR practices	.447	.122	3.67	0	.208	.686	***
Monthly income	0	0	2.24	.025	0	0	**
Distance to the nearest forest	.026	.213	0.13	0.900	-.392	.445	
Familiarity with FLR practices	1.762	.669	2.63	.008	.451	3.073	***
Constant	-3.46	1.269	-2.73	.006	-5.95	-.976	***

Mean dependent var	0.690	SD dependent var	0.463
Pseudo r-squared	0.374	Number of obs	491
Chi-square	227.173	Prob > chi2	0.000
Akaike crit. (AIC)	406.448	Bayesian crit. (BIC)	461.001

Note: ***: significant at 1% Level, **: significant at 5% level, *: significant at 10% level

- Financial incentives, access to training, and income potential are the primary drivers of FLR adoption.
- Adoption has been hindered by high costs and a lack of financial support, particularly in areas like Ambolobozobe and Antsoha.
- The study stresses the need to reduce economic barriers, engage communities, raise environmental awareness, and provide proper training to promote FLR practices.

Table 1 Classification of FLR practices

#				Localities				
FLR-Options	FLR Practices	local practice	F4F promote practice	AMBOLOBOZOBE	ANIVORANO NORD	ANTSOHA	SADJOAVATO	ANKETRAKABE
Forestry Options	Reforestation	X	XX	X	XX	X	XX	XX
	Agroforestry	X	XX	X	XX	X	XX	X
	Tree Planting	X	XX	X	XX	X	XX	XX
	Mangrove	X	X X		XX	X	X	X
Transverse Options	Firewall		X					XX
	Composting		XX				XX	
	Fallow land	X	XX	X		X	X	XX
Agricultural Options	Conservation Agriculture	X		X	X	X		
	Crop rotation		XX		X		X	XX

Conclusion

- Providing targeted support is key to promoting FLR adoption.
- Traditional, locality-specific practices have long existed, despite FLR being a recent concept
- Effective FLR can restore the environment and improve community livelihoods
- Consideration of associative, cohesive, and social factors, including land security, is necessary to achieve FLR objectives in Madagascar