



LIVELIHOODS AND SUSTAINABILITY AFTER UGANDA'S FOREST SECTOR GOVERNANCE REFORM

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Motivation for the study

- Improved rural livelihoods and sustainability are among the expected outcomes of forest sector governance reforms
- There is limited empirical evidence of the impact of reforms, particularly at the household level
- There are often trade-offs between achieving favorable livelihood outcomes and sustainable forest management; are there conditions that favor both?

Forest sector reform in Uganda

Motivation for reform

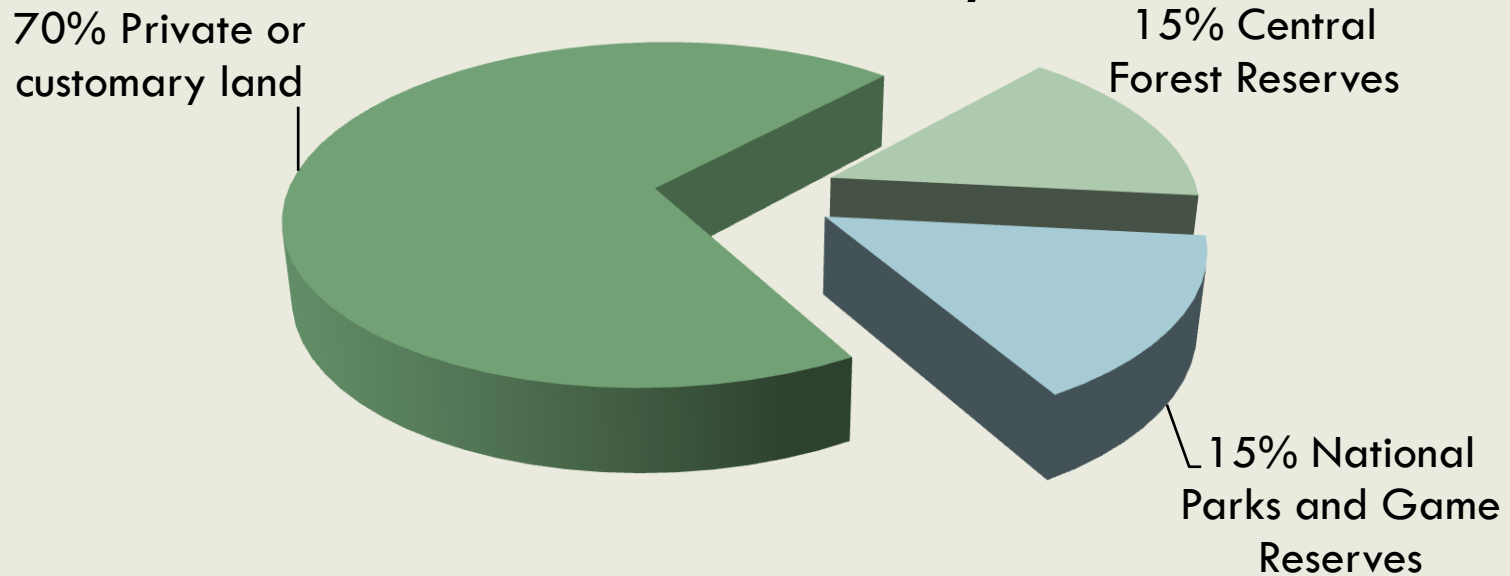
- Government wide decentralization process
- High rates of deforestation
- Corruption in the centralized Forest Department
- Need for coherent forest sector strategy

Process

- Forest Sector Umbrella Support Program 1998-2003
- New policy and legislation (2002/2003)
- Forest Department disbanded and replaced with:
 - District Forestry Service (DFS) (decentralization to local government)
 - National Forestry Authority (NFA) (for profit parastatal)
 - DFS and NFA overseen by Forestry Inspection Division

Pre and post reform forest jurisdiction

Distribution of forest by tenure



Tenure category	Pre-reform jurisdiction	Post-reform jurisdiction
Private or customary land	Forest Department	District Forestry Service
Central Forest Reserves		National Forestry Authority
National Parks and Game Reserves	Uganda Wildlife Authority	

Research design



Attributing causality between reforms and outcomes is a challenge

- Data from before and after the reform
- Counterfactual or control group

Nested research design

- Key informant interviews
- Village level surveys
- Household level surveys

Site selection and sampling

Baseline (WCS 2003)			Follow-up (Jagger 2007)	
4 forest Sites	Purposively selected as representative of forests in Uganda		3 Forest Sites	Purposively selected to maximize institutional variation
46 villages (~12 per site)	Selected using stratified random sample		18 villages (~6 per site)	Selected from WCS villages using stratified random sample
690 households (~15 per village)	Randomly selected from 3 wealth categories identified within each village		540 households (~30 per village)	Randomly selected from within each village



Budongo Forest Site (NFA) →

Bugoma Forest Site (DFS) →

Rwenzori Forest Site →

Characterization of forest sites

	Rwenzori Forest Site (Control Group)	Bugoma Forest Site (Treatment 1)	Budongo Forest Site (Treatment 2)
Governed by:	Uganda Wildlife Authority	District Forestry Service	National Forestry Authority
Forest type	Afromontane	Tropical high	Tropical high
Major forest products for local resource users	Fuel wood Timber Wild foods Ropes Bamboo Medicines	Fuel wood Wild foods Building materials (ropes and poles)	Timber Fuel wood Building materials (ropes and poles) Wild foods Thatch
Major forest products for non-local extraction specialists	<i>Prunus africana</i>	Timber	Rattan

Methods

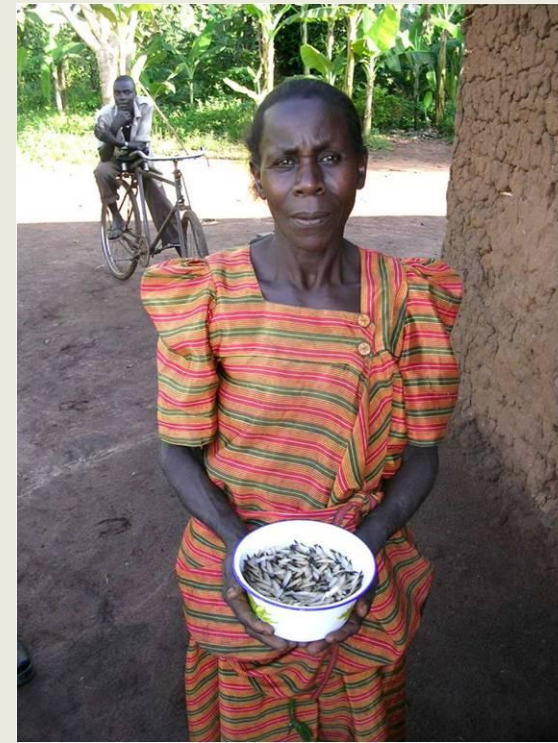
Treatment groups modeled in comparison to control group

- **Livelihood outcomes:** Difference-in-difference estimator
 - Annual household income from forests
 - Annual total household income
 - Share of total annual household income from forests
- **Sustainability outcomes:**
 - Households perceptions of change in forest cover/quality
 - Household participation in activities that contribute to deforestation

Livelihood outcomes for private and customary forests (DFS)

Controlling for household and village level characteristics:

- **Decline in approximately \$10** annual household income from forests
- **Increase of 2%** in share of annual household income from forests
- Forest income and share of income from forests more important for high income quartile households
- Local resource users not engaged in timber production – migrant laborers and timber dealers control value chain



Sustainability outcomes for private and customary forests

- Major decrease in:
 - Area under forest
 - Canopy cover
- Major decrease in:
 - Diversity of tree species
 - Number of large trees in forest
 - Diversity of animal species
- 34% of households cleared forest (avg. of 1.33 acres per household)
- 4% of households harvested timber; Many migrant timber cutters working on contract in the area
- Highest income quartile households most engaged in forest clearing (50%) and timber harvesting (11%)



Interpreting the findings

- The limited effect of the reform on livelihoods is not surprising given constraints facing the District Forest Service
- Local resource users encounter barriers to entering the timber value-chain
- There is limited knowledge in the area of the value of trees
 - Smallholders are allowing non-local extraction specialists to harvest timber trees for free or below market value
- Pressure to clear land to establish secure land rights is negatively affecting forest condition

Policy recommendations (DFS)

- Integrate tree planting, extension and input supply with agricultural extension
- Facilitate District Forestry Officers with transportation
- Shift focus of DFO beyond timber revenue collection to extension, sustainable land management etc.
- Transmission of timber price information to inform smallholders of the value of standing trees
- Develop a mechanism for smallholders to *legally* engage in timber harvesting
- Support small and medium enterprise development to support localized value addition
- Increase smallholder awareness and knowledge of sustainable pole harvesting

Livelihood outcomes for central forest reserve (NFA)

Controlling for household and village level characteristics:

- **Increase of \$44** annual household income from forests
- **Increase of 5%** in share of annual household income from forests
- **Highest** income quartile households have large and significant increases in forest income (**+\$184**)
- **Lowest** income quartile households have significant declines in income from forests (**-\$17**) in forest income
- **Highest** income quartile households have large and significant increases in share of total income from forests (**+32%**)
- **Lowest** income quartile households have significant declines in share of income from forests (**-16%**)

Sustainability outcomes for central forest reserve (NFA)

- Within CFR
 - No major change in forest cover
 - Minor decrease in:
 - Diversity of tree species
 - Number of large trees in forest
- Private and community forests outside of reserve
 - Major declines in forest and canopy cover, tree species and diversity of trees and animals
- 10% of households cleared forest (avg. of 0.73 acres per household)
- 14% of households harvested timber
- Highest income quartile households most engaged in forest clearing (25%) and timber harvesting (40%)



Interpreting the findings

- Large investment in NFA and increased presence around reserve correlated with illegal activity
 - Low salaries for NFA don't favor enforcement
 - Evidence of collusion between NFA staff and timber producers
- Engaging in the timber business requires capital and networks - the poor are excluded
- Change in forest cover and quality consistent with forest disturbance from selective logging which has negative medium term ecological implications

Policy recommendations (NFA)

- Re-evaluate contract system and benefits for NFA contractors to reduce extraction of bribes and side payments from timber producers and return focus to enforcement
- Monitor distribution of benefits associated with forest products within communities
- Persist with collaborative forest management agreements (cf. control group site)
- Provide legal mechanism for selective harvesting of timber and poles by local resource users
- Invest in tree planting on private and customary lands surrounding reserve (cf. control group site)

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