



Determinants of Participation in PES Schemes among Forest Dependent Households in Kenya

Esther Waruingi^{a*}, Robert Mbeche^a, Josiah Ateka^a, Anja Fasse^b, Ulrike Grote^c

^a Department of Agricultural and Resource Economics, Jomo Kenyatta University of Agriculture and Technology, Nairobi, Kenya
^b Hochschule Weihenstephan-Triesdorf University of Applied Sciences, Petersgasse
^c Institute for Environmental Economics and World Trade, Leibniz University Hannover

INTRODUCTION

- Payment for ecosystem services (PES) has been promoted as a means of enhancing conservation and livelihoods (FAO, 2018)
- This follows a backdrop in deforestation levels
- An example of a PES scheme in Kenya is Plantation Livelihood Establishment Scheme (PELIS). (KEFRI, 2014)
- Success of PES depends on local people’s participation

RESEARCH QUESTIONS

- What is the level and nature of forest dependent households?
- What are the determinants of participation in PES schemes?

MATERIALS AND METHODS

- Analysis is grounded on theory of household utility maximization
- Survey done on 900 households in Mount Elgon forest, Kenya between November 2018 and January 2019
- Determinants of participation in PES estimated using Tobit regression
- Regression equation: $Y_i^* = Xi\beta + \varepsilon i$

Where Y_i^* is the intensity of participation and Xi a set of explanatory variables

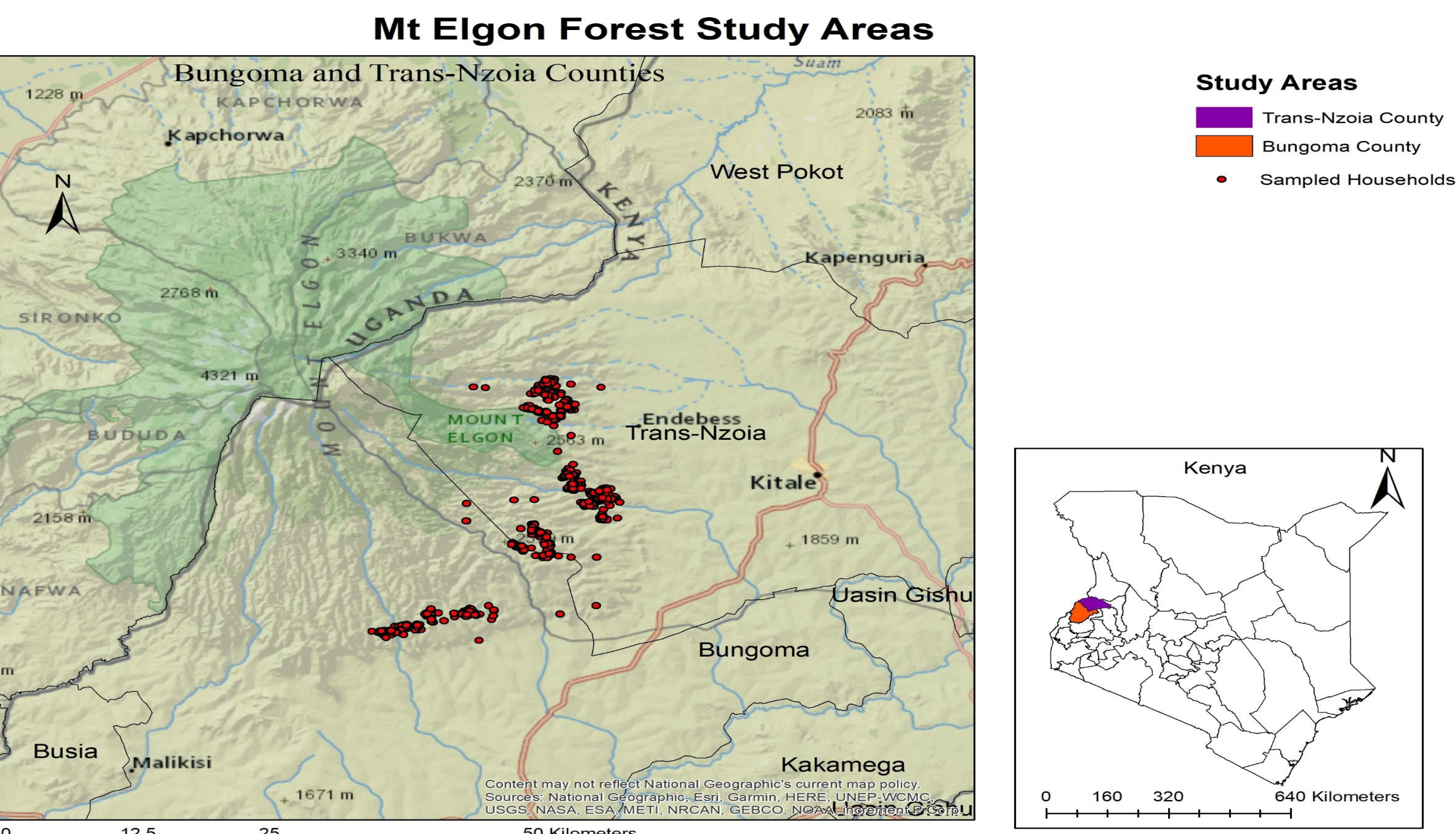


Figure 1: Representation of surveyed households

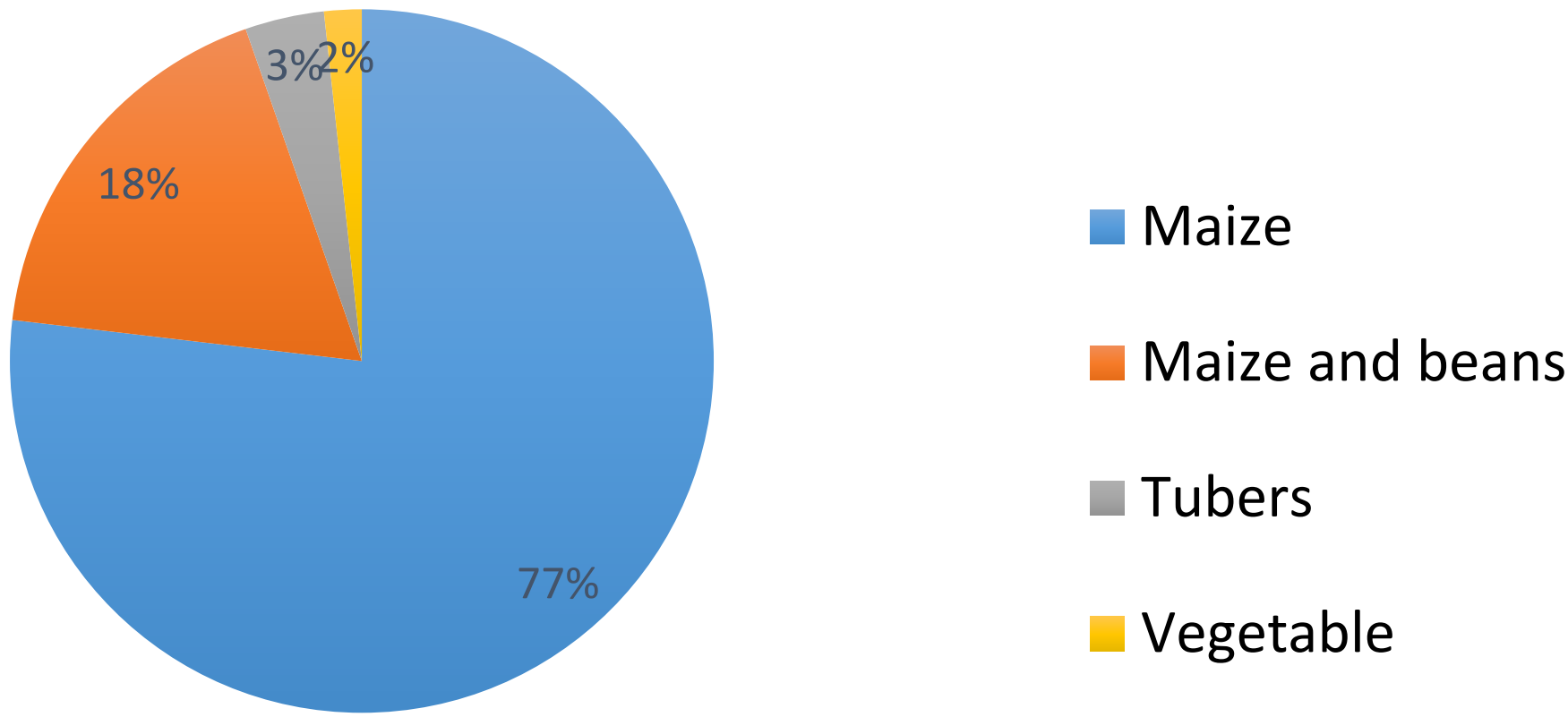
RESULTS AND DISCUSSION

Level and nature of forest dependent households

Variables	Participants 52%		Non-participants 48%		Difference
	Mean	SD	Mean	SD	
Age	45	12.76	48	14.32	3.651
Household size	6.5	2.17	5.8	2.17	-4.316
Land size in acres	2.64	1.76	2.69	1.95	0.398
Yearly expenditure (USD)	1467.056	889.866	1360.799	937.234	-1.762
Off farm income (USD)	474.046	1158.585	616.099	1435.49	1.595
Market distance	3.47	3.02	2.76	2.63	-3.758
Forest Distance	2.57	2.33	2.59	2.40	0.161
Forest user group member	0.92		0.53		-51.33
Access to extension services	0.58		0.44		-4.115
Intensity of participation (%)	49.56	1.74	0		
PELIS income (USD)	221.733	15.432	0		

- Participating households had younger household heads, large household sizes, relatively smaller farm sizes, low off-farm incomes and high yearly expenditure

Distribution of crops planted in PELIS plots



Tobit regression results

Dependent Variable: Intensity of Participation

Variables	Coefficient	P> t
Gender	4.967	0.392
Age	-0.185	0.197
House hold size	1.822**	0.035
Education: Secondary	-2.702	0.491
Education: Tertiary	-16.354	0.215
Asset value	-0.000*	0.079
Forest extraction	4.905	0.172
Membership to FUG	97.691***	0.000
Total land owned in acres	-1.780*	0.078
Membership to native community	8.727*	0.052
Yearly expenditure	-0.000	0.153
Distance to tarmac road	0.590***	0.005
Livestock ownership	-17.415***	0.003
Access to extension services	-5.249	0.158
Constant	-42.569***	0.000

1% sig=***, 5% sig=**, 10% sig=*. Primary education is the reference level

436 left censored observations at intensity <=0

483 uncensored observations 0 right censored observations

SUMMARY

- Household size, land size, asset value, membership to FUG, livestock ownership, distance to tarmac road and membership to native community are indicators of participation in PES



Figure 2: Tree plantations together with crops at the early stages



Figure 3: Grown trees after plantation establishment

CONCLUSION AND RECOMMENDATIONS

- Non-participation among wealthy households implies that participation in PES is a livelihood option for the poor
- Poor participating households are limited by high transaction costs and weak social organizations
- Strengthening social organizations and reduction of transaction costs could enhance participation and increase welfare benefits among households

REFERENCES

- 1.FAO. 2018. The State of the World’s Forests 2018 - Forest pathways to sustainable development. Rome.
2. KEFRI. (2014). Kenya Forest Research Institute. Contribution of PELIS in Increasing Tree Cover and Community Livelihoods in Kenya.

ACKNOWLEDGEMENT

