

# Determinants of Forest Extraction Decisions among Rural Households in Mt Elgon, Kenya

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## BACKGROUND INFORMATION

- Forests provide goods and services such firewood, food and medicinal products (FAO, 2016; Nguyen et al., 2015)
- However, there has been constant degradation of most forest resources
- Understanding the determinants of forest extraction decisions among households is crucial for sustainable forest land use

## RESEARCH QUESTIONS

- How does forest extraction decision vary with social-economic and institutional characteristics
- What are the determinants of forest extraction decisions among rural households

## MATERIALS AND METHODS

- Analysis is based on the theory of household utility maximization
- Survey done on 924 households in Mt Elgon forest, Kenya between November 2018 and January 2019
- Determinants of forest extraction decisions estimated using two-step Heckman model
- Forest extraction decision:  $y_1 = \beta_0 + \beta X_i + \varepsilon$
- Level of forest extraction decision:  $y_2 = \beta_0 + \beta X_i + \varepsilon$
- Where  $y_1$  is forest extraction decision,  $y_2$  is level of forest extraction decision and  $X_i$  is a set of explanatory variables

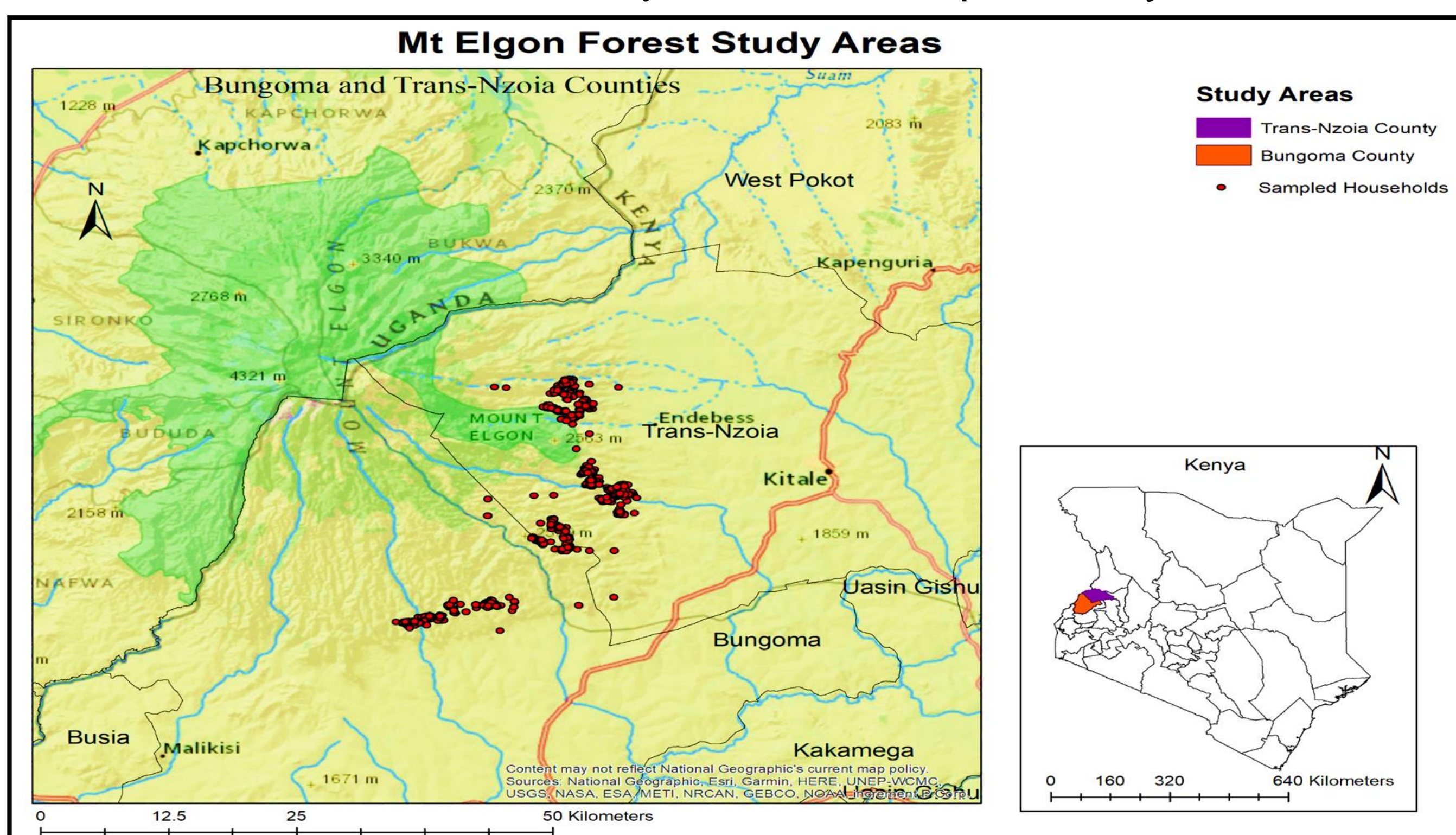


Figure 1: Representation of surveyed households

## RESULTS

Table 1. Main products extracted

Forest products	Number of households	Percentages
Firewood (headload)	571	61.1
Food(wild food and fruits)	294	31.8
Herbal medicine	39	4.2

Table 2: Variation of forest extraction decision by some social economic and institutional characteristics

Characteristics	Participants 49%		Non-participants 51%		Difference
	Mean	SD	Mean	SD	
<b>Variables:</b>					<b>t-value</b>
Age	45.57	13.38	47.22	13.79	2.65
Asset value(USD)	205.443	322.800	366.774	1573.313	4.91
Engagement in farming	0.922		0.872		3.12
Membership in farmer group	0.619		0.495		-0.72
Membership in forest user group	0.615		0.400		3.90



Figure 2: Households carrying firewood and fodder from the forest

Table 3. Two-step Heckman model results on determinants of forest extraction decisions;  $\beta$ -coefficients significant at 1% sig=\*\*\*, 5% sig=\*\* and 10% sig=\* levels are bolded

Variables	1st step(Decision to extract forest products)		2 <sup>nd</sup> step(Level of forest extraction decision)	
	Coefficient	P> t	Coefficient	P> t
Age	<b>-0.009**</b>	0.048	<b>-0.011***</b>	0.000
Distance to market(Km)	<b>-0.095***</b>	0.000	<b>-0.090***</b>	0.000
Distance to all-weather roads(Km)	<b>-0.022***</b>	0.002	<b>-0.015***</b>	0.003
Access to credit	<b>-0.514***</b>	0.007	-0.077	0.431
Membership in a farmer group	0.037	0.198	<b>-0.279*</b>	0.003
Household size	<b>0.054*</b>	0.073	<b>0.474***</b>	0.000
Membership in a forest user group	<b>0.291**</b>	0.039	<b>0.059***</b>	0.003
Assets value	-0.000	0.182	<b>-0.000*</b>	0.068
Shocks value	-0.000	0.152	<b>0.000***</b>	0.012
Education level: Secondary	-0.063	0.159	-0.006	0.181
Farming occupation	0.143	0.230	<b>0.350**</b>	0.016

## SUMMARY

- Of all households (61.1%) extracted firewood, while 31.8% and 4.2% extracted food and medicinal herbs respectively (Table 1)
- Participating households had younger households heads, lower asset value and higher membership in forest user groups
- Age, household sizes, proximity to all-weather roads and access to credit were some of the indicators of forest extraction decisions

## CONCLUSION AND POLICY IMPLICATION

- Non-participation among wealthier households indicates that forest extraction is a mechanism of survival for the poor
- Forest extraction is a coping strategy of shocks suggesting a need of livelihood diversification
- High transaction cost shifts households to forest extraction
- Reduction of transaction costs will promote alternative livelihood sources among poor households

## REFERENCES

- FAO (2016) Global forest resources assessment 2015-how are the world's forest changing? 2<sup>nd</sup> edition, Food and Agriculture Organization in of the United Nations, Rome.
- Nguyen, T., LambDoa, T., D, Hartje., R & Grote, U.(2015). Rural livelihoods and environmental resource dependence in Cambodia. Ecological Economics 120: 282-295

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