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# THE SOCIO-ECONOMIC STUDY

## FOR THE DEVELOPMENT OF A PAYMENT FOR WATERSHED SERVICES SCHEME AROUND RWENZORI MOUNTAINS NATIONAL PARK, UGANDA

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THE SUMMARISED VERSION - JUNE, 2018



## **PREAMBLE**

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This is an abridged version of the socio-economic baseline report that was conducted in order to inform the design and monitoring of the PWS on the Nyamwamba and Mubuku watersheds of the Rwenzori Mountains National Park.

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# INTRODUCTION

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## DEFORESTATION AND FOREST DEGRADATION COUPLED WITH UNSUSTAINABLE LAND USE PRACTICES HAVE CAUSED SOIL EROSION IN THE COMMUNITIES NEIGHBORING THE RWENZORI MOUNTAINS NATIONAL PARK.

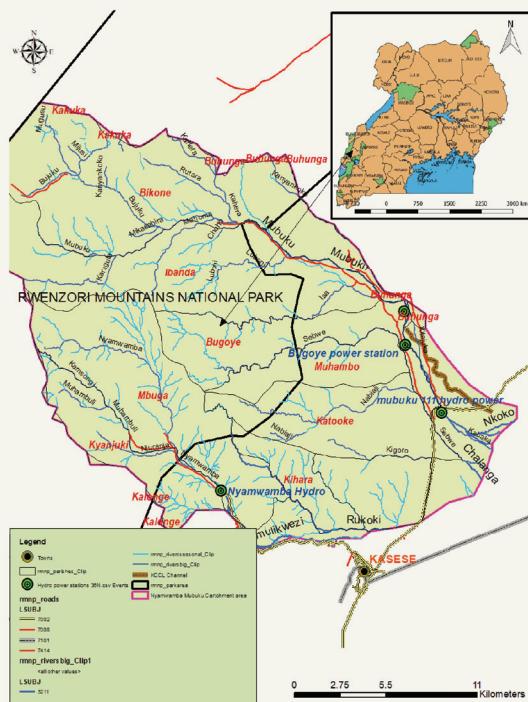
This has not only led to reduced soil fertility but also increased sedimentation in the streams and rivers, hence clogging the water ways. The degraded lands also have less ability to retain water, thus leading to increased occurrences of floods. These challenges affect the local communities, hydro power plants such as Mubuku I, Mubuku II and Mubuku III, and mining industries including Hima cement and Kilembe mines.

As a means of addressing the mentioned challenges, WWF Uganda Country Office with support from other partners are developing a Payment for Water Service (PWS) scheme in the Mubuku-Nyamwamba catchment. This is an incentive based mechanism in which the parties affected by the sedimentation of the Mubuku and Nyamwamba rivers (industries downstream) will voluntarily pay upstream farmers whose practices greatly contribute to sedimentation of the rivers, to improve land management practices. The practices are expected to improve soil fertility and crop yields, reduce soil erosion on the steep slopes and improve the quality of water as well as stabilize the flow of the water in the rivers.

To inform the design of the PWS scheme, a hydrological and agronomic study was implemented which identified hotspot areas. These hot spot areas were the focus for the socio-economic survey, which aimed at informing the PWS architecture and implementation by providing: a socio-economic profile of the households; a baseline on land use management; and insights into costs of some land management interventions. The information was obtained through review of literature and use of various survey techniques, including direct observation, household questionnaire surveys, Key Informant Interviews (KII) and Focus Group Discussions (FGDs).

# THE STUDY AREA

The study area constituted of communities whose land use practices greatly lead to sedimentation of the rivers, termed as the hot spot area (Figure 1). This area was determined based on the hydrological perspective of the hydro/agronomy study. This area included the Mubuku and Nyamwamba catchment, from which representative parishes and villages were selected. In Mubuku catchment, Bugoye, Ibanda, Katooke, Muhambo, and Bikone parishes were selected, which constituted 13 villages and 2109 households. In Nyamwamba catchment, Mbunga, Kyanjuki, Nyakazinga parishes were selected, constituting of 6 villages and 1024 households. From the identified villages, 253 households were selected (170 from Mubuku and 83 from Nyamwamba) and the household heads were the targeted respondents in the individual households.



**Figure 1:** Mubuku-Nyamwamba catchment showing location of upstream communities and downstream industrial water users

# INFORMATION GATHERING AND SYNTHESIS

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A semi-structured questionnaire was administered to the household heads. The thematic areas included: demographics, socio-economic characteristics, income and expenditure lines, access to and use of land and other land-based resources, farming systems, sustainable land management practices, access to financial services, investments and incentivization. The information was analyzed through descriptive statistics.

## THE MAIN FINDINGS

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### Demographics and livelihoods

The households represent an ethnically homogeneous population, the Bakonzo constituting 91% while the other ethnicities included the Banyabindi, Batooro, Bafumbira, and Banyankore. The study population was skewed with 46% of the population below the age of 15 years. The women constituted 49% of the population and 7.5% of the household heads that were interviewed. The average household size was 6 persons, slightly higher than the 5 persons per household reported for Kasese district (UBOS, 2009). Approximately 60% of the household heads had attended primary level education. Majority of the respondents were involved in peasantry farming as the main livelihood activity (Figure 2).

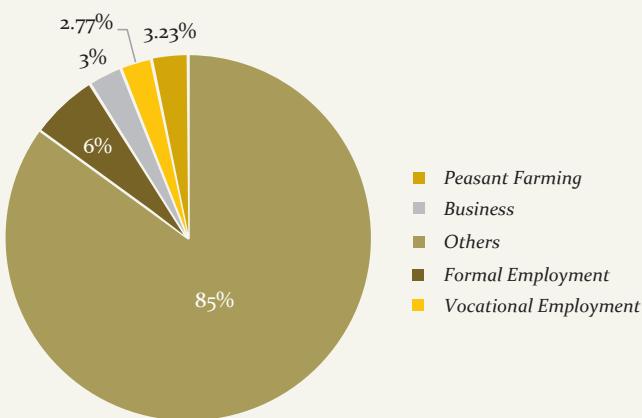


Figure 2: Main livelihood activities

## Access to and use of land

The land tenure regime is predominantly customary ownership. The average land holding was 2-3 plots per household, with an estimated area of 2.4 acres per plot. Given the terrain of the area, most of the plots (42%) are located on steep slopes, 36% and 22% on medium and low slopes respectively. About half of the plots were acquired through some sort of commercial transaction (approx. USD 458 per acre). There were a few (only 3% of the plots) reported land conflicts, with 15 cases of boundary conflicts and 5 cases of trespass.

The agricultural plots are cultivated mainly by the owners, with limited occurrences of renting, approximated at less than 10% of the plots.

The major crops grown include coffee, cassava, bananas and beans. Out of the total land cultivated, 43% of the acreage is occupied by these crops as monocrops, 47 % had them as mixed crops, while 10% had other crops.

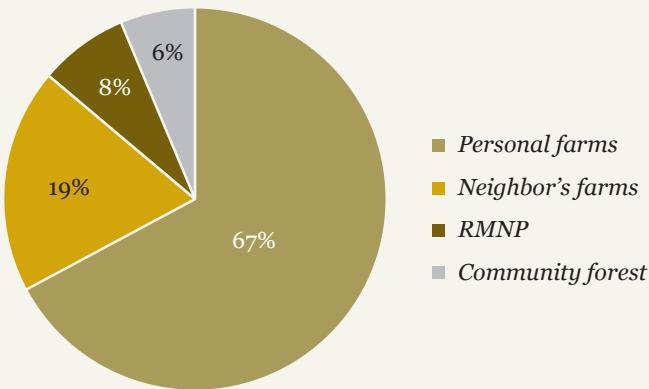
Households reported poor yields especially for three of the four major crops namely: coffee, banana and beans. This was mainly (44%) attributed to climate variability (temperatures and rainfall), pests (38%) and infertile soils (10%). Other causes of poor yields included poor farming methods (4%), poor planting material (3%) and crop damage by wildlife (1%).



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## Access to and use of tree-based resources

The area is characterized by 4 main land uses including agricultural lands, private forest patches, Ruboni community forest and Mt. Rwenzori National Park (MRNP). About 59% of the agricultural plots were reported to have trees either in a scattered form or as boundary trees. The existing vegetation is a major source of tree products for the community, with private farms providing about 67% of these products. About 17% of the households reported to purchase the tree products without clear knowledge of the source. The proportionate share of the known sources for the tree products is presented in Figure 3.



**Figure 3:** Sources of tree products



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The communities depend on these tree products mainly for energy (fuelwood), housing (building poles), medicine (herbs) and stakes for crops (mainly beans) (Table 1). These products are mainly extracted for subsistence use, while a few households extract fuelwood and building poles for income generation.

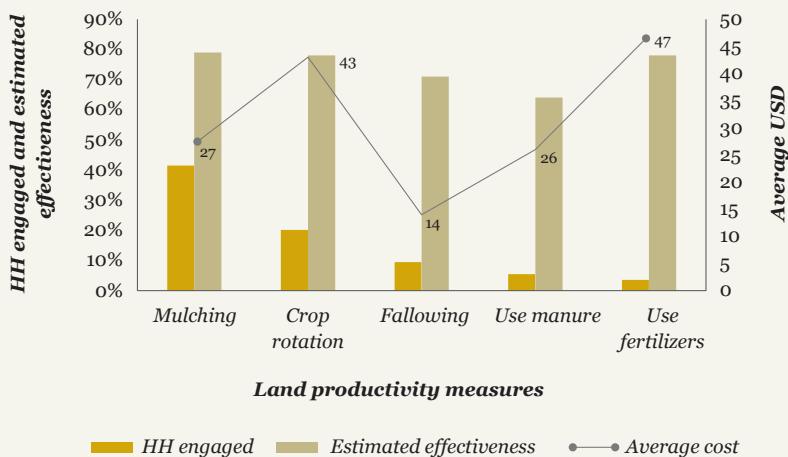
*Table 1: Tree products used by the communities*

<b>Source</b>	<b>Product</b>					
	<i>Firewood</i>	<i>Building poles</i>	<i>Charcoal</i>	<i>Bean stakes</i>	<i>Herbs</i>	<i>Craft materials</i>
Personal	64	39.7	30.8	77.8	42.9	50
Neighbors	12.3	23.3	11.5		34.3	
Park	5.5	2.7		11.1	20	50
Communal	5.9	6.8			2.9	
Purchased	12.3	27.4	57.6	11.1		

### Land management practices

#### *Enhancement of Soil Productivity*

The land productivity enhancement activities already practiced in the area were identified including mulching, crop rotation, fallowing, use of manure and fertilizers. Majority (62%) of the households practiced at least one land productivity measure. Although some households were observed to practice more than one activity on a given piece of land, the investigations enumerated the number of activities implemented by each household. The activities were assessed for level of adoption (% of households), perceived effectiveness and average implementation cost (Figure 4). The households rated effectiveness of the various practices attributing their score to a number of reasons including; (i) enhancing soil fertility, (ii) improving water retention, and (iii) preventing weed growth.



**Figure 4:** Land productivity measures



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Use of fertilizers was the least adopted activity by the households and the most costly, crop rotation was the second most costly practice but also the second most adopted, while fallowing was the least costly practice but adopted by only 9% of the households. Mulching was the most adopted practice and also reported to be fairly costly.

The respondents that reported no engagement with any of the land productivity practices attributed this to many factors as shown in Table 2 below.

*Table 2: Motivations and hindrances to adopting land productivity measures*

<b>Activity</b>	<b>Motivational Factors for HH Engaged</b>	<b>Hindrances for HH not Engaged</b>
Mulching	<ul style="list-style-type: none"> <li>- Increase manure content in the soil and thus increase crop yields</li> <li>- Soil erosion control</li> <li>- Increase water retention</li> </ul>	<ul style="list-style-type: none"> <li>- Access to mulches</li> <li>- Costly in terms of time and labour</li> <li>- Habour pests</li> <li>- Easily washed away by floods</li> </ul>
Crop rotation	<ul style="list-style-type: none"> <li>- Increase manure content in the soil and thus increase crop yields</li> <li>- Soil erosion control</li> <li>- Pest control</li> </ul>	<ul style="list-style-type: none"> <li>- Labor intensity in changing cropping cycle</li> <li>- Climate variability</li> <li>- Poor soils</li> <li>- Costly</li> </ul>
Manure	Pest control	<ul style="list-style-type: none"> <li>- Costly</li> <li>- Susceptibility to being washed away by heavy rains</li> <li>- Susceptibility to drying up</li> </ul>
Fertilizers		Costs Availability

## Practices for controlling soil erosion

The soil erosion control measures practiced by the communities were investigated and it was revealed that some of the households implemented trenches, terracing , tree planting , grass strips and mulching . It is however noted that often tree planting is motivated by many other factors including access to tree products for income and subsistence use. Soil erosion control is here appreciated as a co-benefit for this activity. Out of the total area subjected to these soil erosion control practices, trenches, mulching and tree planting (agroforestry) were the most widespread practices, while terracing, grass strips and fallowing covered the most extended areas (hectares per household).

Regarding the implementation of the different activities, the associated costs ranged between USD 15 and USD 25 per acre for the construction and maintenance of trenches and terraces. The households that did not participate in particular soil control measures cited reasons as indicated in table 3.

Table 3: Hindrances to practicing soil erosion control measures

<b>Soil erosion practice</b>	<b>Hindrances to engagement (3 top ranked)</b>
Trenches	Time consuming Establishment and maintenance costs are high Easily filled up with water leading to landslides
Terraces	Washed away by heavy rains Establishment and maintenance costs are high
Tree Planting (Agroforestry)	Expensive to get seeds and seedlings Susceptibility to drought Trees take long to mature
Mulching	Time consuming Maintenance costs are high Habors pests

## **Management of Water Resources**

The water resources in the community are utilized in an open access manner with households participating in Water User Groups (WUGs). Some of the households are not aware of the existence, roles, nature and identity of the WUGs. However, a good proportion of the households that do not belong to any water user group expressed interest in participating in the WUGs. Among the suggested benefits, these households were mainly motivated by easy access to safe/clean water and getting support for environment/water conservation as well as sustainable land management practices.

## **Financial Sources and Expenditure**

Farming is the major livelihood activity. Crop and livestock sales form the major source of income for the communities. Other sources of income include provision of casual labor and formal employment. The other sources of finances included; Saving and Credit Cooperative Organization (SACCOs), commercial banks, money lenders and microfinance institutions.

The major expenditure lines for income obtained are paying for food (92%), education bills (78%), medical bills (78%) and repaying loans (26%). On the other hand, access to loans was mainly driven by the need to pay for school fees (64% of transactions), for business investment (16%), health care (6%), housing improvement (4%), food, farm inputs, livestock purchase (3% each), and land purchase (2%).

There were several challenges associated with the different financial services. The main challenge with local money lenders was the short payback period (weekly), while micro finance institutions were not easily accessible and their repayment procedures together with the commercial banks were laborious. SACCOs were faced with challenges of limited capital to sustain the business, misappropriation and misunderstandings in groups. High interest rates were a common challenge for all of the financial service.

# INCENTIVISATION AND INSTITUTIONAL ARRANGEMENTS FOR THE PWS SCHEME

## Priority land management activities

When the respondents were asked to prioritize three land management activities that they would implement in the PWS scheme, all the major SLM practices that are currently implemented in the community featured within their options. Majority of the respondents chose trenches as their first priority, while tree planting was preferred by the majority as the second and third priority (Figure 5).

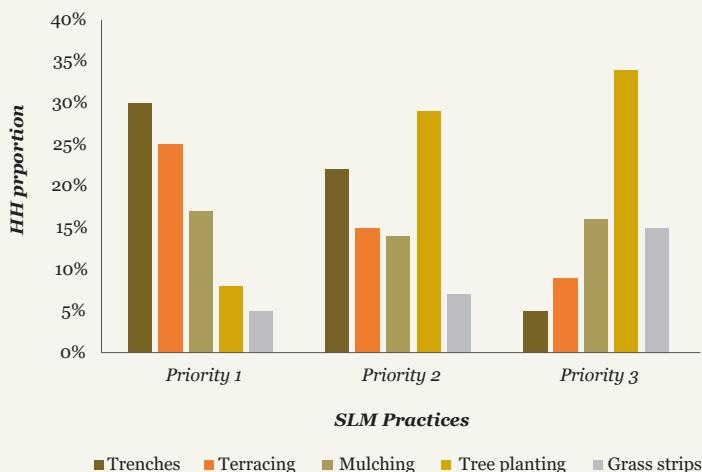
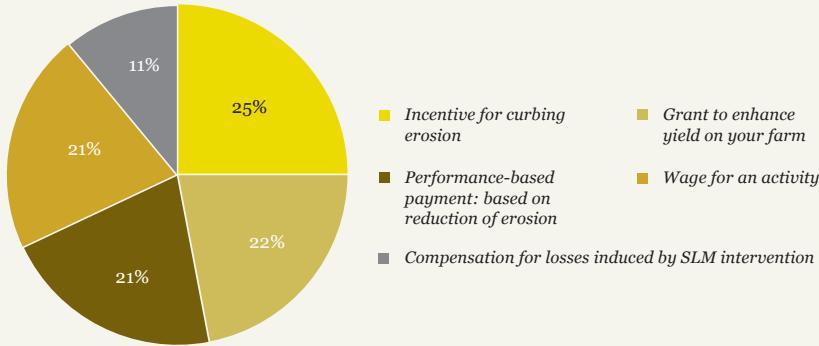
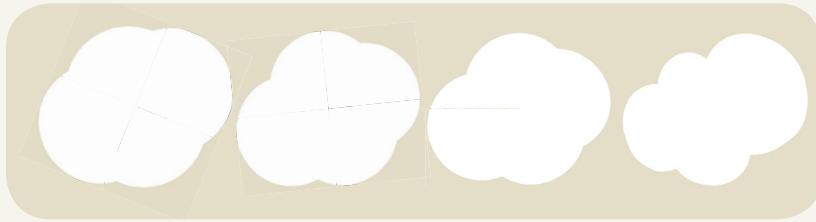


Figure 5: Prioritized Sustainable land management activities

## Perception about the incentivization

Given that incentivization under PWS is performance-based, the respondents were provided with five options for which they were to choose what they would best associate the payments provided to them once they were involved in implementation of SLM practices. The options with relatively equal distribution of responses included; (i) facilitation for activities to curb soil erosion (ii) grant to enhance yield on farm (iii) performance-based payment for reduced erosion and (iv) wage for an activity as shown in Figure 7. Compensation for losses induced by SLM intervention was the least preferred option.



**Figure 6:** Community perception about incentivization

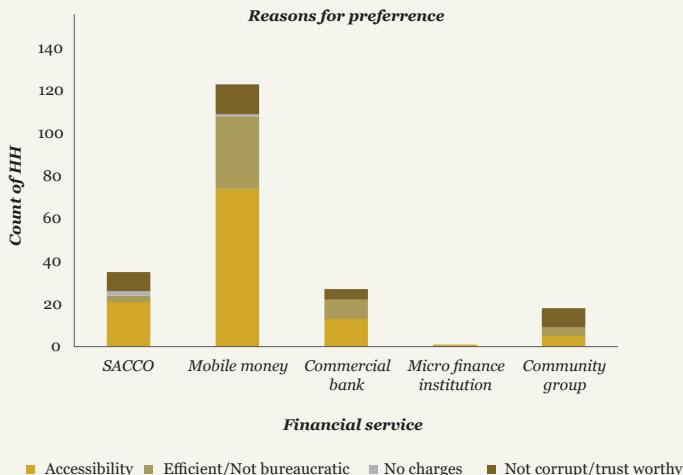
### Institutional Set Up Options for the Incentive Scheme

**Decision Makers:** The households (land owners/farmers) deem themselves the primary decision makers for interventions that should be undertaken, as well as for the implementation of the activities. Other decision makers deemed appropriate in guiding the implementation of activities included WUGs, Extension workers, NGOs and community based organizations.

**Nature of payments:** Cash payment was the most preferred nature of payment by majority (77%) of the households. This was followed by in-kind payments as well as a mixed package of cash and in-kind. Preference of cash payments was due to reliability with limited risks of embezzlement and flexibility in choice of use as compared to in-kind payments. However, there were some households (21%) that preferred in-kind payments mentioning that cash was susceptible to fraud and could easily be misused. The in-kind payments included livestock, farm tools, farm inputs, and household equipment such as water tanks and solar systems. Those who preferred both cash and in-kind were targeting equipment to carryout land management activities and money to pay for the labour force, buy farm inputs and cater for other household needs.

## The preferred mode of payment

If households were to receive payments, majority (59%) preferred receiving money via mobile money. Other preferred channels included SACCOs (16%), commercial banks (15%), community groups (15%) and microfinance institutions (1%). The choices were mainly attributed to accessibility, efficiency, limited bureaucracy and limited risk for corruption (Figure 7).



**Figure 7:** Reasons for preferred mode of payment

## Institutional arrangements for the incentive scheme

While institutional arrangements are important for the successful design and implementation of a PWS scheme, monitoring of the SLM activities was the main focus during this investigation. Village leaders/members of the Local Council committee were the most preferred (59%) actors for monitoring the activities followed by local government (16%), international NGO (15%) and local NGO (8%). The high preference for local council was attributed to their residence status and social capital built overtime. These individuals are usually known and trusted, and it is easier for village communities to sanction and hold them accountable, than the (more bureaucratic) district or sub-county leaders and civil servants. 15% thought that an international NGOs would equally be ideal because they are not corrupt and they are well knowledgeable and connected.

# CONCLUSIONS

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- The common tenure system is customary with average land holdings of 5.3 acres. Most of the plots are on steep slopes, on which the major crops grown are coffee, bananas, cassava and beans in a mixed cropping system.
- Tree products are mainly obtained from private farms/plots on which trees are found mixed with crops. Major tree products accessed are fuel wood and building materials for subsistence use.
- The major land management practices implemented are trenches, mulching, tree planting and terraces to reduce soil erosion and increase crop productivity. Mulching may be more affordable though the practice harbors pests. Trees are susceptible to drought, terraces are easily washed away by rains and trenches are expensive to maintain.
- The land management practices currently implemented by some of the community members were identified as the desired SLM options to be promoted under the scheme. This would enable a proportion of the community to implement these activities in a rationalized manner. The landowners deem themselves as the primary decision makers for the SLM interventions.
- The incentives to be received during the PWS were perceived as (i) facilitation for activities to curb soil erosion (ii) grant to enhance yield on farm (iii) performance-based payment for reduced erosion and (iv) wage for an activity.
- For households to take part in sustainable land management activities, the preferred nature of payment is cash due to reliability with limited risks of embezzlement, while the preferred mode of payment is mobile money due to accessibility and efficiency.
- Village leaders/members of the Local Council committee were the most preferred institution for monitoring the SLM activities. The other institutions included local government, international and local NGOs.



## REPORT

## SOIL PRODUCTIVITY ENHANCEMENT

**62%** of the households practiced at least one land productivity measure

## DEMOGRAPHICS AND LIVELIHOODS

**85%** of the respondents were involved in peasantry farming as the main livelihood activity



## NATURE OF PAYMENTS

**77%** of the households preferred cash as the nature of reward

## THE PREFERRED MODE OF PAYMENT

**59%** of the households preferred receiving money via mobile money if they were to receive cash payments



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