
Manafwa Watershed Restoration (MWARES) Project in Bududa District, Eastern Uganda

Baseline Survey Report



Compiled by

MWARES project M&E Officer with
technical inputs from
Africa2000Network Uganda (A2N),
Tree Adoption Uganda (TAU),
Kyambogo University,
Makerere University and
Wageningen Environmental Research
(WENR)



June 2020

The cover Picture is of the only motorable road connecting Ibokho village to the world. The community collaborated and dug this road after attending initial project sensitization workshops and learned about the guiding principles of the PIP Approach: Empowerment, Integration, Collaboration.

Source: Baseline Picture

Acknowledgments

This baseline report is the product of contributions from different stakeholders. The MWARES project team therefore extends her appreciation to the different stakeholders for their different contributions.

Specifically, our appreciations go to the following entities:

Government officials from Bududa and Namisindwa districts, the sub county officials of Bukalasi, Bushiyi, Bushaki and Tsekululu, the Local Council one Leadership of the villages where the survey was conducted.

We also acknowledge the unreserved participation of the respondents who offered valuable information and time that made the writing of this report possible, particularly the Innovative Farmers from respective villages who offered to guide the research team during the data collection exercise.

The research team further acknowledges the support offered by the MWARES project team right from the design of the study to the production of this report.

Finally, Dr. Aad Kessler, Ms. Laurie Van Reemst, Dr. Kyeswa Christopher, Mr. Opedes Hosea, Prof Mugagga Frank, Dr, Mutekanga Fiona, Dr. Batte Charles, Ms. Misanya Doreen, Mr. Walukano Wilberforce, Ms. Kabuye Margaret, Mr. Wesonga Yusuf, Mr. Balyegisawa Joseph, Ms. Nandhego Eseri and Mr. Tusse Livingstone, kindly accept our humble gratitude for the technical support.

Table of Content

Acknowledgments	3
Table of Content	4
List of Abbreviations	6
Glossary	7
Executive Summary	8
1. INTRODUCTION AND BACKGROUND	9
1.1 Project Summary.....	9
1.2 The Baseline Study	10
1.3 Scope of the Baseline Study.....	10
2. BASELINE STUDY METHODOLOGY	11
2.1 Study Design.....	11
2.2 Sample size and sample Selection	11
2.3 Data Collection Process.....	12
2.3.1 Study tools and data collection technology.....	12
2.3.2 Human Resources	12
2.3.3 Pre-testing and correction of study tools	12
2.3.4 Administering research tools	12
2.3.5 Quality Assurance:	12
2.3.6 Ethical Principles	13
2.4 Data Management	13
2.4.1 Data Download, Cleaning and Export	13
2.4.2 Data Analysis	13
2.5 Key Assumptions and Limitation in the study.....	13
3. BASELINE SURVEY FINDINGS	14
3.1. Introduction	14
3.1.1 Demographic Characteristics of Respondents	14

3.1.2 Land Ownership and Use	15
3.1.3 Food Security	15
3.2 Outcome 1.1 - Farmers intrinsically motivated to invest in resilient farming and PIP activities.....	17
Indicator 1.1a: % of farmers using at least 5 or more recommended soil/water management practices.....	17
Indicator 1.1b: % of farmers using at least 5 or more recommended agronomic practices in their farmland.....	20
Indicator 1.1c: % of farmers engaged in alternative livelihood activities other than farming.	22
3.3 Outcome 1.2 - Enhanced collaboration in households and villages for good stewardship and improved livelihoods.....	24
Indicator 1.2a: % of villages engaged in collaboration activities for good stewardship and improved livelihoods.	24
Indicator 1.2b: % and # of farmers whose spouses are involved in decision-making on good stewardship and livelihood choices.	26
3.4 Outcome 2.1 - More environmental awareness and action in the villages, especially by youth	27
Indicator 2.1a: % of farmers (farming households) knowledgeable on at least 3 or more environmental conservation and restoration practices.	27
Indicator 2.1b: % of farmers practicing at least 3 or more environmental conservation and restoration methods.	31
3.5 Outcome 2.2 - Collective action is undertaken in the villages to conserve and restore natural resources.....	36
Indicator 2.2a: % of villages & schools with collective actions plans to conserve and restore natural resources.....	36
Indicator 2.2b: % of villages/schools implementing collective actions to conserve and restore natural resources.	36
3.6 Outcome 3.1 - Stakeholders in the watershed are willing and ready for upscaling to other areas. 38	
Indicator 3.1a: # of stakeholders in Manafwa watershed implementing watershed-vision action plans.....	38
Indicator 3.1b: # of stakeholders in Manafwa watershed with watershed-vision action plans in their strategic plans.....	38
3.7 Outcome 3.2 - Evidence is available on how PIP fosters resilience-based stewardship of watersheds.....	39
Indicator 3.2a: # of evidences that demonstrate how PIP fosters resilience-based stewardship of the watersheds.....	39

4. OTHER ISSUES.....	40
5. CONCLUSIONS.....	41
6. RECOMMENDATIONS	42
7. REFERENCES	43
8. APPENDICES	44
Appendix 4.1: MWARES project KPIs Baseline Values.....	44
Appendix 4.2: The Welt Hunger Hilfe Sampling Table.....	45
Appendix 4.3: Baseline Study Sample Frame.....	47
Appendix 4.4: Household Questionnaire.....	48
Appendix 5: Community Meeting Guide	57
Appendix 6: Key Informant Interview Guide	58

List of Abbreviations

DAO	District Agricultural Officer
DCAO	Deputy Chief Administrative Officer
DEO	District Natural Resources Officer
DP	District Planner
DPO	District Production Officer
FP	Family Planning
IGA	Income Generating Activity
IUCN	International Union for Conservation of Nature
KIIs	Key Informant interviews
LC	Local Council
MoU	Memorandum of Understanding
MWARES	Manafwa Watershed Restoration Project
PAPI	Paper Assisted Personal Interviewing
PIP	“Integrated Farm Planning”
RA	Research Assistant
UWA	Uganda Wildlife Authority
VSLA	Village Savings and Loan Associations

Glossary

This section provides main working definitions and descriptions of key terms used in MWARES project and these terms include;

- i). **Intervention Villages:** These are villages or communities where the MWARES project is being implemented in Bududa district. These villages or communities include: Bushaki, Munyende, Matuwa, Elgon NP, Ibokho and Nekoshe.
- ii). **Control Villages:** These are villages or communities which were sampled from Namisindwa district, Tsekululu Sub County as counter factual villages for purpose of comparison with the intervention villages to establish the causal effect relationship between the project activities and the outcomes or changes being observed in the intervention communities. These villages included Sibanga and Nabitere.
- iii). **Bought land:** This is the land that a farmer or household purchased using his or her money. This land is not customarily owned or inherited by the study respondent (here referred to household head) from his/her parents or clan.
- iv). **Rented land:** This is the piece of land that a household or a farmer hires from another person for purposes of agriculture or any other economic activity.
- v). **Forest/National Park land:** This refers to land owned or under the protection of Mt. Elgon National Park. Part of this land may or may not be in use by farmers in the surrounding communities under a memorandum of understanding (MOU) with Uganda Wildlife Authority, but sometimes without the consent of UWA.
- vi). **PIP “Integrated Farm Planning” Approach:** This is a sustainable development approach that motivates and builds the capacity of smallholder farmers to experiment with all kinds of integrated practices, to learn from others, and to undertake collective action to scale-up resilient farming village-wide, and ultimately attain sustainable development. (Kessler, Reemst, & Nsabimana, 2018).
- vii). **Innovative Farmers:** Also referred to as “PIs” are the first set of farmers who were selected from each target village and are trained on the PIP approach by the Junior Agronomists. The PIs later train other farmers on the PIP approach. These second set of farmers later form the first-generation PIP farmers (Kessler, Reemst, & Nsabimana, 2018).
- viii). **PIP Farmers:** These are sets of subsequent farmers who are trained on the PIP approach by PIs/innovative farmers with support from Junior Agronomist (Kessler, Reemst, & Nsabimana, 2018).
- ix). **Household Action Plan:** This refers to a series of short and long-term activities, usually one to three or more years plan that the household intends to implement in order to realise a certain set of objectives or goals. These plans include activity duration, schedules, resources required, sources of these resources, time frames, responsible person etc. (Kessler, Reemst, & Nsabimana, 2018).

Executive Summary

The MWARES project works in the Bududa district in Eastern Uganda. The project goal is to restore resilience and stimulate stewardship of the Manafwa Watershed. Its key outcomes include: achieving intrinsic motivation among household farmers to invest in resilient farming and PIP activities; collaboration in villages for good stewardship and improved livelihoods; environmental awareness and action in the villages, especially by the youth; collective action in the villages to restore and conserve natural resources; stakeholders in the watershed willing and ready for upscaling to other areas; and attaining evidence on how PIP approach fosters resilience-based stewardship of watersheds. To benchmark on these outcomes, a baseline survey was conducted to collect reference information that will allow for a before and after comparison of the outcomes in subsequent assessments (mid-term and end-line evaluations).

A quasi-experimental study design was deployed. The survey targeted and sampled farmers from six villages (Bushaki, Munyende, Matuwa, Elgon NP, Ibokho and Nekoshe) referred to as **intervention villages** where the project is being implemented and Sibanga and Nabitere in Namisindwa district that are **control villages**. Data was collected using both qualitative and quantitative methods. The study used household surveys to interview 328 sampled households (of which 248 from intervention villages) and Community Meetings with selected farmers (25-30) in each village. Quantitative data was analyzed using Pivot tables while qualitative data was analyzed using themes, quotations and explanations, which were triangulated with the quantitative data.

On intrinsic motivation to invest on resilient farming, 32% of farmers interviewed were practicing at least 5 or more recommended soil/water management practices, while 47% were using at least 5 or more recommended agronomic practices on their farmland. Only 38% of farmers interviewed reported having alternative livelihood alternatives besides farming. There were no villages/schools that reported engaging in collaborative activities for good stewardship and improved livelihoods. However, 59% of the farmers interviewed indicated that their spouses were involved in decision making on good stewardship and livelihood choices. Forty-two (42%) of farmers interviewed were knowledgeable of at least 3 or more environmental conservation and restoration practices while only 18% were practicing at least 3 or more of these practices. The survey further revealed that there were no collective actions in place by any village or school to conserve natural resources. Though the stakeholders in the Manafwa watershed indicated that they had undertaken some activities towards restoration and conservation of the watershed, these activities were not part of a broader action plan towards restoration of the watershed. All the stakeholders interviewed indicated willingness to be part of the Manafwa watershed platform and pledged to contribute to its functioning to restore and conserve the Manafwa watershed.

Bududa is an agricultural-based district and all efforts of the project intervention should focus on improving production and productivity of the area through adaptation of sustainable agricultural and environmental management practices. This will include building capacity of farmers to restore, conserve the environment and improve resilience of farmers and the environment through improved soil, water and agronomic practices using collaborative approaches within households and among community members while forging partnership with other stakeholders within the watershed. Attention of relevant stakeholders should also be drawn to the social issues such as teenage pregnancies, early marriages and high school dropout rates that have been found to be rampant in the communities.

I. INTRODUCTION AND BACKGROUND

I.1 Project Summary

The Manafwa Watershed Restoration and Stewardship (MWARES) Project is a 4-year project that started in June 2019 and is being initially implemented in three sub counties and six villages in Bududa district which forms the upstream of the Manafwa watershed. The three sub counties include Bukalasi, Bushiyi and Bushika. The six villages include Ibokho and Nekoshe in Bukalasi Sub County, Matuwa and Elgon in Bushiyi Sub County and Munyende and Bushaki in Bushika Sub County. The project is being implemented by a consortium of five partners that include Wageningen University, Makerere University, Kyambogo University, Africa 2000 Network Uganda and Tree Adoption Uganda.

The project goal is to restore resilience and stimulate stewardship of the Manafwa Watershed, with the following specific objectives:

1. To lay a solid foundation for resilient farming, with motivated people and healthy land.
2. To achieve good stewardship of natural resources in the villages and in the National Park
3. To create the enabling environment for further up scaling of resilience-based stewardship.

By 2022, the project is expected to have contributed to the achievements of the following outcomes in its intervention communities:

- Outcome 1.1: Farmers are intrinsically motivated to invest in resilient farming and PIP activities.
- Outcome 1.2: Enhanced collaboration in villages for good stewardship and improved livelihoods
- Outcome 2.1: More environmental awareness and action in the villages
- Outcome 2.2: Collective action in the villages to restore and conserve natural resources.
- Outcome 3.1: Stakeholders in the watershed are willing and ready for upscaling to other areas.
- Outcome 3.2: Evidence is available on how PIP fosters resilience-based stewardship of watersheds.

In the interim, the project is expected to achieve the following milestones within a period of 2 - 4 years of its implementation:

- Milestone 1.2 (After 2 years): 80% of all households in 6 intervention villages (approximately 2,000 farming families) have created their integrated farm plan (PIP).
- Milestone 1.2 (After 4 years): All PIP farmers in the 6 intervention villages invest in resilient farming, and in 30 adjacent villages (approximately 10,000 families) have created their PIP.
- Milestone 2.1 (After 2 years): A culturally relevant environmental curriculum is validated in 6 primary and 6 secondary schools, and children are engaged in Trees4School actions.
- Milestone 2.2 (After 4 years): Next to the initial 12 schools, another 30 schools are implementing the environmental education curriculum and are engaged in Trees4School actions.
- Milestone 3.1 (After 2 years): Action plans for landscape restoration are ready in all six target villages and workshops in each sub-county have started discussions on the National Park.
- Milestone 3.2 (After 4 years): All six target villages implement collective conservation and restoration activities, and are enforcing a stewardship agreement for the National Park.
- Milestone 4.1 (After 2 years): The Manafwa Watershed Platform is established based upon the genuine participation of all key stakeholders.
- Milestone 4.2 (After 4 years): An Action Plan for the entire watershed is ready to be implemented and connected to workplans from the 3 districts involved.

I.2 The Baseline Study

In order to benchmark on the project performance indicators, a baseline study was conducted to provide reference information that will allow for a before and after comparison of the project performance concerning the Outcomes and related indicators in subsequent assessments i.e., baseline, mid-term and at end-line.

The main objectives of the baseline study were to;

- Collect baseline data for the MWARES project goal and outcome indicators that will allow for a before and after comparison in subsequent assessments (mid-term and end-line evaluations) of the project's performance.
- Provide a basis for counterfactual analysis of the project goal and outcomes in subsequent assessments (mid-term and end-line evaluations) of the project's performance.
- Provide evidence necessary to inform adjustments on the life of project plans, targets and strategies based on the baseline study findings.

I.3 Scope of the Baseline Study

The baseline study was conducted in the six intervention villages and two control villages between the months of November 2018 and February 2019, the study focused on assessing;

- Food security and income status of farming households in the target villages
- Soil, water and agronomic management practices among farmers and farming households
- Existing alternative livelihood activities (other than farming) in target villages
- Collaboration levels in households and villages for good stewardships, especially involvement of spouses (men and women) in household decision making process on livelihood choices.
- Environmental awareness levels among farming households and youth on good stewardship of the natural resources and actions to restore and conserve natural resources.
- Existing collective actions being undertaken in villages and schools to restore and conserve natural resources.

At midline and end-line, the evaluation plan will assess how the PIP approach effectively fosters resilience-based stewardship of the watershed, and also, assess stakeholder's willingness and readiness to upscale the PIP approach to other areas. At baseline, this component of the project is considered a new approach thus the benchmarks values referring to the PIP approach are being considered zero.

2. BASELINE STUDY METHODOLOGY

2.1 Study Design

This research applied a quasi-experimental study design, where study communities were not randomly assigned to interventions and control group, respectively. This design is aimed to establish a cause-and-effect relationships between project activities and changes in the intervention communities compared to the counterfactual (change that would have even occurred without project activities). The project intervention villages were selected based on their proximity to Mt. Elgon national park, repeated history of landslides and presence of land degradation. Based on this same criterion, control communities (Sibanga and Nabutere) were selected from another district (called Namisindwa district) bordering the Mt. Elgon national park. The control villages were selected from a different district in order to minimize the project spillover effects and to eliminate the effect of confounding factors while drawing casual inferences.

Data was collected using a mixed methodology comprising of both quantitative and qualitative methods. Quantitative data was collected from intervention and control communities through a household survey using a structured questionnaire. The targeted respondents in the household survey were primarily household heads or caregivers in the farming households. Similarly, qualitative data were collected through Community Meetings with village local council leaders and community members using an open-ended interview guide. Key informant interviews (KII) were also used with selected district technical stakeholders to collect qualitative data. The mixed data collection method supported triangulation of information produced from either methods, in this case, qualitative method was used to collect information about perceptions in the communities on resilient farming practices, environmental conservation and restoration practices. Document review was also used to collaborate already existing literature that helped to inform the research design process and validate some of the findings. Documents reviewed include the MWARES project proposal, the PIP manual, the Environmental Education baseline survey report, Inception meeting report with the District stakeholders, Uganda Demographic Household Survey (UDHS) of 2017 and Uganda Household Census of 2014 (Batte, 2019; Kessler, Reemst, & Nsabimana, 2018; Kessler, Reemst, Kyeswa, et al., 2018; UBOS, 2016, 2018).

2.2 Sample size and sample Selection

Using the Welt Hunger Hilfe sampling Table for Monitoring and Evaluation, a representative household sample was determined in each of the intervention and control village. With the help of a household list for each village, simple random sampling (using the lottery technique) was deployed to select the survey households. The sample size in each village was then distributed proportionately to the village population size. Within each selected household, a household head, caregiver or representative was then interviewed. A total of 328 households were surveyed, 249 households from the six intervention villages and 79 households from the two control villages (detail of the sampling framework is found in the appendix). Thirty six percent (36%) of the study respondents were female and 64% were male. Ibokho village had the highest (84) number of sampled households surveyed compared to least number in Elgon (20) due to the proportion to population size. Average age of the respondents was 41 years (maximum 90 and minimum 17). Seventy-four percent (74%) of respondents interviewed from the intervention villages were household heads (not spouses or representatives of household heads) compared to 70% in the control villages. In the 89 households where the heads were not available, 89% of the interviews were conducted with their spouses.

Under qualitative data collection, a total of eight (8) Community Meetings were conducted, one meeting in each village. Each meeting comprised of 30-35 community members and local council leaders. Participants in these meetings included a mix of sexes and individuals in various age brackets above 18 years; youths (18-30 years), and other adults aged 30 years or more. Selection of the participants for the Community Meeting were random but excluding participants who were interviewed during the household survey. This exclusion criterion was intended to avoid interview burden, but also to reduce response biases from those exposed to study questions in the household survey. Three (3) Key Informant Interviews (KIIs) were conducted using the Key Informant Interview guide with selected district technical stakeholders. These stakeholders were purposively selected due to their roles at the district where they are directly responsible for issues of natural resources and environment. They include the Deputy Chief Administrative Officer (DCAO), the District Natural Resources Officer (DNRO) and the District Environmental Officer (DEO).

2.3 Data Collection Process

2.3.1 Study tools and data collection technology: the household survey questionnaire was built with ODK collect and administered through an online / offline computer assisted data collection application installed in Tablets. The Community Meetings and KIIs were administered through Paper Assisted Personal Interviewing (PAPI) – in this case meeting minutes were captured on a flip-chat and booklet respectively.

2.3.2 Human Resources: the study recruited six (6) undergraduate level Research Assistants (RAs) to support data collection process. The basic criteria for selection included; completion of undergraduate degree, experience in collecting both quantitative and qualitative data and native language speaking abilities. The Research Assistants were trained on the research tools, basic ethical principles to be observed during data collection and on the use of technology application (ODK data collect) to collect data.

2.3.3 Pre-testing and correction of study tools: after training the Research Assistants, study tools were pre-tested in Elgon NP and Matuwa Villages among the Innovative Farmers before the data collection exercise was initiated. The KII guide was pretested in Bududa with some district stakeholders including the District Production Officer (DPO) and District Agricultural Officer (DAO). Afterwards, data collection tools were revised based on a feedback report from the pre-test exercise.

2.3.4 Administering research tools: the research tools were administered in local language (Lumasaba) and using a one-on-one and a face-to-face interaction. The field enumerators moved as a unit collecting data at household level from one village to another under close supervision of the MWARES project M&E officer. Community Meetings were conducted after the household survey, where each meeting was managed by 3 enumerators (a facilitator, co-facilitator and note taker). The KIIs were administered through a one-on-one and face-to-face interaction by 3 enumerators each interviewing one district technical stakeholder.

2.3.5 Quality Assurance: in addition to the consultative process in the research tools design stage and pre-testing, more quality control measures were put in place to reduce interview errors, maintain completeness, consistency and logical flow of interviews. First, the ODK forms (survey questionnaires created in ODK collect) were designed with strong skip logic and data integrity checks. Second, daily meetings were also held between the Research Assistants and field supervisor to review completed questionnaires, identify and resolve field level challenges and all reviewed completed questionnaires were uploaded (sync) to the web-based database (ona.io).

2.3.6 Ethical Principles: in order to safeguard the rights of the study participants, only study respondents who voluntarily consented to take part in the study were interviewed on both the quantitative and qualitative tools. While the data capture included details of household location, names and pictures, respondents were assured of utmost confidentiality of their household and personal details. In addition to the selection of field enumerators who were acquainted to the community norms, Research Assistants (RAs) trainings recapped some of the community norms so as to avoid violations custom rules.

2.4 Data Management

2.4.1 Data Download, Cleaning and Export

The quantitative data was downloaded from the online database (ona.io) to excel CSV format, transformed, cleaned and exported to Stata version 14.2 for further analysis. Qualitative data were typed in a Word-document and organised in themes to ease manual approach of qualitative data analysis.

2.4.2 Data Analysis

The clean and transformed quantitative data from the household survey was analysed at univariate and bivariate level. The univariate analysis produced descriptive statistics such as frequencies distribution, averages, maximum, minimum, percentages and proportions. At bivariate level, cross tabulations were conducted to assess the relationships between two study variables – but with no reference to any level of statistical significance.

Minutes from Community Meetings were analyzed using content and thematic techniques. Emerging issues and themes in line with the research objectives and questions were captured to further explain findings from the household survey. In some cases, the emerging issues were captured by directly quoting submissions from the participants – thus providing information that was used to further explain findings from the household survey.

2.5 Key Assumptions and Limitation in the study

- The criteria used to assigned villages in intervention and control villages would yield minimum errors / biases and the control measures put in place will reduce the project spillover effect which could mislead cause-and-effect relationship analysis between project activities and change in the intervention villages compared to the counterfactual.

3. BASELINE SURVEY FINDINGS

3.1. Introduction

This section presents the baseline study findings structured according to the study objectives. The results displayed in this section capture the basic demographic characteristics of study respondents, household land ownership/use and the baseline values for all the MWARES project indicators under the following outcomes:

- intrinsic motivation among household farmers to invest in resilient farming and PIP activities;
- collaboration in villages for good stewardship and improved livelihoods;
- environmental awareness and action in the villages, especially by the youth;
- collective action in the villages to restore and conserve natural resources;
- stakeholders in the watershed willing and ready for upscaling to other areas; and
- attaining evidence on how PIP approach fosters resilience-based stewardship of watersheds.

The section also draws conclusion and provides key recommendations to consider in the project implementation, monitoring and in subsequent waves of MWARES project evaluations. Important to note here is that the findings from intervention villages versus control villages is represented as (xx% - xx%) respectively throughout this report.

3.1.1 Demographic Characteristics of Respondents

A total of 328 sampled respondents were interviewed (249-79). Sixty four percent (64%) of the respondents were male and 36% were female, with less than 3% difference in the proportion of male to female between the intervention and control villages. Majority of the respondents were aged 40 years, with median the age of 37, maximum age of 90 and the minimum age of 17 (two children aged 17 years represented their parents during the interview). Seventy-three percent (73%) of the interviews were held directly with heads of the households, expectedly, in the context of Uganda, about 85% of these household heads interviewed were men.

Majority (75%) of the household heads (78% - 71%) attained primary education; 14% attained secondary education; less than 1% on average attained university education and about 8% of the household heads on average did not attain any level of formal education. These findings resonate well with the findings in Uganda Demographic Household Survey (UBOS, 2018) and (UBOS, 2016).

In terms of household size in the study communities, findings shows that there are 6 members per household on average across both control and intervention villages, with the majority of the household members under the age of 18. This finding is also consistent to the past information from UBOS, (2018) and the Census report (UBOS, 2016).

Table 1: Shows demographic characteristics of the study respondents

Demographics	Control	Intervention	Total
Sampled respondents interviewed (n)	79	249	328
Sex of respondents			
Female	30 (38%)	89 (36%)	119 (36%)
Male	49 (62%)	160 (64%)	209 (64%)
Age of respondents			
<18years	1 (1%)	1 (0%)	2 (1%)
18-30 years	22 (28%)	70 (28%)	92 (28%)

31-49 years	33 (42%)	119 (48%)	152 (46%)
50 and above	23 (29%)	59 (24%)	82 (25%)
Average age	41	40	40
Median age	40	35	37
Maximum	90	89	90
Minimum	17	17	17
Interviews held with household head			
Not household head	24 (30%)	65 (26%)	89 (27%)
Household head	55 (70%)	184 (74%)	239 (73%)
Household head education level			
No Formal Education	10 (13%)	17 (7%)	27 (8%)
Primary	56 (71%)	193 (78%)	249 (76%)
Secondary	12 (15%)	35 (14%)	47 (14%)
Tertiary/vocational/post-secondary	1 (1%)	3 (1%)	4 (1%)
University	(0%)	1 (0%)	1 (0%)
Average household size	6	6	6

3.1.2 Land Ownership and Use

Eighty-five percent (85%) of surveyed household own land acquired through family transfer of ownership-“customary ownership”. Detailed findings show that 59% (53%-80%) of the households surveyed own less than two acres of land, 23% of the households own about 2 acres of land and only 18% own more two acres of land. The maximum size of land owned by the surveyed household is approximately 6 acres. The small sizes of land owned by households, high household sizes of 6 on average, coupled with high population size; has resulted into high population density that has strained the available natural resources such as land leading to over cultivation, increased land degradation, soil erosion and frequent landslides..

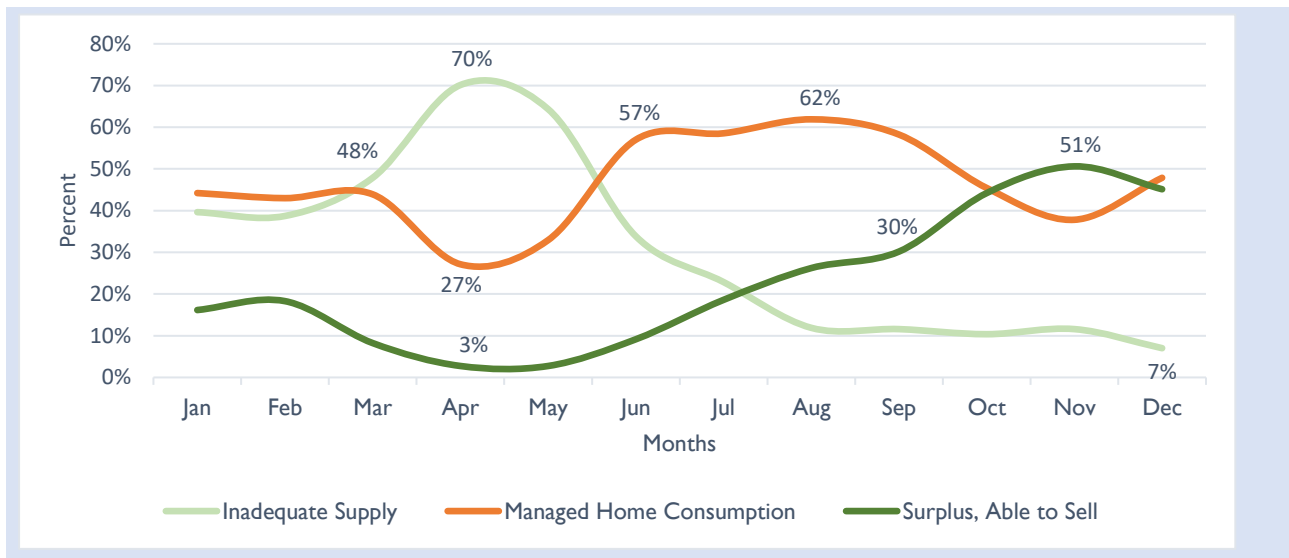
In terms of land use, 97% of the household surveyed used their own land (customary and bought land) for farming activities within 12 months preceding the survey and 7% of the households surveyed had used forest (national park) land for farming. The average size of forest land used by farmers in the last 12 months was 0.5 acres). To stress the shortage of land ownership, 35% of the households who engaged in agricultural activities used rented land for their farming activities.

3.1.3 Food Security

Household Food Supply: Ninety-eight percent (98%) of the food consumed in the surveyed households are home grown and periodically bought from market, 15% of the households acquire food in return for work and 2% receive food in the form of donations from development agencies especially during periods of disasters such as landslides. This finding was similar across control and intervention communities. As indicated in Figure I below, the pattern of household food supply across the year is uneven, between 60% to 70% of the surveyed households registers inadequate food in the month of March, April, May and June. The meeting held with the community confirms that March to June are the hardest months where households virtually have nothing to eat. This is planting season. Some of the seeds available is reserved for planting and little is cooked. In the period of July to September, between 57% to 62% of the households in the study area have sufficient supply of food that can only meet household consumption needs. This

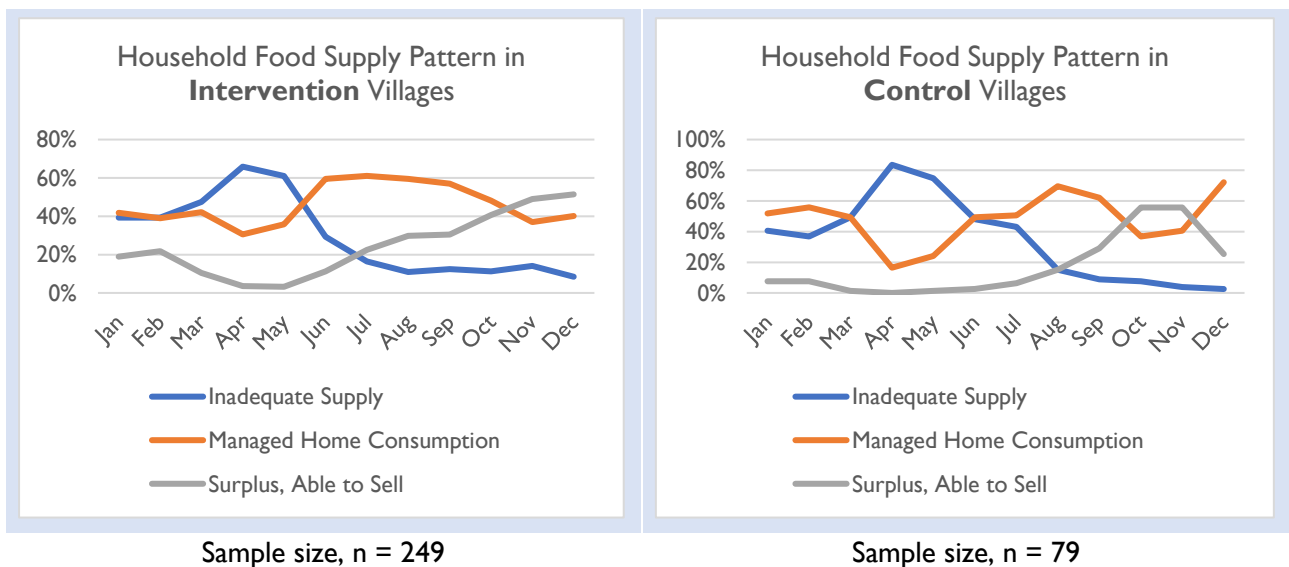
timeline is the first season (food harvest period) where farmers are pessimistic about second season and so the first season harvest is usually kept for home consumption and as inputs in the second season. Between October to December, about 40%-50% of the surveyed households experience surplus in food supply and are able to earn some money by selling some of the home-grown food. This finding resonates with the comments made during the meeting - where farmers reported that steady food supply is from October to December since these are post-harvest months where food is always in surplus in the households. The accumulated harvest from the first season and second season gives a household a sum quantity of the harvest from which they decide on how much to sell towards the end of the year.

Figure 1: Trend in household food supply (food security) in a year.



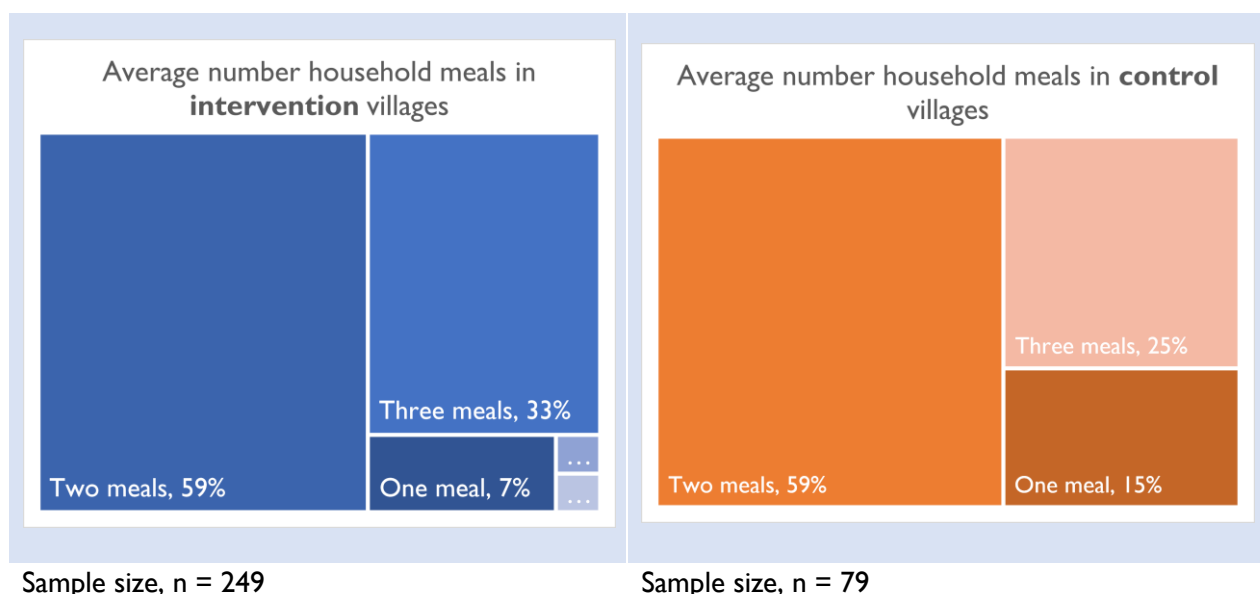
A similar trend is observed in the intervention and control villages as shown in figure 2 below.

Figure 2: Annual Food Availability in Intervention and Control Villages



Number of Meals Per Day in Households: As indicated in the figure 3 below, 7%-15% of the households reported having had one meal per day on average in the last 30 days preceding the survey. Uniformly across all villages, 59% of households reported having had 2 meals per day, while 33-25% of the households had 3 meals a day. Only 1% of the households had more than 3 meals a day. Qualitative data from the Community Meetings revealed that some households could not have food for some days and noted that these incidences were increasing by the day. According to community members, this increasing food shortage was due to reduced crop yields and reduced land available for farming because of the increasing population density in the area.

Figure 3: Percent of surveyed households by their number of meals per day.



As described in sub sections 3.1.1, 3.1.2 and 3.1.3 above, findings in both intervention and control villages show that both groups have got similar “homogeneous” characteristics in terms of socio-economic demographic status; in this sense, any change observed in the project intervention villages at the end of the MWARES project but not observed in the control villages can be attributed to the work of the project.

3.2 Outcome 1.1 - Farmers are intrinsically motivated to invest in resilient farming and PIP activities.

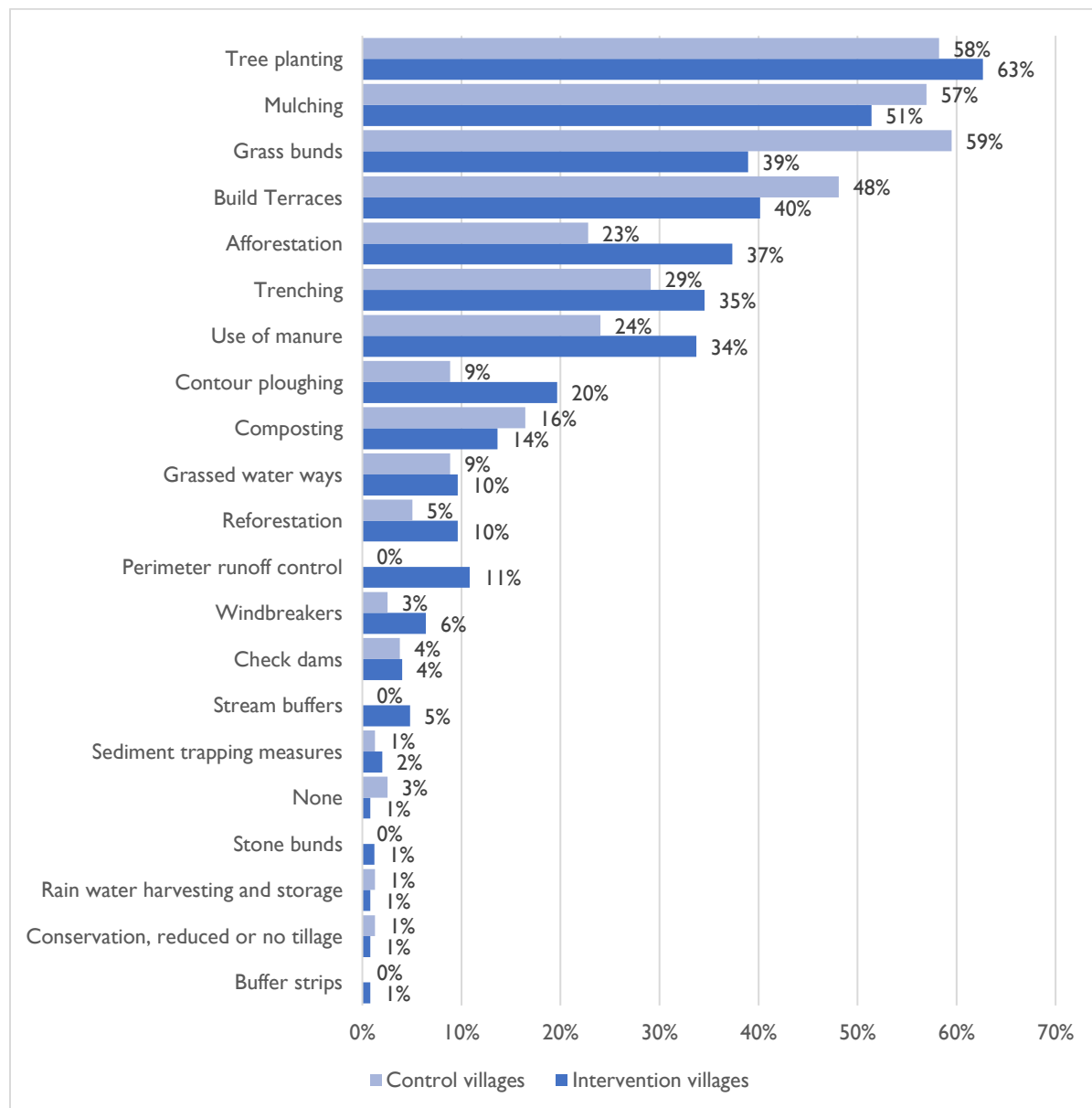
Indicator 1.1a: % of farmers using at least 5 or more recommended soil/water management practices.

Regarding soil and water management practices, the household survey findings revealed that 30% (32%-23%) of the surveyed households had at least 5 or more different kind of soil and water management practices – where the top ten methods most frequently used include: Tree planting, Mulching, Grass bunds, Terraces, Afforestation and Trenching (see Figure 3 below for the exact percentages). The least used soil

and water management practices are check dams, buffer strip, sediment trapping measures, windbreakers, conservation/reduced/no-tillage, rainwater harvesting and storage, stone bunds and buffer strips.

Qualitative data from the Community Meetings indicated that farmers desire to have grass for feeding their livestock and as such, they plant grass ways and edges which also help in soil and water management. In another Community Meeting, participants indicated that some farmers plant trees (or do afforestation and reforestation) to provide firewood used as source of energy for household cooking. Participants further indicated that the soil and water conservation practices they are undertaking are based on their local understanding and experiences, and as such they are not being done in the best recommended way due to lack of knowledge on how to do them well. For example, in Bushaki and Ibokho, the participants indicated that they do not know the recommended measurements/dimensions of a trench.

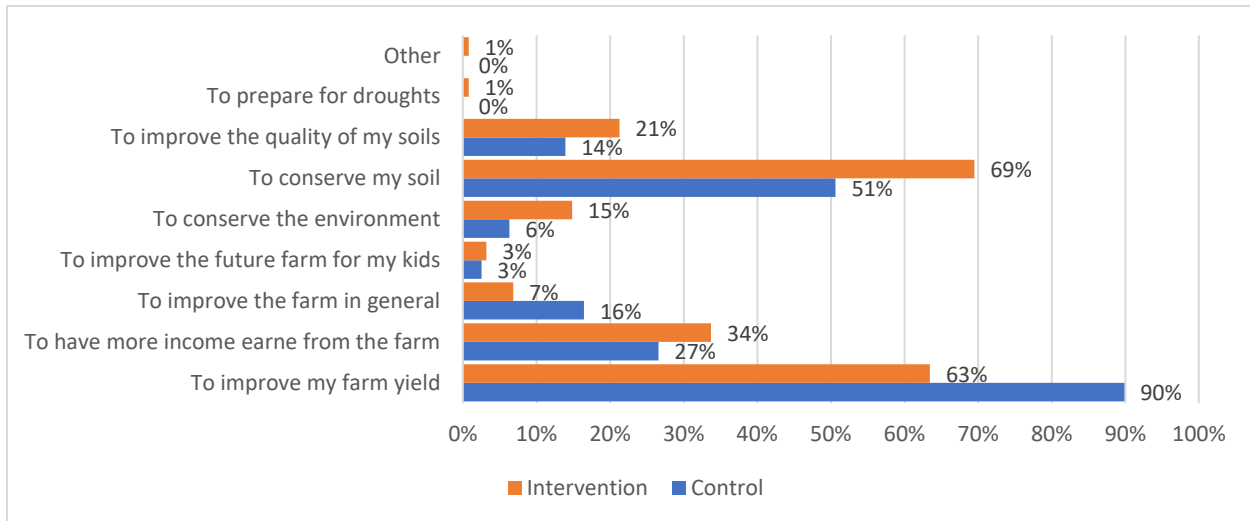
Figure 4: Percentage of households undertaking various soil and water management practices.



Factors that Inspire Households to Practice Soil/Water Management:

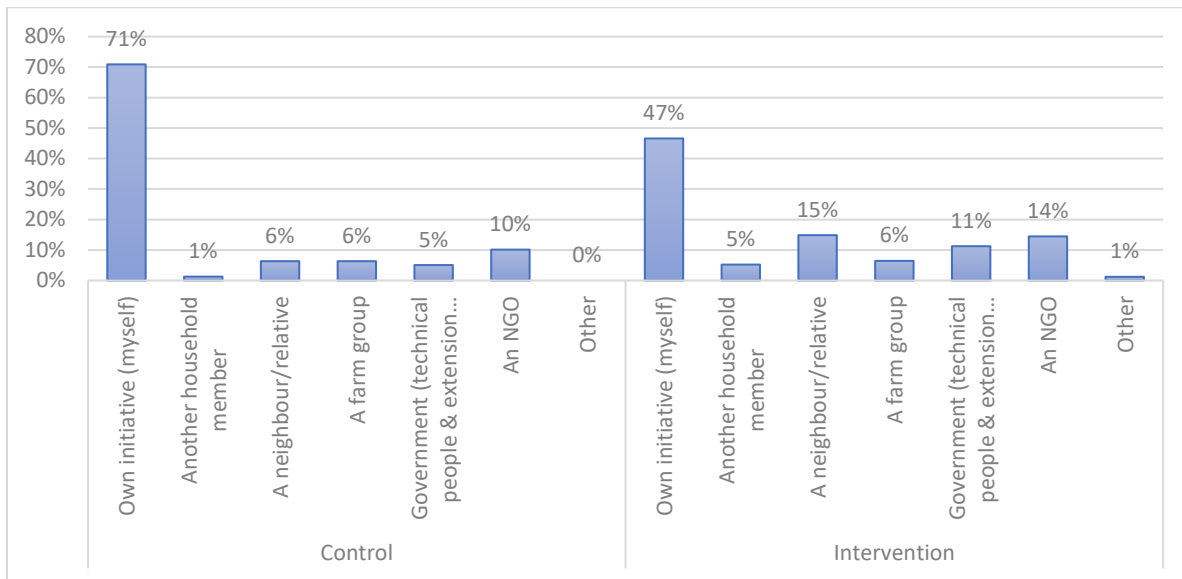
As shown in figure 5 below, improving farm yield and need to conserve the soils were the top inspirations for farmers to undertake soil and water management practices. Meanwhile, the need to improve the farm for the children in future was less inspiring. This can be construed as lack of conscience to have a good productive farm in place for the children to inherit in future.

Figure 5: Shows what inspired farmers to use soil and water management practices



Who Inspires Households to Practice Soil/Water Management: In terms of who inspired the farmers to practice soil/water management, 52% (47%-71%) indicated they were self-inspired. Approximately 15% of the households cited the influence of neighbours/relatives, government (technical people & extension workers) and NGOs as inspiration for soil and water management actions as shown in figure 6. The self-inspiration was said to have been derived from the adverse effects of land degradation experienced in the area. The soil loss due to erosion, landslides and reduction in crop productivity has also driven some farmers into taking initiatives towards soil and water conservation. In all communities, the role of farmer groups is very minimal (7%) in mobilising and training farmers in land conservation practices. The influence of government extension workers on farmers is also low at only 10%. Some farmers furthermore reported that they got inspired through the various radio talk-shows on farming. These radio talk-shows discuss issues about farming as a business, the existing opportunities, the challenges and how to overcome these challenges.

Figure 6: What inspired farmers to undertake soil and water conservation management.

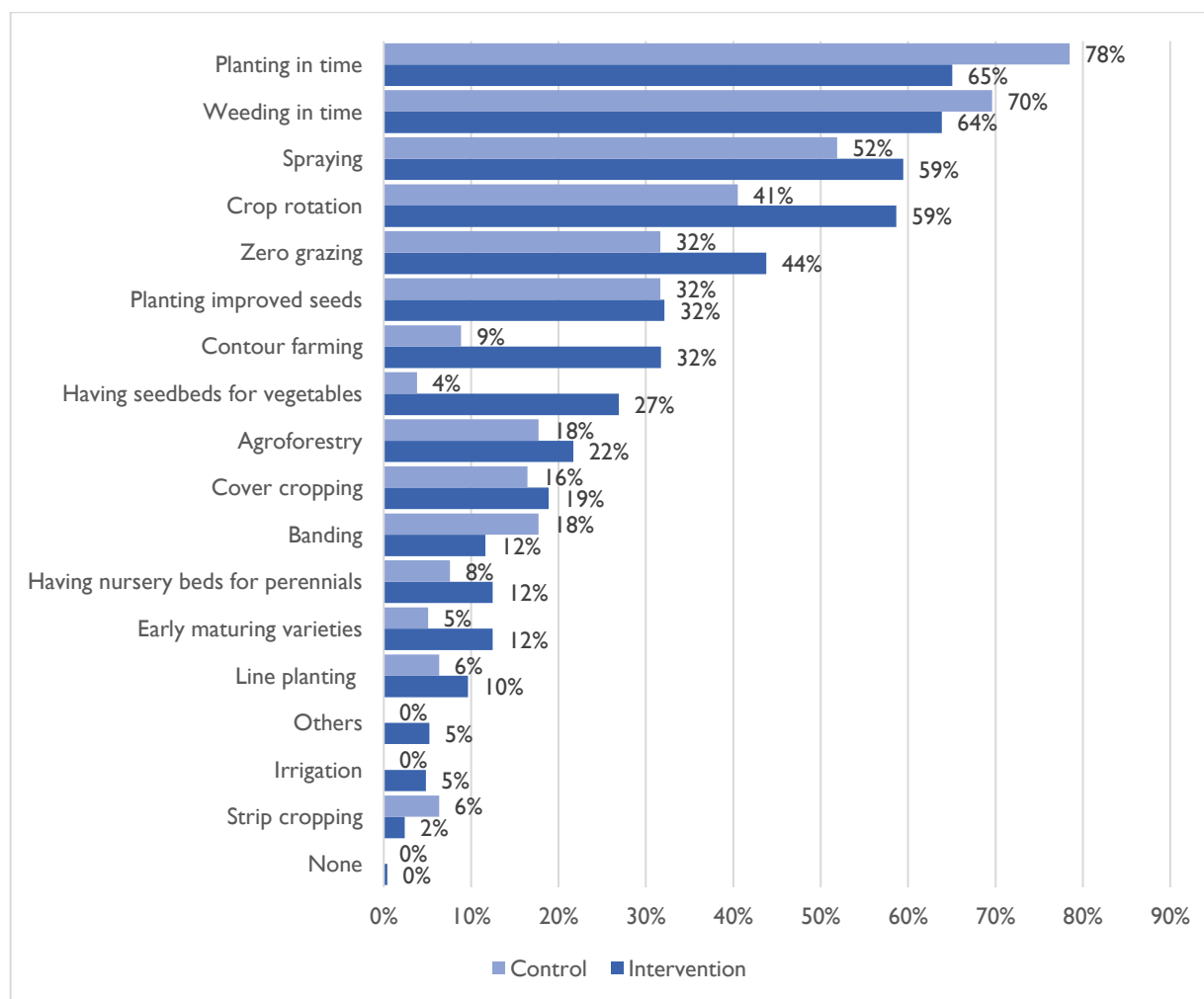


Indicator 1.1b: % of farmers using at least 5 or more recommended agronomic practices in their farmland.

The household interviews revealed that 45% (47%-38%) of households were practicing at least 5 or more agronomic methods. The top four most practiced agronomic methods include: planting crops in time (72%), weeding in time (68%), spraying (55%), crop rotations (52%) and zero grazing (40%). See figure 7 for the details.

Qualitative data from the community also revealed that farmers apply fertilizers in their farms, prune their crops especially coffee and early planting and provide livestock with shades including vitamin supplements. Though the farmers acknowledge the importance of these agronomic practices towards improving agricultural production and soil health, they indicated that the practices a household undertakes is dictated by the labour force available in the household, land size owned/available and funds to implement them. For example, crop rotation and fallowing are influenced by the land size owned by a household.

Figure 7: Percentage of households undertaking the various agronomic practices.



Factors that Inspire Households to Undertake Agronomic Practices: About half of the farming households reported that they were inspired to undertake agronomic practices in order to improve their farm yield. For 40% of the households earning more income from the farm is an important driver. Unfortunately, only 11% of household in the intervention villages and 4% in the control villages cited the goal to conserve soil as their main inspiration factor. During the community meeting, the farmers reported that factors to undertake agronomic practices are the desire to overcome poverty through agriculture, the steep slopes that provoke runoff, and the availability and effectiveness of local materials to make compost manure and organic pesticides. In Nabitere village particular, they indicated that some of these practices are inherited so they are done by default given how effective they are in delivering some of the desired results in the farms.

Who Inspires Households to Undertake Agronomic Practice: In terms of who inspired farmers to undertake agronomic practices, the large majority indicated that they were self-inspired (63%-81%). Furthermore, about 10% of the households expressed that their neighbours/relatives were a main influencer. Government staff (technical people & extension workers), farmer groups and NGOs did not have much influence on the farmers in regard to practicing agronomic methods.

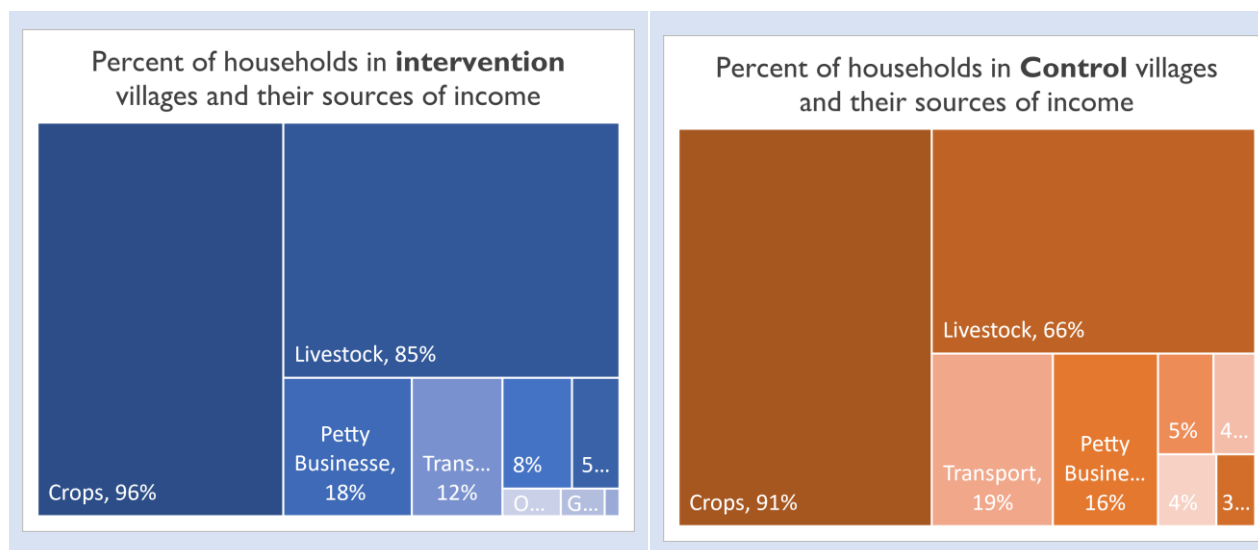
Indicator 1.1c: % of farmers engaged in alternative livelihood activities other than farming.

The household survey findings revealed that only 40% (38% - 46%) of farmers were engaged in alternative livelihood options besides agriculture. As indicated in the figure 8 below, crops and livestock were the major source of household income for households. Most households earn their income from crops / agriculture (96% - 91%) and from livestock rearing (85% - 66%). In the community meeting with farming households, participants confirmed that main economic activity is farming. Additionally, this is the only economic activity that was bequeathed to them by their ancestors, therefore inherited. Agriculture also supports the entire community by way of paying wages to labourers, sharing of food after the harvest with the less privileged.

In order to meet basic household requirements such as salt, soap, medicine, scholastic materials, some households are engaged in petty business (18%-16%). According to the community meeting minutes, participants cited that most of the households engaged in petty business are selling silver fish “mukene”, cooking oil and also trading in other agricultural related products that are not common in the area.

Motorcycle transport business “commonly termed as Boda Boda” is a source of income for about 15% of the households, especially by the youth. Worth noting is that only about 5% of the households earn income from forest products, and a similar percentage through formal employment.

Figure 8: Households’ sources of income.



Average household income: As illustrated in Table 2, study findings revealed that the estimated average household annual earnings from crop farming ranked highest – standing at about UGX 500,00 (UGX 560,000 - UGX 448,000). The average annual earnings from livestock farming were about UGX 300,000 (UGX 364,000 - UGX 194,000). Gambling provides the least average annual earning since our

communities are located in rural areas which has very limited access to gambling activities compared to the urban setting. As shown in the statistical table below, the distribution of income within and between the two study communities were quite uneven.

For example, in crops, the top 25% of the households earn about UGX 1,000,000. The least 25% of the households earn about UGX 200,000. The middle 50% of the households earn between UGX 200,000 and UGX 1,000,000. This therefore means that a household chosen at random has a 75% chance of earning more than UGX 200,000. The difference between the highest earning and the lowest earning is UGX 800,000 which is more than even the average amount earned by a household.

To determine a nearly true mean value of household income, extreme outlier income in the intervention greater than UGX 2,400,000 and income in the control communities greater UGX 1,500,000 were not used as indicated in this statistical computation below.

Table 2: Distribution of household income by sources

Sources of household income	Minimal Value	First Quartile	Median Value	Mean Value	Third Quartile	Inter-Quartile Range (IQR)	Maximum Value
Intervention							
Crops	-	200,000	500,000	559,534	1,000,000	800,000	2,400,000
Livestock	-	1,000	250,000	364,112	500,000	499,000	1,500,000
Petty Business	-	-	-	64,223	-	-	1,250,000
Business/ Trading	-	-	-	26,553	-	-	1,200,000
Transport	-	-	-	24,199	-	-	1,000,000
Other	-	-	-	18,092	-	-	800,000
Forest products	-	-	-	8,650	-	-	480,000
Formal Employment	-	-	-	1,942	-	-	300,000
Gambling/ Betting	-	-	-	1,602	-	-	300,000
Discarded outlier income values > 2,400,000							
Control						0	
Crops	-	137,500	375,000	448,056	600,000	462,500	1,500,000
Livestock	-	-	135,000	194,028	225,000	225,000	1,000,000
Petty Business	-	-	-	72,917	-	-	1,200,000
Business/ Trading	-	-	-	13,889	-	-	500,000
Transport	-	-	-	38,889	-	-	400,000
Other	-	-	-	10,139	-	-	200,000
Formal Employment	-	-	-	3,472	-	-	200,000
Forest products	-	-	-	2,778	-	-	150,000
Gambling/ Betting	-	-	-	-	-	-	-
Discarded outlier's income values > 1,500,000							

Source: Household survey

3.3 Outcome 1.2 - Enhanced collaboration in households and villages for good stewardship and improved livelihoods.

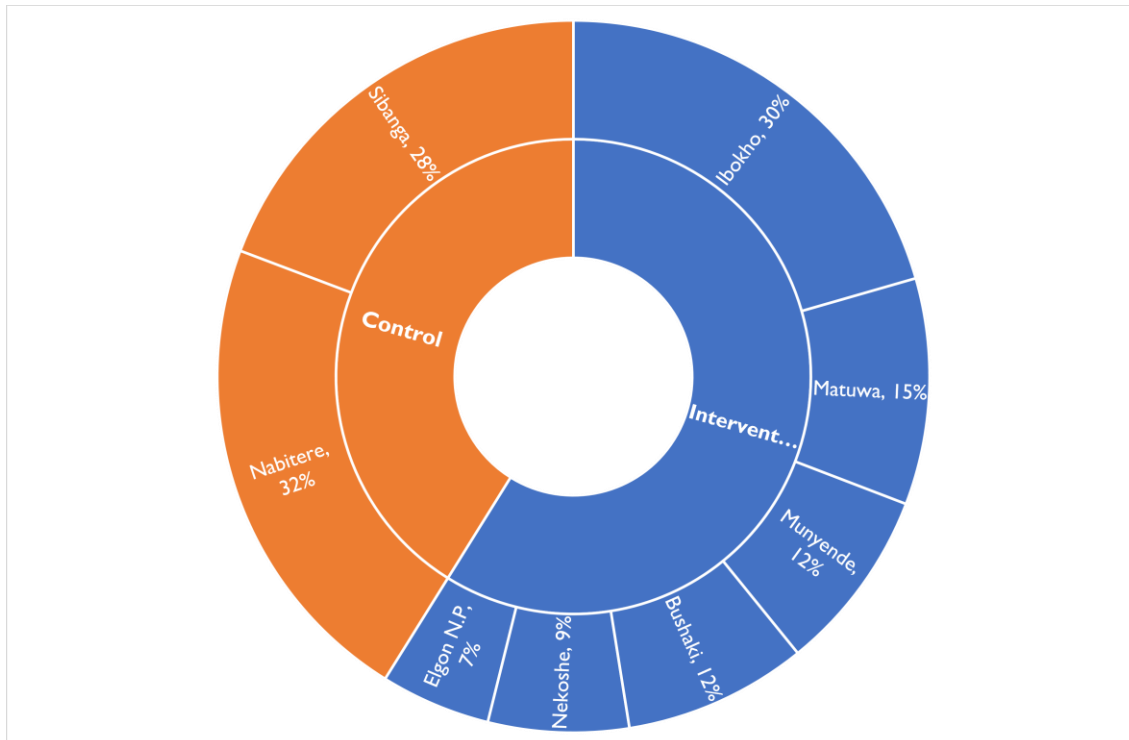
Indicator 1.2a: % of villages engaged in collaboration activities for good stewardship and improved livelihoods.

According to the household survey results, there was more collaboration activities (especially community meetings) in the intervention villages at 89% compared to just 59% in the control villages to discuss issues that affect the community as indicated in the Figure 9.

Existence of the community meetings in the intervention villages is also believed to have been influenced by development partners such as IUCN, Tree for the future, Caritas, Red Cross and government programme called Northern Uganda Social Action Fund (NUSAF) that implemented projects in the same study communities 2-3 years ago. Meanwhile, in the control villages, the community members indicated that their local leaders always organise meetings with them to discuss community issues as they arise.

Additionally, the study results show that most of the community meetings are held monthly, a few meetings take place sporadically and quarterly to discuss issues that affect the community, in essence, the meetings are not well structured. Results from the community meeting indicated that most times community meetings are held when there is need to do so and on average this happens on monthly basis. This could be due to need by an external person(s)/agent to meet community members or need within the community. When asked on the frequency of participation in the community meetings, 63% of the households indicated that they participate every time the meeting is held and 27% “sometimes”.

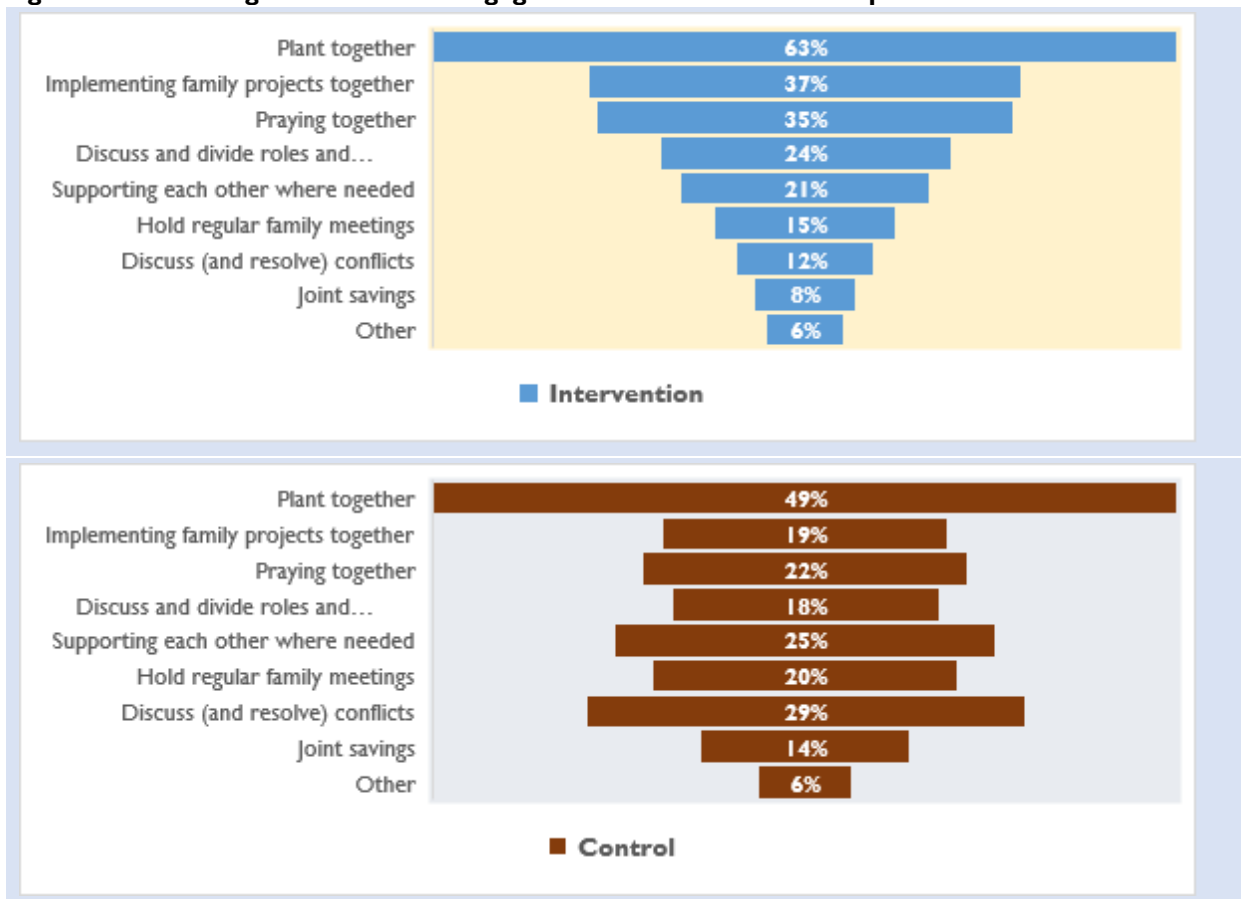
Figure 9: Percent of households in villages which affirmed that their community engages in collaborative activities (especially meetings) for good stewardship and improved livelihood.



Community-based platforms geared towards improving livelihoods and stewardship: During the Community Meetings, the participants were asked what platforms currently exist in their communities that are geared towards improving livelihoods and stewardship. The farmers listed a number of platforms that included community meetings, farmers groups, community road construction engagements, the Village Savings and Loan Associations (VSLAs), praying together and terrace groups. They acknowledged that current farmer groups are few and not empowered. The VSLA groups are few and not very active and therefore need further mentoring and trainings on issues of financial literacy, entrepreneurship and general management. Interesting is the existence of terrace groups in all the intervention villages, which are groups of self-selected individuals who support each other in digging trenches around their farms to minimize the effect of runoff and erosion. These are between 3-5 individuals of a VSLA group who chose to come together to support each other in digging trenches. Farmers indicated that they were inspired by the sensitization during the inception workshops that were held by the Junior Agronomists (JAs). Hence, such terrace groups were non-existent in the control villages.

Collaboration at household level: all surveyed households reported that they engage in some form of collaborative activities that can enforce farm and household livelihood. The commonest collaborative activities include (Figure 10): planting crops together (63%-49%), implementing family projects, praying, supporting each other where needed, family meetings, conflicts resolution and joint saving activities.

Figure 10: Percentage of households engaged in various activities to improve household collaboration.



Common Issues Discussed in Community Meeting: The quantitative survey findings showed that security related issues were the commonest issues being discussed during the community-initiated meeting, followed by environmental issues, social service delivery and conflict. Anti-social behaviour¹ and other social problems such as theft were the least discussed in the community-initiated meetings. Unique in the findings is that the control villages discuss more on anti-social behaviour than about the environment, but the reason for this was not established. Other related issues discussed during community meetings included agriculture, economic prosperity for households that are engaged in village savings and loan associations (VSLAs).

When asked to rate the level of collaboration among the community members, 62% (58%-75%) of the survey respondents rated that the level of collaboration in the community was good. The level of trust among the community members was rated at 69% (65%-82%), hence we can safely conclude that there is good level of confidence among the community members, most probably due to the fact that these community members have lived together for many years. In terms of conflict in the community, most respondents reported that the level the level of conflicts is “very low”.

Data from community meetings indicated the existence of conflict resolution avenues that are used by community members. These included clan meetings/interventions, church leadership interventions, neighbours, relatives, village meetings, village councils (e.g. women councils), one-on-one meetings and police intervention for the extreme issues. Interestingly, in Nabitere village, the community reported bewitching ones’ arch enemy as a way of solving a conflict. Though those in attendance did not indicate that anyone amongst them does so, they unanimously agreed that it happens in their community.

During the Community Meetings, the communities further shared that in order to strengthen the level of collaboration in their communities, members needed to take the following actions: organise and attend community meetings regularly, elect capable leaders in-charge of the community events, sharing ideas, support each other, offer psychosocial support to those in need, create and strengthen farmer groups. The members argued that farmer groups bring together and unite many farmers. This makes it easier to mobilise, sensitise members to attend any community related activities. Regular attendance of meetings will allow members to deliberate on issues affecting them. By so doing, members would contribute ideas and come up with joint actions on how best they can work together. In times of landslides, some families are heavily devastated and would require psychosocial support. If members treat each other as one, such support would facilitate faster healing, stabilise such households to quickly get back on their feet. This will strengthen the spirit of togetherness and solidarity among members and build community resilience. Capable, proactive leaders are able to plan together with their communities, mobilise them, sensitise them, and inspire members towards development. The leaders will lobby for their communities and link the communities with government to improve social service delivery.

Indicator 1.2b: % and # of farmers whose spouses are involved in decision-making on good stewardship and livelihood choices.

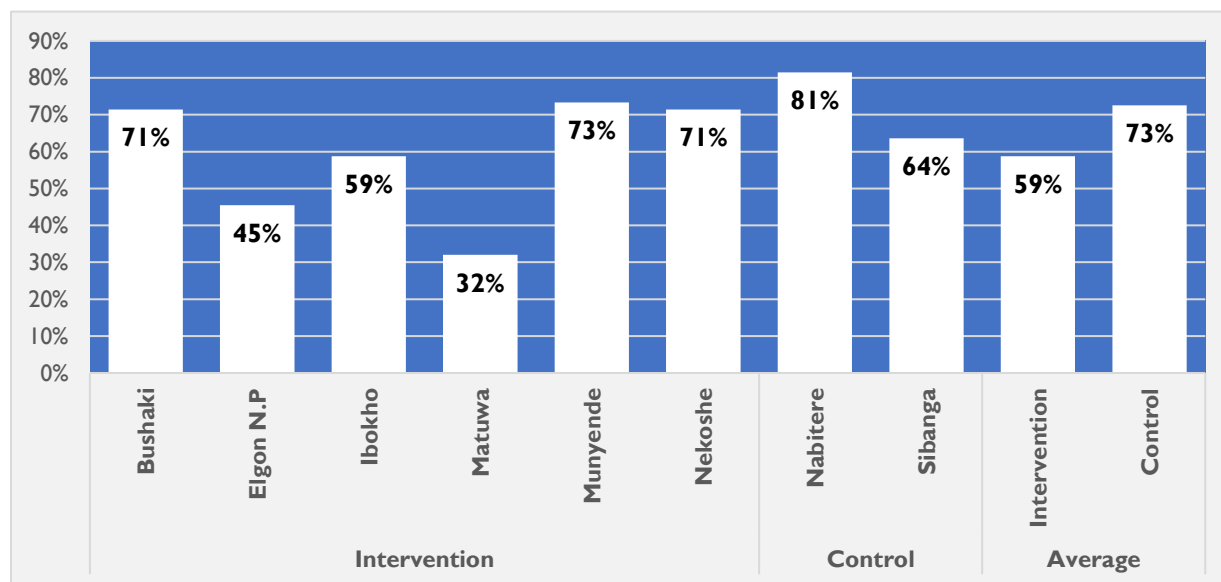
As indicated in the Figure 11, most households (59%-73%) reported engaging their spouses in good stewardship and making livelihood choices in the household. Nabitere, Munyende, Neksohe and Bushaki

¹ Heterogeneous set of actions outside the norm, rules, or laws of a social group in which the subject develops, such as physical aggression, theft and violation of societal rules.

reported the highest number of respondents engaging their spouses in decision making on good stewardship and livelihood choices.

From a gender perspective, there are more men taking unilateral decisions on household plans at 25% compared to women at 6%. In Matuwa and Elgon NP communities, men are taking more decisions in household planning at 40% and 55% respectively. This is much higher than in the rest of the communities. This could be attributed to the patriarchal nature of communities in Uganda. In some households, relatives, elders and community leaders are involved, most commonly in households that are headed by single mothers and young boys. The involvement of children in the decision-making process is minimal. This was attributed to the young age of the children. The parents believed that the children are still too young to effectively participate in the decision-making processes.

Figure 11: Percentage of household members who involve their spouses in decision making and planning for good stewardship and livelihood choices.



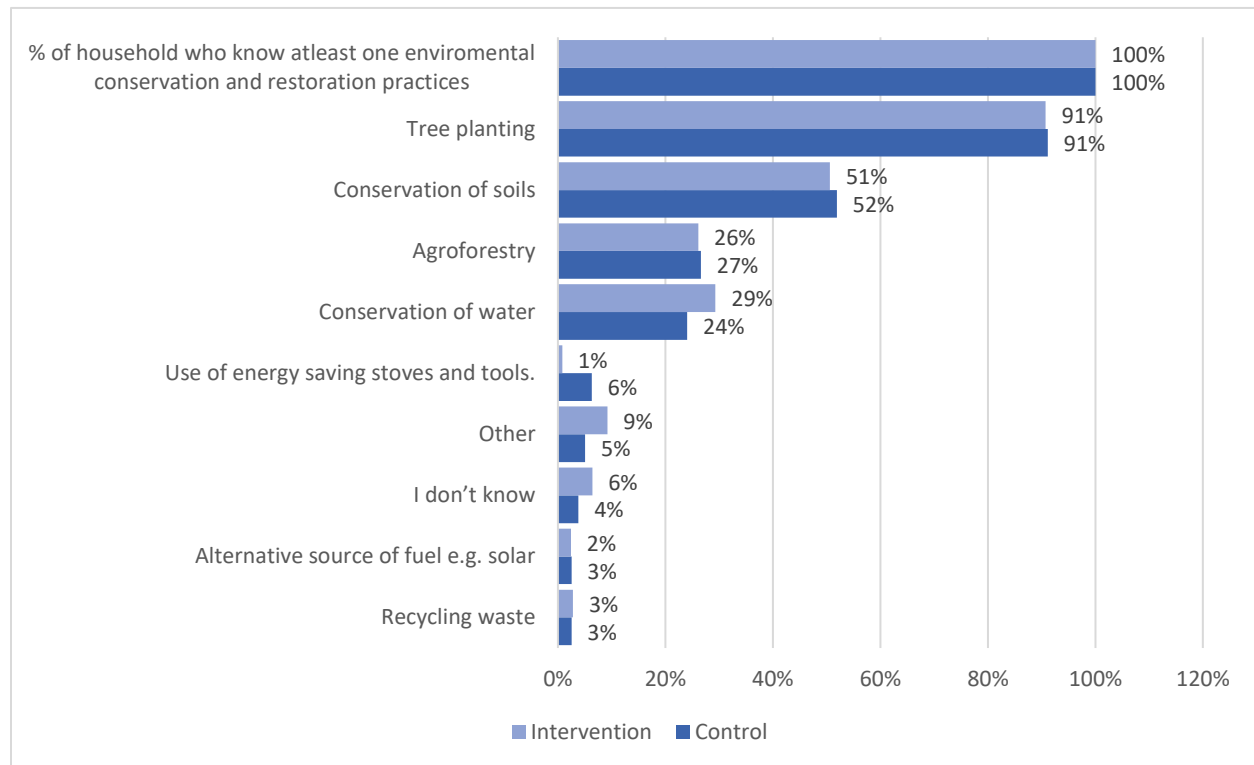
3.4 Outcome 2.1 - More environmental awareness and action in the villages, especially by youth

Indicator 2.1a: % of farmers (farming households) knowledgeable on at least 3 or more environmental conservation and restoration practices.

There was considerable level of knowledge among households in the intervention villages about practices to conserve and restore the environment. The household survey findings revealed that about 40% of the respondents (42% - 33%) were knowledgeable of at least 3 or more environmental conservation and restoration practices. Tree planting was the most well-known practice to improve the condition of the environment, with 91% of households recognizing tree planting as a practice to conserve and restore the environment as shown in Figure 12. About 50% of the households were knowledgeable on soil conservation as a practice to conserve and restore the environment. Ironically, the findings indicate that

farmers are not relating the cutting of trees for fuel to the state of environment, as only 2% of the respondents think that adopting alternative sources of fuel and use of energy saving stoves can actually improve the state of the environment. Interestingly, 8% of the respondents also reported that they do not know what practices can improve the state of the environment. During the community meetings, the farmers also revealed that they know of trenching, digging perimeter walls, mulching, fallowing as some of the practices that can improve the status of the environment. There was also strong believe that praying to God could help especially during calamities such as landslides.

Figure 12: Percentage head of households knowledgeable on practices to conserve and restore environment.



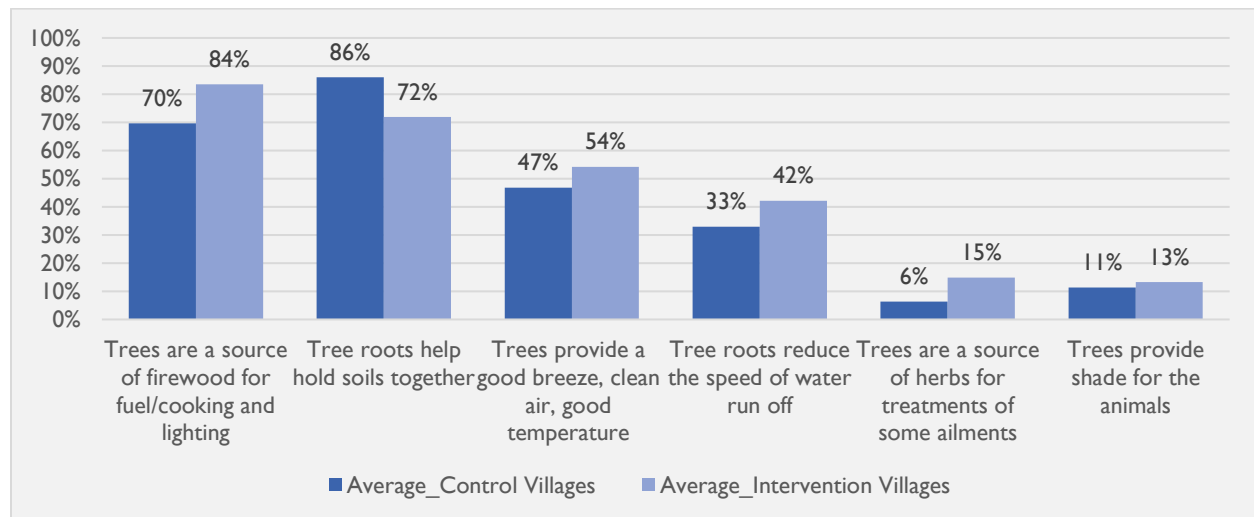
Knowledge on Environmentally Friendly Sources of Energy: The findings indicate that most households (54%-80%) know environmentally friendly sources. Only 33% of the households expressed that solar and biogas are environmentally friendly sources of energy. Interestingly, 39% of the households still say that firewood is an environmentally friendly source of energy while 22% thinks that charcoal is environmentally friendly. These results show a mixed understanding and limited knowledge among the households on the most suitable alternative and environmentally friendly sources for domestic energy use.

Community Rating on the Roles of Trees in the Communities: Generally, the respondents acknowledged that the role of trees in their area is important. This appreciation and value attached to the trees is seen in the increasing demand for indigenous trees. During the Community Meetings held in Matuwa and Elgon, participants requested to be supplied with seeds of indigenous trees and be trained on how to propagate these seeds. They indicated that often the indigenous tree seeds do not easily germinate

like the other tree seedlings. The farmers added that trees play a significant role in the provision of fruits, food, construction material, tree products sold to earn income and being good wind breakers.

As indicated in figure 13, when asked on their opinion on the role of trees in their region, a majority of the respondents indicated that trees are important since they are the main source of firewood for fuel/cooking and lighting, the tree roots help hold soils together, and provide a good breeze, clean air and good temperature. Qualitative data from the community meetings also indicates that trees are a good source of medicinal herbs that they are currently using for treating many ailments, additionally, a source of construction materials and income from forest products.

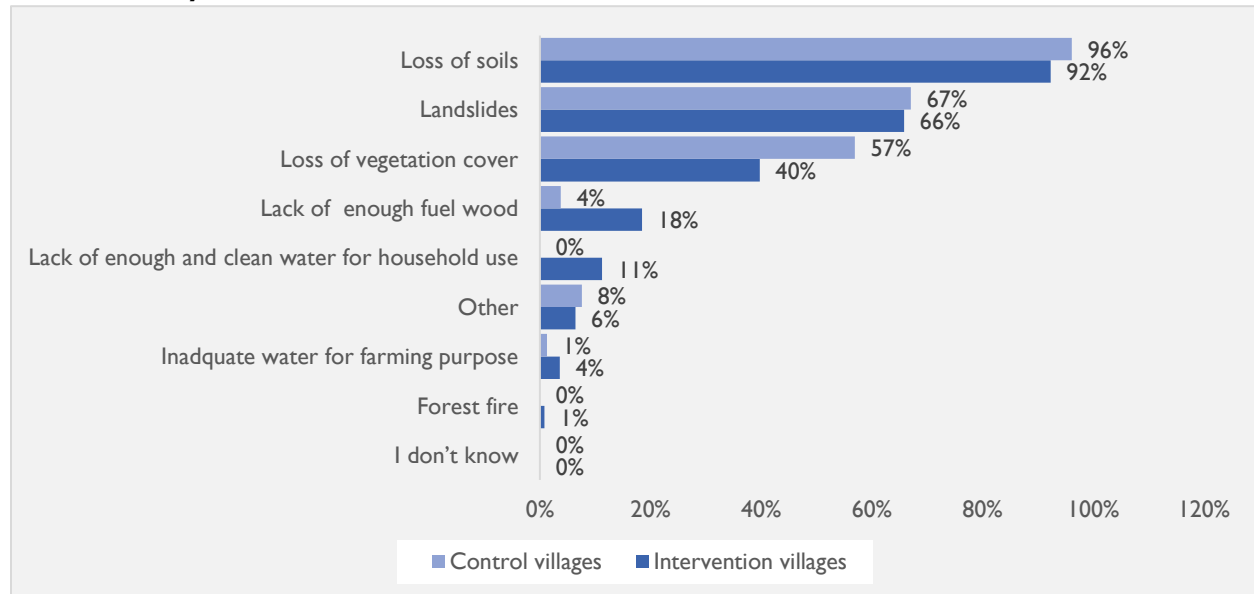
Figure 13: Household opinion on role of trees in this region



Known Environmental Challenges in the Study Communities: Approximately 97% of the households acknowledged that their communities face environmental challenges.

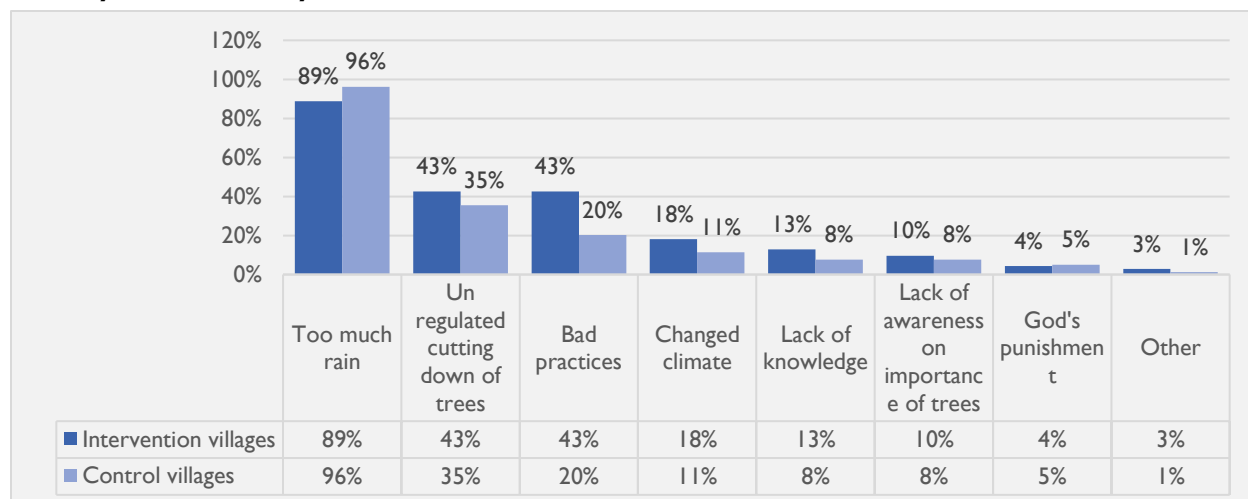
Loss of soil was the predominant environmental challenge faced by the communities as shown in figure 14. A staggering majority (92%-96%) of the respondents reported that soil erosion heavily affects their farm productivity. The soils are being washed away by the running waters along the slopes. Landslides were reported as the second biggest environmental challenge affecting the communities where 66% of the respondents reported that in their communities, homes and farms were washed away by landslides and mudslides. Forest fire was the least reported environmental challenge across both control and intervention villages. Other environmental challenges listed by the communities during the Community Meetings included poor crop yields, heavy cloud cover, hailstorms, and unpredictable weather patterns, where sometimes they experience too much rain and long dry spells. In communities like Ibokho, Nekoshe and Nabitere, one key concern is also the cracks on the rocks/mountain slopes. They worry that this will eventually result into landslides in the future. The steep slopes in the area make the road infrastructure difficult to establish and maintain. This has hindered movement of agricultural produce to the markets. This in turn lowers their earnings from agriculture.

Figure 14: Percentage of households reporting commonly known environmental challenges faced by the community



Known Causes of Environmental Challenges in the Study Communities: A majority of the respondents (89%-96%) attributed the environmental challenges they are facing to too much rainfall received in the area as indicated in figure 15. The loss of soils, the land slides, the poor road network, they are all resulting mainly due to heavy rains. About 40% of the respondents reported that unregulated tree cutting is perpetuating the environmental challenges being experienced now. Tree cutting has left the soils bare and vulnerable to runoff. Qualitative data from the community meetings indicate that indigenous trees have been cut for charcoal and provide more land for farming. However, the tree planting projects being undertaken now are only for commercial purposes. The tree species being planted do not offer the same environmental benefit as the indigenous trees. Over-cultivation by farmers on steep soils, without allowing the land to recover was also reported during community meeting as a cause for some of the environmental challenges faced now, especially soil erosion and landslides. Farmers were asked why they continue to negatively impact on the environment, despite being aware of the environmental challenges they face and the causes (which some of them admittedly are caused by their actions). The farmers' response was that the high population and high population growth rate in the area has led to shrinking land for agriculture, this is leading to over-cultivation, land fragmentation, forest encroachment, deforestation and worsening environmental challenges. Asked why the farmers would not manage the high population growth rate through adopting family planning, both male and female farmers expressed negative perceptions on family planning.

Figure 15: Percentage of households reporting the common causes of the environmental challenges faced by the community.

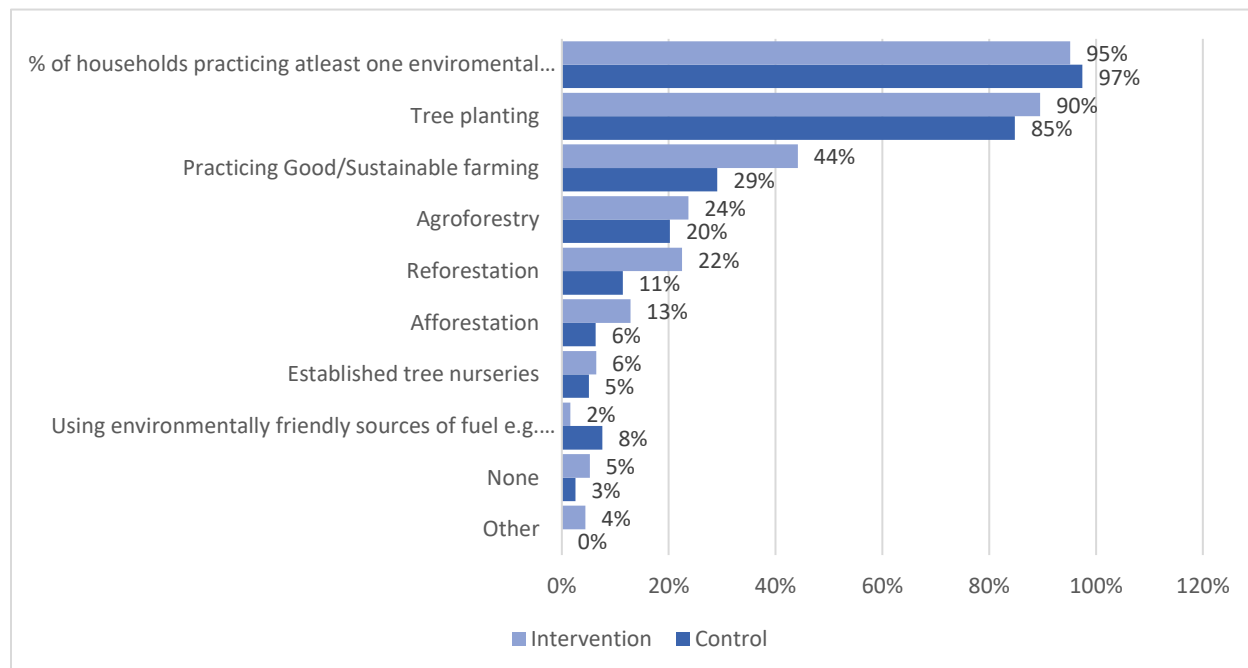


Indicator 2.1b: % of farmers practicing at least 3 or more environmental conservation and restoration methods.

The household survey revealed that about 25% of the farming households (18%-35%) were practicing at least 3 or more environmental conservation and restoration methods. Among these practices, tree planting is most common and done by 90% of the households (Figure 16). Tree planting here is differentiated from afforestation and agroforestry as a practice where a farmer plants few and scattered trees in his/her land, whereas afforestation is planting trees on a given piece of land in a concentrated manner, probably allocating such piece of land to only trees. Furthermore, only a minority of the households (44%-29%) practice good /sustainable farming. Noteworthy is that using environmentally friendly sources of fuel e.g., coffee husks, energy saving stoves etc. was the least practiced form of environmental conservation.

The participants in the Community Meetings were furthermore asked how they are currently coping with environmental challenges listed above. The participants reported undertaking a number of actions that included tree planting, opening of roads (especially in Ibokho, Elgon NP and Matuwa) to improve transportation of agricultural produce, adoption of local knowledge in the development of pesticides. A few community members are encouraging parents to adopt family planning, adoption of solar as alternative source of energy used particularly for lighting and charging electronics, adopting good sanitation practices and lobbying for government intervention through their elected leaders. Other community members expressed willingness to relocate to safer places away from landslide prone areas as per the government relocation programme as long as the process is transparent with assurance of ownership of the land in the new location.

Figure 16: Percentage of households practicing various environmental conservation and restoration methods.

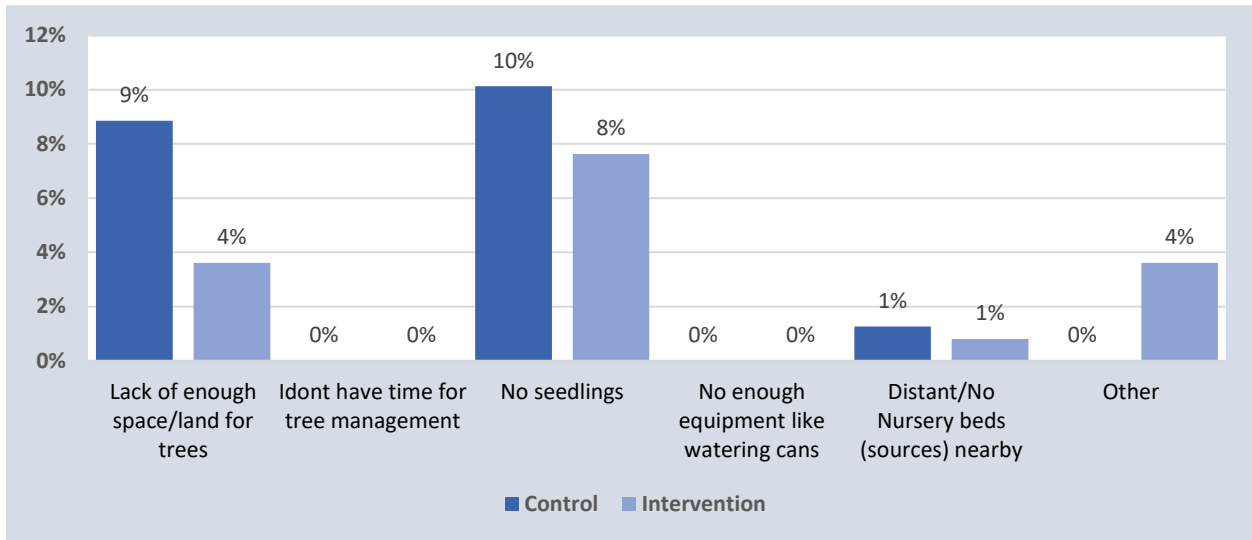


Tree Planting as Practice to Conserve and Restore the Environment: About 85% of the respondents reported to have planted indigenous trees in the last 12 months. However, during the Community Meetings, farmers indicated that they have not planted significant numbers of indigenous tree species. Some households had planted only one or two trees in the last 12 months. This therefore means that the coverage of indigenous trees is still very low and there is an urgent need to scale up these efforts.

Figure 17 shows that from those who reported to have not planted indigenous trees in the last 12 months, many cited lack of seedlings as the main reason why they did not plant indigenous trees. In the Community Meetings, other community members reported that they did not plant the indigenous trees because they had already planted in the previous years, while others were too old to plant. The farmers also cited lack of technical knowledge on the propagation of indigenous tree species. The farmers reported that they had tried to propagate these seeds, however, the seeds don't germinate easily like other exotic species. The high demand for construction materials which they get from eucalyptus trees makes farmers opt for exotic tree species rather than indigenous which take long to mature.

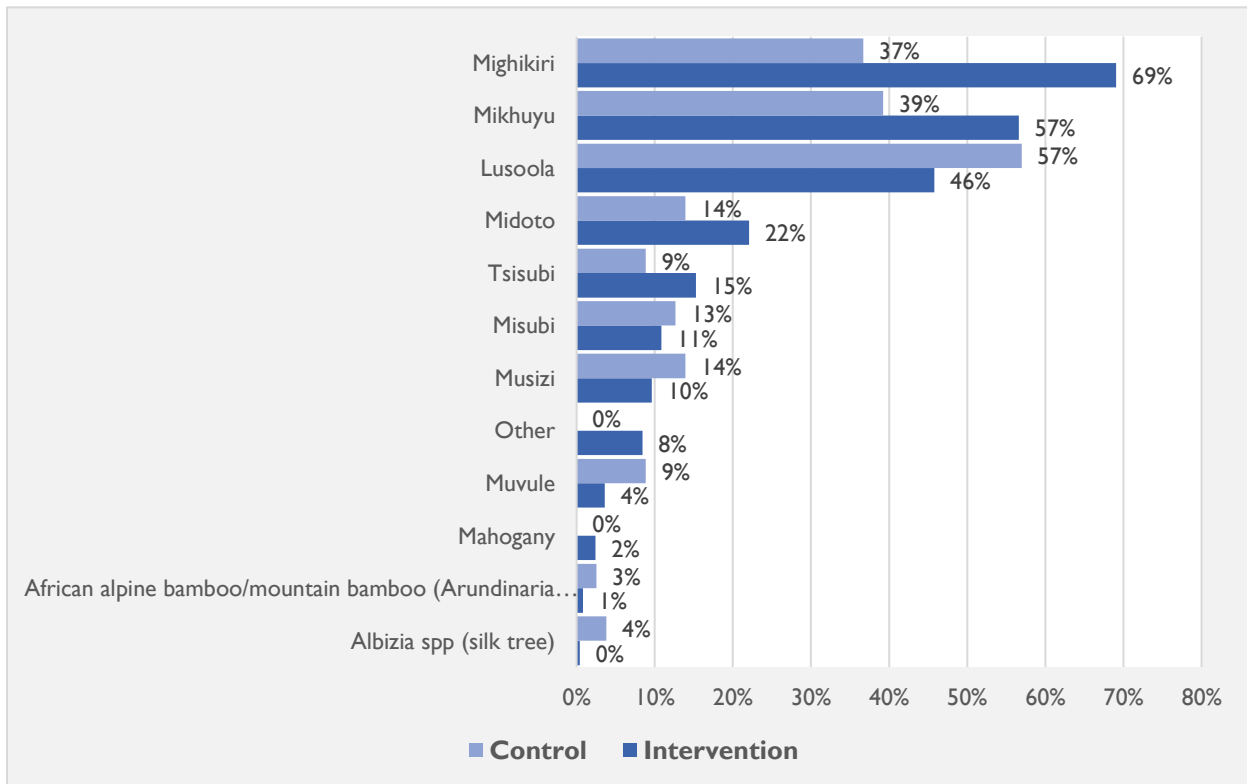
Asked what should be done to restore indigenous tree species, the community members suggested identifying alternative reliable and fuel-efficient sources of fuel other than eucalyptus trees, sensitise masses and train some community members on propagation of indigenous seeds. The members also indicated that many poles obtained from trees are used in the construction of semi-permanent structures especially the walls. The best alternative to these construction poles would be construction of permanent houses, however, this is expensive for the majority of the farmers to afford.

Figure 17: Reasons for not planting indigenous tree species in the last 12 months.



Indigenous Tree Species Planted: Of the ones who reported having planted indigenous tree species in the last 12 months, the following indigenous tree species were most mentioned as shown in the Figure 18 below: *Mighikiri*, *Mikhuyu*, *Lusoola*, *Midoto*, *Tsisubi*, *Misubi* and *Musizi*. The top three most common indigenous tree species planted by farmers in the study community include; *Mighikiri*, *Mukhuyu*, and *Lusoola*. Other indigenous tree species identified and planted include *Kimikihili*, *Shindondwe*, and *Bisabasi*.

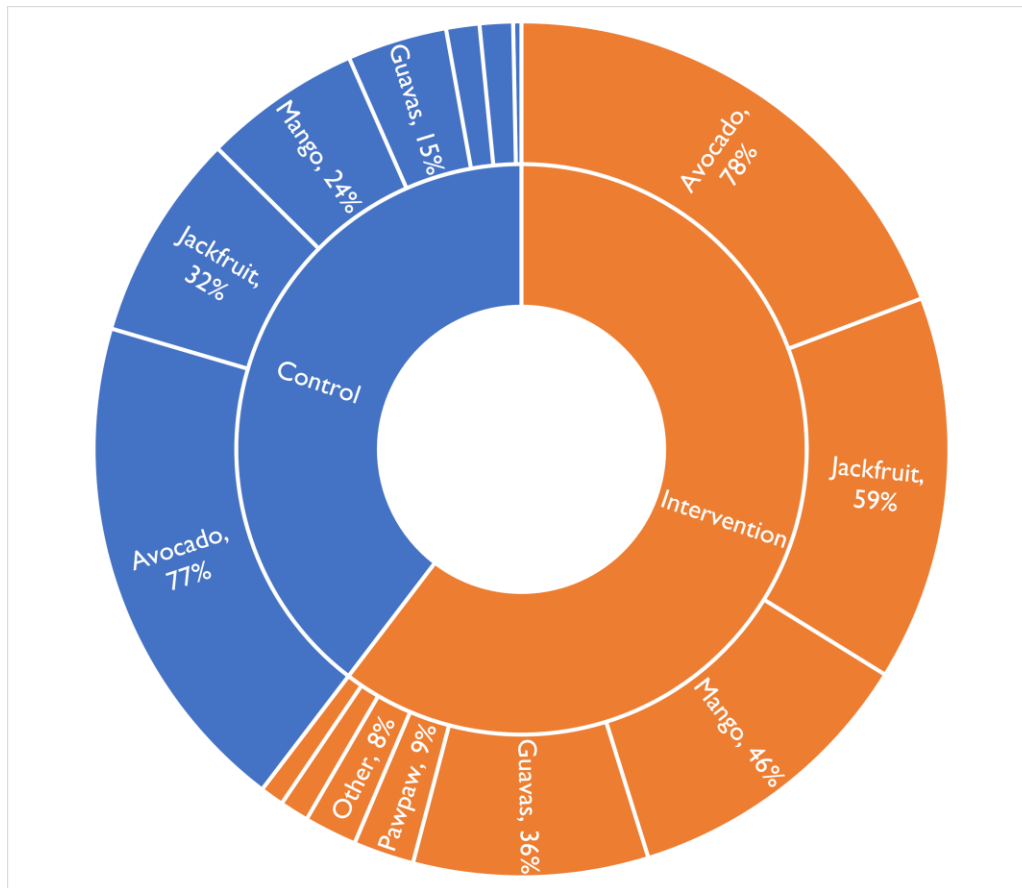
Figure 17: Indigenous tree species planted in the last 12 months.



Planting of Fruits Trees:

A majority of the respondents (93%) reported to have planted fruit trees in the last 12 months. The main fruit tree species planted by farmers are Avocado, Jack fruit, mangoes and passion fruits. In Community Meetings, farmers stressed that fruit tree planting was just picking up among farmers after they started witnessing those who planted Avocados and jackfruit get side income from these fruits.

Figure 19: Fruit trees planted in the last 12 months.



Reasons for Not Planting Fruits Trees: Of the 7% of the farmers who reported having not planted any fruit tree in the last 12 months, 41% cited lack of seedlings while 35% cited inadequate land for accommodating fruit trees. During the Community Meetings, the farmers also reported the same reasons as in the case with the indigenous tree species i.e. high failure rates of seed germination, high death rate of the seedlings, limited availability of seedlings, over-concentration on other crops while ignoring fruit trees, low interest in planting fruit trees, competition from other non-fruit commercial tree species such as eucalyptus etc. They also reasoned that fruit trees attract a lot of birds from the forest that destroys their crops.

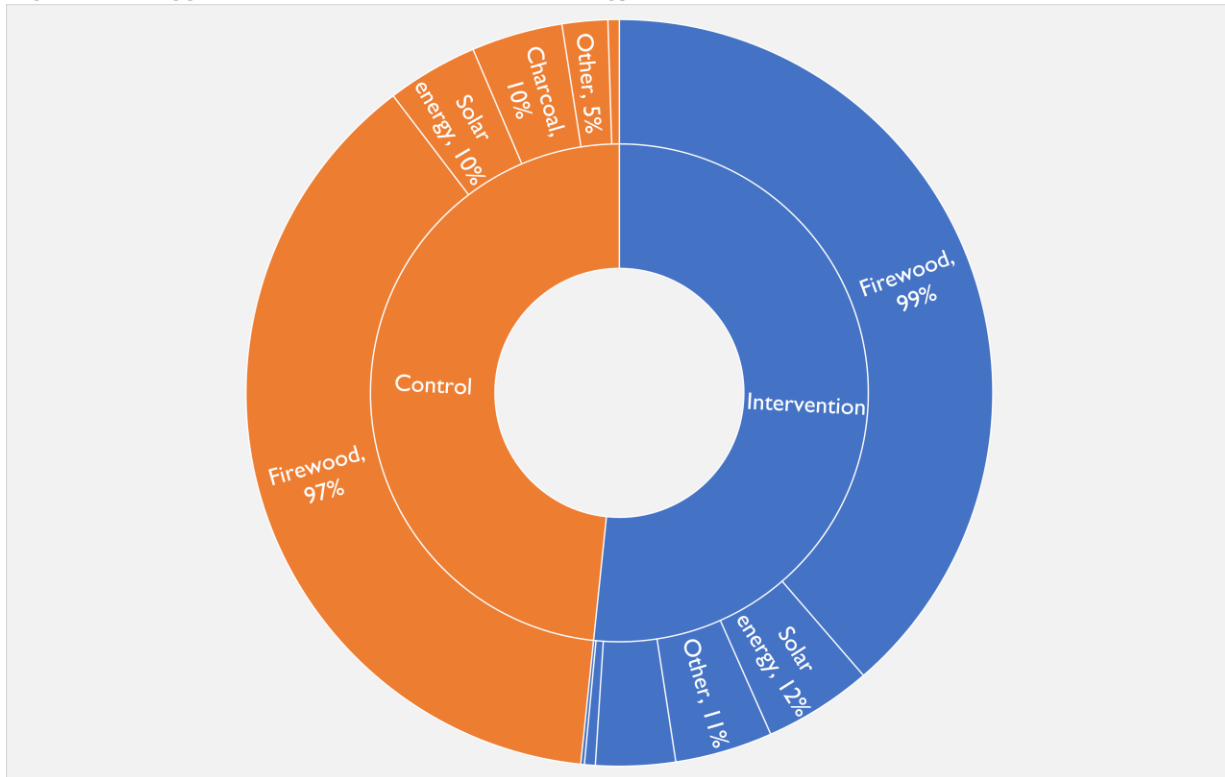
Household Practices of Environmentally Friendly Sources of Energy: Access to energy for household use is one of the biggest challenges in all communities. This is perpetuated by the high population density that has led to clearing of almost every available piece of vegetation for farming, with the affected species being the indigenous trees cut down for firewood/charcoal. As indicated in Figure 20, almost all households indicated that their main sources of energy is firewood which is a threat to the

environment and particularly the indigenous trees. The major justification for use of this energy source is that firewood is multipurpose i.e., can light, cook and the smoke chases away mosquitoes. The farmers also do not have access to electricity which would be the best alternative to firewood and charcoal. Besides, they have no knowledge and skills to set up biogas despite having cows that would provide cow dung that is a raw material required for biogas.

However, community members expressed their desire to move away from using firewood to more sustainable sources that are considered environmentally friendly. During the Community Meetings participants, especially the women, highlighted the challenges they go through to prepare a meal for the household. It takes a lot of effort to gather cooking materials which also comprises of plant waste/residues as supplement to the scarce firewood. As such, their current coping mechanism is to prepare soft foods that don't require much energy such as greens and prepare a double meal to cater for lunch and dinner. The community in Matuwa Village for example said that they would have probably loved to use biogas, however, the only young man who was taken to be trained by some development partner on how to make biogas never returned to the village. As reported in this survey, 84% of the household rears cattle, which ideally gives a good basis for uptake of biogas by the communities.

Despite these gaps, and instead of cutting down trees, the community is trying to transform to alternative sources of energy for domestic use, among which include; collecting firewood from dry logs from trees that have aged naturally and from the forest during designated days as agreed with UWA, buying or collecting the cuttings of mainly eucalyptus trees which are cut for timber purposes. Other sources of energy being used by the community include kerosene and other electronics such as torches that uses dry cells especially for lighting.

Figure 20: Suggested alternative sources of energy



3.5 Outcome 2.2 - Collective action is undertaken in the villages to conserve and restore natural resources.

Indicator 2.2a: % of villages & schools with collective actions plans to conserve and restore natural resources.

Existence of collective action to conserve and restore natural resources: According to the baseline findings, there were no collective actions plan being put in place by communities directed particularly towards natural resource conservation and restoration. During the Community Meetings, the community members indicated that the actions towards natural resources conservation are undertaken at individual household level and are not structured or properly planned. These household actions include tree planting in degraded areas and river banks, digging trenches, etc. This therefore means that the aggregated impact of these actions cannot lead to sustainable improvement towards natural resource conservation and restoration. As such, there is need to mobilize these communities to undertake community collective actions towards natural resource conservation and restoration if sustainable impact is to be realized.

Furthermore, a review of the Environmental Education baseline report (Batte, 2019) revealed that there was no school with collection actions to conserve and restore the environment. In fact, there was no school with an environmental club. Some few schools had Wildlife clubs which were not necessarily undertaking any activities at the school as such in active.

Community based plans to restore and conserve natural resources: During the Community Meetings, the community members further reported that there were no concrete plans to restore and conserve the natural resources in their communities. In the general community meetings that villages always held, natural resource conservation and restoration needs are discussed. However, there has not been any deliberate effort to translate these needs into actions/plans by community members. These needs have therefore remained inconsequential towards natural resources restoration and conservation. This is due to limited or no mobilization of communities towards community level planning for natural resource conservation and restoration.

Existence of by-laws to Protect, Restore and Conserve the Natural Resources: There were no bylaws in place in the communities. During the Community Meetings, community members indicated that despite the desire to take more proactive and regulatory action to protect, restore and conserve natural resources, their communities have not yet enacted any bylaws. However, they reported that a number of recommendations/guidelines are always shared for community members to follow in order to protect, conserve and restore the environment. This include planting more trees, practicing agroforestry, using alternative energy sources such as biogas, minimise deforestation etc. These are just guidelines and can not be enforced by leaders since they are not registered as bylaws. They are therefore not binding.

Indicator 2.2b: % of villages/schools implementing collective actions to conserve and restore natural resources.

From the findings in indicator 2.2a above it appeared that there were no plans for collective action in any of the villages or schools, hence, logically there were also no villages or schools implementing any collective action to conserve and restore natural resources. During the Community Meetings, the communities

indicated that such actions basically done at household level, since there has been no concerted effort to do the same at community/village level.

Key Actions Being undertaken to Conserve and Restore Natural Resources: During the Community Meetings it was reported that afforestation is the main effort undertaken to restore and conserve the natural resources, **but at household level**. Trees are being planted by households in their farms, homesteads and along the streams by some households, and especially on the mountain slopes where trees were cut and have been severely affected by soil erosion. Some of the landslide scars are also being reforested by households that own the affected lands. Some level of awareness creation on restoration and conservation of natural resources is one of the actions that have been on going in these communities. Awareness creation is being conducted by community leaders, sub county leaders, extension workers, and some development partners that managed to reach these communities. Some community members reported other actions such as digging perimeter walls, trenching, grass planting and use of energy saving stoves as additional actions being implemented to restore and conserve natural resources. In none of the villages existed bylaws regarding access, utilization, conservation and restoration of natural resources except for the national park (forest) which is under UWA. The community responsibility towards the conservation and utilization of natural resources therefore remains a loose effort.

Other Collective Activities Existent in the Study Communities: However, the communities reported undertaking collective activities geared towards solving some community challenges such as poor road infrastructure, clean water access, supporting community members who are faced with some challenges such as calamities, death, sickness etc. For example, in Ibokho village, the community worked together to dig a road and build a bridge that links Ibokho to the main road. They reported that they could now transport their produce easily since vehicles can now reach their trading centre. Matuwa, Elgon villages built a bridge while Munyende dug a road. This level of collaboration among community members lays a foundation for community collective action towards natural resource conservation and restoration if the right mobilisation is made.

Community View on How to Implement Collective Activities: To achieve full and effective implementation of community-based plans to restore and conserve the natural resources, the respondents recommend the following top three main actions: mobilization of community members to take part in the collective actions, election of capable leaders to lead the collective activities, sensitization of community members on the importance of collective action, protection of natural resources, and forging and seeking partnerships with stakeholders interested in natural resource conservation. Community mobilisation will lay the foundation for community sensitisation and election of capable and responsible leaders. Qualitative data from community meetings further suggested sensitisation and awareness raising by the government and other stakeholders first to support communities generate community development plans and secondly their implementation. They also indicated that sometimes they need to be guided on what to do to improve their current situations.

3.6 Outcome 3.1 - Stakeholders in the watershed are willing and ready for upscaling to other areas.

Indicator 3.1a: # of stakeholders in Manafwa watershed implementing watershed-vision action plans

Key Informant interviews (KIs) with some members from the district technical team including the Chief Administrative Officer (CAO), the District Planner (DP), the District Natural Resources Officer (DNRO) and the District Environmental Officer (DEO) revealed that there was no Manafwa watershed vision action plan being implemented by then in the district. They further indicated that they were not aware of any stakeholder doing the same either. They indicated that the district has had few partners come to implement some interventions focusing on environment and natural resource conservation. However, these partners/stakeholders have not taken a step to formulate a plan/vision for the Manafwa watershed. As a district, they have also implemented some interventions in the Manafwa Watershed concerning conservation and restoration especially under NUSAF in restoration of some landslide prone hills in Buvukula parish in Bushiribo sub county. However, they do not have a long-term concrete (action plan) for watershed restoration. Important to note here though is the fact that the district local government and some development partners such as IUCN that have worked in the district also implemented some interventions on watershed protection and conservation; this potentially provides an opportunity to further build on and might ease the mobilisation of stakeholders for scaling-up. When asked if they would be willing to participate in the development of the Manafwa Watershed vision action plan, the stakeholders exhibited strong interest and pledged to participate and contribute to the process. They indicated that their desire as a district is to see the Manafwa watershed restored and protected for the good of the environment and all the natural resources associated with it.

Indicator 3.1b: # of stakeholders in Manafwa watershed with watershed-vision action plans in their strategic plans

Although at this stage there are no stakeholders that already work with a watershed vision in their strategic plans, most district stakeholders were keen to support any initiative that protects and restores the watershed. The Environmental officer for example indicated that as a department, their environment-related activities are sometimes incorporated into activities of the agriculture department and therefore lose visibility in the planning and budgeting processes. She believed that an initiative to establish and operationalise a Manafwa watershed platform would be very specific to issues of environment and natural resources. She explained that she would be very happy to take part in the implementation of such an action plan. Similarly, other district stakeholders voiced the same willingness but cautioned that there will be a need to engage a bigger number of stakeholders in the process since the watershed covers a bigger geographical area with different stakeholders bearing different interests on the watershed.

3.7 Outcome 3.2 - Evidence is available on how PIP fosters resilience-based stewardship of watersheds

Indicator 3.2a: # of evidences that demonstrate how PIP fosters resilience-based stewardship of the watersheds

PIP approach is yet to be implemented in the Manafwa watershed by the MWARES project. As such there was no evidence to collect to demonstrate that PIP fosters resilience-based stewardships of the watershed. These evidences will be collected, analysed, documented and reported over the project lifespan.

4. OTHER ISSUES

1. **Family Planning:** this is a very contentious issue in all the communities surveyed. A majority among both men and women alike do not approve adoption of Family Planning (FP) to manage the population explosion, though the members feel the pressure of the high population which is being pushed by high population growth rate. During the Community Meetings, the participants argued that FP causes sicknesses to women such as cervical cancer, interrupted and abnormal painful menstrual flow, makes women barren and reduces the sexual feelings of women. When asked if they could then adopt the ABC (Abstain, be faithful or use a condom) strategy as fronted by the government in the control of HIV/AIDs, the participants argued that it only applies to the unmarried youth. This would help in curbing the high levels of teenage pregnancies in these communities. The men further argued that pregnancy is a tool they use to manage and control their women. Most women in these border communities operate cross-border business with Kenya. Some of them spend almost an entire year there and only return during the Christmas festive season. To minimise this, the men ensure their wives are constantly pregnant. *“Some of our women like going to Kenya to do business and spend an entire year and leave us the men with children. They come back during Christmas. To eliminate this, we keep them pregnant all through”* said Wakhata Eric, a resident of Ibokho Village. The women on the other hand argued that their men need many children and failure to give them those children leads to polygamy. The members further argued that many children are an insurance, since some children may die, others become social misfits and irresponsible. Many children provide pride and labour to a household. *“Our men like very many children, if I as a woman go for family planning and produce fewer children, my husband will be forced to marry another woman”*, said Kakayi Beatrice, a resident of Nabitere village. However, there are some community members who are enlightened on FP and try to guide their colleagues e.g. in Ibokho. Though clearly, there is enormous resistance and ignorance about FP.
2. There was clear evidence of **early marriages** e.g., the youngest married girl interviewed was 17 years old in Ibokho village.
3. **Teenage pregnancies** were also common as very many households had teenage mothers carrying their babies
4. **High illiteracy levels.** This was one of the observations which was also confirmed by the statistics, with 8.3% of the respondents not having attained any formal education. The Community Meetings indicated that out of the 75.9% who reported attending primary education, the majority dropped out in lower primary and can hardly write their names.
5. There were incidences of **child labour** where young boys are engaged in transporting produce down and uphill for wage. The children carried load beyond their ages and they don't go to school.
6. Men are very authoritative regarding the **household's decision-making**, with women having little say if any. In as much as data from household surveys indicate that there is joint decision making, the effectiveness of women contribution to this decision-making process may be minimal as they could just be rubber stamping the decisions of men.
7. There existed **local/indigenous knowledge** on some aspects of life e.g. pest and disease control though it's not exploited fully.
8. There are incidences of heightened **domestic violence** affecting children and women especially in Bushaki Sub County as reported by women.
9. **Housing infrastructure** was bad. Most of the roofs are made of Banana fibres and very old iron sheets especially in Ibokho. The floors are dumped. The walls are rough, weak and potential threat to lives of the household members.

5. CONCLUSIONS

On food security, over 98% of the farmers grow their own food. Between 60% to 70% of the surveyed households experience inadequate food supply for about four months as compared to just two months of surplus food supply. About 60% percent of households reported having had 2 meals per day in the previous 30 days, while only 7% of the households reported having had one meal per day in the previous 30 days. Only 38% of farmers were engaged in alternative livelihood options besides agriculture. On intrinsic motivation towards investing in resilient farming, about 32% of the surveyed households had practiced at least 5 or more different soil and water management practices – where the top ten methods most frequently used include: Tree planting, Mulching, Grass bunds, Terraces, Afforestation and Trenching. Forty seven percent of households were practicing at least 5 or more agronomic methods. The top four most practiced agronomic methods include: planting crops in time, weeding in time, spraying, crop rotations and zero grazing. There were more collaboration activities (especially community meetings) in the intervention villages at 89% and this was attributed to the previous empowerment by development partners that worked in the area. At household level, 59% percent of the households reported engaging their spouses in good stewardship and making livelihood choices in the household with Matuwa village having the lowest number of respondents engaging spouses in decision making at only 32%. About 42% of the respondents were knowledgeable of at least 3 or more environmental conservation and restoration practices and only 18% were practicing at least 3 or more environmental conservation and restoration methods. There were no collective actions plan being put in place by communities and schools directed particularly towards natural resource conservation and restoration and as such there were no collective actions undertaken

The main source of livelihood in the Manafwa watershed is agriculture, which provides food for home consumption but also cash for the households. There is a need to support communities to open up road infrastructure to improve access to markets. This will enable farmers to realize reasonable returns on their crops and livestock products.

The high population and high population growth rate perpetuates environmental degradation. Yet, many farmers are skeptical about family planning. It is inevitable now to sensitize the communities about family planning and encourage its adoption.

There is general appreciation of the role of trees and clear understanding of the causes and consequences of environmental degradation by the communities. The project can leverage this to mobilize, sensitize and motivate communities towards achievement of module 2, 3 and 4 of the project.

Reaffirming the findings of sources of inspiration to undertake farm and land management practices, it emerged that farmers have been learning more from their own experiences than from other sources. They also continued to share and learn from other farmers rather than from external change actors such as government extension workers and development partners. It's also clear that farmers were not yet organised into farmer groups that would able to mobilise, train and link farmers to essential extension services.

Power relations at household levels still remain unbalanced with men independently making most of the decisions. Women should be empowered to take part in the decision-making process on issues affecting their households and effectively contribute to household development. This can be achieved by encouraging households to plan, decide and collaborate together.

The households do not yet recognize the link among vegetation cover, deforestation, household fuel/energy requirements and the general environment. Farmers should be guided to look at their household/farm as a whole and practice integrated approaches to farm management to improve the conditions of their households, farms and the environment in general.

This baseline study of the MWARES project showed that there is a lot of work ahead for the project in all set Outcomes that together should achieve working towards our goal: restoring the resilience of the Manafwa sound watershed by means of stewardship of its natural resources.

6. RECOMMENDATIONS

- i. The project implementation should also incorporate technical training for farmers focusing on agronomy, water, soil and land management practices for improved productivity and production.
- ii. The project implementation should collaborate with the sub county and district stakeholders to strengthen the agricultural extension service structures to reach and benefit the farmers.
- iii. Need for more sensitisation on joint decision making by spouses. Women should become effective participants in the process of decision making rather than being passive.
- iv. Further investigation on why men alone took lead in the decision-making process in regard to distribution of roles in the households as opposed to other decision-making aspects where both spouses decide jointly.
- v. There is need to strengthen farmer to farmer trainings as well as build stronger farmer groups to facilitate learning and knowledge sharing.
- vi. The project implementation should address the challenges of fuel for household use. This could be through supporting the adoption of sustainable alternative fuel sources such as biogas, energy saving stoves etc.
- vii. The project should address the issues of environmental degradation through encouraging or supporting the planting of indigenous tree species. These trees will equally meet fuel requirements as well.
- viii. In building the Manafwa watershed platform, there is need to undertake wider stakeholder sensitisation and mapping to galvanise the most relevant stakeholder involvement.

7. REFERENCES


- Batte, C. (2019). *Environmental Education Baseline Report*.
- Kessler, A., Reemst, L. Van, Kyeswa, C., Muggaga, F., Batte, C., & Mutekanga, F. (2018). *Restoring Resilience & Stimulating Stewardship of the Manafwa Watershed Project Proposal - Uganda*.
- Kessler, A., Reemst, L. Van, & Nsabimana, F. (2018). *PIP manual: A step-by-step explanation of the PIP approach* (Issue September).
- UBOS. (2016). *The National Population and Housing Census 2014-Main Report*.
<https://dc.sourceafrica.net/documents/118158-Uganda-National-Population-and-Housing-Census-2014.html>
- UBOS. (2018). *STATE OF UGANDA POPULATION REPORT 2018*.

8. APPENDICES

Appendix 4.1: MWARES project KPIs Baseline Values

Project Logic / Key Performance Indicator (KPI)	Data Disaggregation	Baseline Values	
		Intervention villages	Control Villages
Objective 1: To lay a solid foundation for resilient farming, with motivated people and healthy land.			
Outcome 1.1: Farmers are intrinsically motivated to invest in resilient farming and PIP activities			
1.1a: % of farmers (or farming households) using at least 5 or more recommended soil / water management practices	Villages	32%	23%
1.1b: % of farmers (or farming households) using at least 5 or more recommended agronomic practices in their farmland	Villages	47%	38%
1.1c: % of farmers (or farming households) engaged in alternative livelihood activities other than farming	Villages	38%	46%
Outcome 1.2: Enhanced collaboration in villages for good stewardship and improved livelihoods			
1.2a: # of villages (target and adjacent) engaged in collaboration activities	Villages	0	0
1.2b: # of farmers (or farming households) whose spouses are involved in decision making on good stewardship and livelihoods choices	Villages	59%	73%
Objective 2: To achieve good stewardship of natural resources in the villages and in the National Park.			
Outcome 2.1: More environmental awareness and action in the villages, especially by the youth			
2.1a: % of farmers (or farming households) knowledgeable at least 3 or more environmental conservation and restoration practices	Villages	42%	33%
2.1b: % of farmers (or farming households) practicing 3 or more environmental conservation and restoration methods	Villages	18%	35%
Outcome 2.2: Collective action is undertaken in the villages / schools to restore and conserve natural resources			
2.2a: % of villages/schools with collective action(s) to conserve natural resources	Villages/schools	0%	0%
2.2b: % of villages/schools implementing collective action(s) to conserve and restore natural resources	Villages/schools	0%	0%
Objective 3: To create an enabling environment for further upscaling of resilience-based stewardship.			
Outcome 3.1: Stakeholders in the watershed are willing and ready for upscaling to other areas			
3.1a: # stakeholders in Manafwa watershed implementing watershed-vision action plans	N/A	0	NA
3.1b: # stakeholders in Manafwa watershed with watershed-vision action plan in their strategic plans	N/A	0	NA
Outcome 3.2: Evidence is available on how PIP fosters resilience-based stewardship of watersheds			
3.2a: # of evidence that demonstrate how PIP fosters resilience-based stewardship of the watersheds		0	0

Appendix 4.2: The Welt Hunger Hilfe Sampling Table

		Required Sample Size for Monitoring and Evaluation <i>Table and Calculator</i>							
		Probability of Confidence= 95.0%				Probability of Confidence= 99.0%			
Population Size	Single Sided Error of Measurement				Single Sided Error of Measurement				
	5.0%	3.5%	2.5%	1.0%	5.0%	3.5%	2.0%	1.0%	
10	10	10	10	10	10	10	10	10	
20	19	20	20	20	19	20	20	20	
30	28	29	29	30	29	29	30	30	
50	44	47	48	50	47	48	49	50	
	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	
100	80	89	94	99	87	93	98	99	
150	108	126	137	148	122	135	145	149	
200	132	160	177	196	154	174	191	198	
250	152	190	215	244	182	211	236	246	
300	169	217	251	291	207	246	280	295	
400	196	265	318	384	250	309	365	391	
500	217	306	377	475	285	365	446	485	
600	234	340	432	565	315	416	524	579	
700	248	370	481	653	341	462	599	672	
800	260	396	526	739	363	503	671	763	
900	269	419	568	823	382	541	740	854	
1,000	278	440	606	906	399	575	806	943	
1,200	291	474	674	1067	427	636	931	1119	
1,500	306	515	759	1297	460	712	1102	1376	
2,000	322	563	869	1655	498	808	1349	1785	
3,000	341	622	1016	2286	543	933	1741	2541	
4,000	351	656	1110	2824	569	1012	2036	3223	
5,000	357	678	1176	3288	586	1066	2267	3842	
7,500	365	710	1275	4211	610	1147	2671	5165	
10,000	370	727	1332	4899	622	1193	2931	6239	
25,000	378	760	1448	6939	646	1285	3557	9972	
50,000	381	772	1491	8056	655	1318	3829	12455	
75,000	382	776	1506	8514	658	1330	3930	13583	
100,000	383	778	1513	8762	659	1336	3982	14227	
250,000	384	782	1527	9248	662	1347	4079	15555	
500,000	384	783	1532	9423	663	1350	4113	16055	
1,000,000	384	783	1534	9512	663	1352	4130	16317	
2,500,000	384	784	1536	9567	663	1353	4140	16478	
10,000,000	384	784	1536	9594	663	1354	4145	16560	
100,000,000	384	784	1537	9603	663	1354	4147	16584	
200,000,000	384	784	1537	9603	663	1354	4147	16586	



Required Sample Size for Monitoring and Evaluation *Table and Calculator*

WHH - Deutsche Welthungerhilfe e.V.

The body of the table shows the **recommended sample size** for a given "population size", desired "probability of confidence" and for an intended "precision of measurement".

Example: In a given population of 1.500 households, with a desired probability of confidence of 95% and with an intended precision of measurement of +/- 2.5% the recommended minimum size of sample would be 759 households.

5.0%

Change these values to select different ranges of error (**precision of measurement**)

Explanation:

In order to measure the true value of a property of a given population, it would of course be necessary to ask everybody. By reducing the size of a sample drawn from the total population, we receive as a consequence more and more an error of measurement. This means, that the measured value in our sample can deviate hazardously by a certain amount (percentage) from the true value of the total population.

In the yellow fields you can insert a desired percentage of maximum measurement error that could probably be accepted. This is however a "single sided" value, in other words a "plus minus" value. If you enter 5% here, this means that the true value of the total population will lie within a range of "plus-minus" 5% of the value we measure in the sample. The "Total Error of Measurement" in this case will be 5% to the left plus 5% to the right, which makes 10% in total.

95.0%

Change these values to select different **probabilities of confidence**.

Explanation:

However, even if we selected a certain precision of measurement, there still exists a (small) probability that the drawn sample represents a minority, and that the measured value of the sample deviates by a large amount from the true value. This probability is called "Alpha-Error". We can reduce this "Alpha-Error" by increasing the sample size, this is why the maximum acceptable "Alpha-Error" has to be indicated. In the green fields you should insert the desired probability of confidence as percentage. 95% means, that it remains an "Alpha-Error" of 5%. Common probability of confidence in very important researches is 99%, in social studies 95%, in field studies could be 90%.

1,500

Change these values to select more precise **population sizes**

Explanation:

The size of the total population has a strong impact on the required sample size. This relation is non-linear. You can see in the table, that for small populations a high percentage is required as sample. The larger the total population, the smaller becomes the percentage of the required sample size. If you don't know the exact size of your total population, it is even better to do a rough estimation than to have no value. It is good to have a look into the table and compare different population sizes, to get a feeling about the relations. Compare population sizes of 3.500 with 5.000 and look, how the recommended sample size is related. The precision for estimating the total population size does not have to be too exact. But if you have the precise value you can enter it here.

Appendix 4.3: Baseline Study Sample Frame

Study Methods	Sample Size per Village				
	Sub county	Village	No. of HHs	Sample size	
Household Survey	Intervention	Bukalasi	Nekoshe	80	33
			Ibokho	212	86
		Bushika	Bushaki	82	33
			Munyende	50	20
		Bushiya	Matuwa	76	31
			Elgon	58	24
		Sun Total	558	227	
	Control		Nabitere	61	40
		Tsekululu	Sibanga	39	39
			Sub total	98	79
			Grand Total	656	306
	Community Meetings	Between 30-35 community members were targeted per village for the Focused Community Meeting. Participants in these meetings included a mix of sexes and various age brackets of individuals above 18 years of age categorized as youths (18-30 years), and other adults aged 30 years or more.			
Key Informant Interviews	Three key district stakeholders/informants were selected based on their pivotal roles at the district. There were; the District Administrative Officer, The District Natural Resources Officer, The District Environmental Officer were selected to provide in-depth information on the existence and implementation of Manafwa Watershed vision Action plan (module 4)				

Appendix 4.4: Household Questionnaire

MWARES BASELINE SURVEY FEB 2020 QUESTIONNAIRE				
Q1	Interviewers' Name			
Q2	Sub County			
Q3	Parish			
Q4	Villages			
Q5	Name of the respondent			
Q6	Telephone number of the respondent			
Q7	Household ID			
Q8	Is the household a beneficiary of the project			0. No 1. Yes
Q9	Gender of the respondent			0. Female 1. Male
Q10	How old is the respondent?			
Q11	Are you the head of the household?			0. No 1. Yes
Q12	If no, how are you related to the head?			
1	Married to the Head	4	Other family member	
2	Child of Head	5	Not family member	
3	Parent of Head			
Q13	If not household head, is the head person married (or has a partner)?			
1	Couple			
2	Woman single			
3	Man single			
Household Size and Gender Comparison				
Q14	Now I will ask about the number of people who live in your household, and their age. What is the total household size?			
Q15.a)	How many young boys (below 18years) live in your household?			
Q15.b)	How many young girls (below 18 years) live in your household?			
Q15.c)	How many males/men (above 18 years) live in your household?			
Q15.d)	How many females/women (above 18 years) live in your household?			
Land Ownership and Use				
Q16	How much land does your household own in total?			
Q17	What is the type of land ownership of the land that this household uses?			
1	Own land	5	Use common land	
2	Customary land	6	No, do not use any land	
3	Rent land from someone else, for own use	7	Other Specify	
4	Forest land under MoU with UWA			
Q17.a)	Do you use forest land for farming?			0. No 1. Yes
Q17.b)	If you use forest land for farming, how much forest land did you use in the last 12 months?			
Q18	If you rent land for farming, how much land did you rent in the last 12months? (...acres)			
Q19	In total, how much land did you use for growing crops during the last 12months?			
Q20	What is the highest level of Education completed by Household head?			
0	No Formal Education			

1	Primary	3	Tertiary/vocational/post-secondary
2	Secondary	4	University
Restore resilience and stimulate stewardship			
Q21	What are the sources of food for your household?		
1	Home grown	4	Donated by relatives, neighbors, well wishers
2	Bought from the market	5	Provided as return/wages for the labour offered
3	Donated by food relief agency/organization	6	Other, specify
Q22	How many meals did you on average have per day in the last one month?		
1	One Meal	4	Four Meals
2	Two Meals	5	Other, Spec
3	Three Meals		
Q23	How always is your food supply across the year, Specifically		
a)	In January?	Not Enough Just Manage Able to Sell	
b)	In February?		
c)	In March?		
d)	In April?		
e)	In May?		
f)	In June?		
g)	In July?		
h)	In August?		
i)	In September?		
j)	In October?		
k)	In November?		
l)	In December?		
Q24	Sources of Household Income and amounts		
a)	What are the sources of income for your household?		
1	Crops	6	Transport
2	Livestock (cattle, poultry, bees, etc.)	7	Formal Employment
3	Forest products sales	8	Gambling/betting
4	Petty Businesses (small stall, crafts)	9	None
5	Business/trading	10	Other Specify
b)	How much income on average did you earn from sale of crops in the last 12 months?	0. No income 1. Specify	
c)	How much income on average did you earn from sale of livestock in the last 12 months?	No income Specify e.g., transfer earnings = 15,000 and donations= 10,000	
d)	How much income on average did you earn from sale of forest products in the last 12 months?		
e)	How much income on average did you earn from petty business in the last 12 months?		
f)	How much income on average did you earn from business/trading in the last 12 months?		
g)	How much income on average did you earn from Transport in the last 12 months?		
h)	How much income on average did you earn from Formal Employment in the last 12 mons		
i)	How much income on average did you earn from Gambling/betting in the last 12 months?		
j)	How much income on average did you earn from other sources in the last 12 months?		
Community Meetings and Frequency			

Q25	Does the community have regular community-initiated meetings to discuss issues that affect the community?		0. No 1. Yes
Q26	How often does the community hold these community meetings?		
1	Weekly	6	Bi-annually
2	Bi-weekly	7	Annually
3	Monthly	8	Sporadically (when an issue arises)
4	Bi-monthly	9	Other Specify
5	Quarterly		
Q27	How often do you attend these community meetings?		
1	Every time they are held	3	Rarely
2	Sometimes	4	Never attended
Q28	When was the last time a community meeting was held?	1. The past week 2. Within the past two weeks 3. Within the past month 4. Within the past two months 5. Within the past three months 6. Within the past six months 7. Within the past twelve (year)	
Q29	When was the last time you attended a community meeting?		
Q30	During the community-initiated meetings that you attended; what kind of issues were discussed? <i>Note: Framer will talk, and you will tick from the list.</i>		
1	Security	5	Governance
2	Conflict	6	Anti-Social Behavior
3	Social Service Delivery	7	Theft
4	Environment	8	Other Specify
Q31	In your own opinion, how would you rate the level of collaboration among the community members?	1. Very bad 2. Bad 3. Moderate 4. Good 5. Very Good	
Q32	In your own opinion, how would you rate the level of trust among the community members?		
Q33	In your own opinion, how would you rate the level of conflicts among the community members?		
1	Very High	4	Low
2	High	5	Very Low
3	Moderate		
Intrinsic Motivation to invest in resilient farming			
Q34	Do you have a drawn up, long term action plan as a household on what you would like to achieve on your farm in the next 3-5 years to come?		0. No 1. Yes
Q35	If YES, where is the evidence of this plan?		
1	Put on paper and seen	4	Not put-on paper, and not able to give a good description of the plan
2	Put on paper but, not being able to show, but has good description of the plan	5	Other Specify
3	Not put-on paper but has good description of the plan		
Q36	If YES, who is involved in the development of the household long term planning?		
1	Man	4	All household members (man, woman and children)
2	Woman	5	Other Specify
3	Man and Woman together		
Q37	What soil, water and land management practices do you undertake on your farm?		

1	Afforestation	12	Rainwater harvesting and storage
2	Buffer strips	13	Reforestation
3	Build Terraces	14	Sediment trapping measures
4	Check dams	15	Stone bunds
5	Composting	16	Stream buffers
6	Conservation/reduced/no tillage	17	Tree planting
7	Contour ploughing	18	Trenching (digging Trenches)
8	Grass bunds	19	Use of manure
9	Grassed water ways (to reduced water speed)	20	Windbreakers
10	Mulching	21	None
11	Perimeter runoff control	22	Other Specify
Q38	What inspired you to undertake the practices you just mentioned previously?		
1	To improve my farm yield	6	To conserve my soil
2	To have more income earn from the farm	7	To improve the quality of my soils
3	To improve the farm in general	8	To prepare for droughts
4	To improve the future farm for my kids	9	Other Specify
5	To conserve the environment		
Q39	Who inspired you to undertake these soil, water and land management practices?		
1	Own initiative (myself)	5	Government (technical people & extension workers)
2	Another household member	6	An NGO
3	A neighbor/relative	7	Other Specify
4	A farm group		
Q40	Who generally decides on which of these practices to implement and where? (for outcome 1.2)		
1	The man	5	The children
2	The woman	6	The entire household together
3	Man and woman jointly	7	Other Specify
4	Man and woman separately for different practices		
Q41	Which of the following crop and livestock management practices do you undertake in your farm?		
1	Strip cropping	10	Agroforestry
2	Crop rotation	11	Weeding in time
3	Early maturing varieties	12	Planting in time
4	Contour farming	13	Spraying (pest and disease management)
5	Banding	14	Having nursery beds for perennials
6	Cover cropping	15	Having seedbeds for vegetables
7	Line planting	16	Planting improved seeds
8	Zero grazing	17	None
9	Irrigation	10	Agroforestry
18	Others Specify		
Q42	What inspired you most to undertake crop and livestock management practices?		
1	To improve my farm yield	6	To conserve my soil
2	To have more income earned from the farm	7	To improve the quality of my soils

3	To improve this farm in general	8	To prepare for droughts (have more water)																		
4	To improve the future farm for my kids	9	Other Specify																		
5	To conserve the environment (conservation)																				
Q43	Who inspired you to undertake these crop and livestock practices?																				
1	Own initiative (myself)	5	Government (technical people & extension workers)																		
2	Another household member	6	An NGO																		
3	A neighbor/relative	7	Other Specify																		
4	A farmer group																				
Q44	What crops do you grow for cash/sale?		<table border="0"> <tr> <td>1. Avocado</td> <td>10. Onions</td> </tr> <tr> <td>2. Banana</td> <td>11. Passion Fruits</td> </tr> <tr> <td>3. Beans</td> <td>12. Soya beans</td> </tr> <tr> <td>4. Cabbage</td> <td>13. Spinach</td> </tr> <tr> <td>5. Cassava</td> <td>14. Sukuma</td> </tr> <tr> <td>6. Coffee</td> <td>15. Sweet potato</td> </tr> <tr> <td>7. Ground nuts</td> <td>16. Tomatoes</td> </tr> <tr> <td>8. Irish potatoes</td> <td>17. Yams</td> </tr> <tr> <td>9. Maize</td> <td>18. Other Specify.</td> </tr> </table>	1. Avocado	10. Onions	2. Banana	11. Passion Fruits	3. Beans	12. Soya beans	4. Cabbage	13. Spinach	5. Cassava	14. Sukuma	6. Coffee	15. Sweet potato	7. Ground nuts	16. Tomatoes	8. Irish potatoes	17. Yams	9. Maize	18. Other Specify.
1. Avocado	10. Onions																				
2. Banana	11. Passion Fruits																				
3. Beans	12. Soya beans																				
4. Cabbage	13. Spinach																				
5. Cassava	14. Sukuma																				
6. Coffee	15. Sweet potato																				
7. Ground nuts	16. Tomatoes																				
8. Irish potatoes	17. Yams																				
9. Maize	18. Other Specify.																				
Q45	Which crops do you cultivate specifically for home consumption?																				
Q46	Who decides on what should be cultivated? (for outcome 1.2)		<table border="0"> <tr> <td>1. The Man</td> </tr> <tr> <td>2. The Woman</td> </tr> <tr> <td>3. Man and Woman jointly</td> </tr> <tr> <td>4. Man and Woman separately for different crops</td> </tr> <tr> <td>5. The Children</td> </tr> <tr> <td>6. The entire household together</td> </tr> <tr> <td>7. Other Specify.</td> </tr> </table>	1. The Man	2. The Woman	3. Man and Woman jointly	4. Man and Woman separately for different crops	5. The Children	6. The entire household together	7. Other Specify.											
1. The Man																					
2. The Woman																					
3. Man and Woman jointly																					
4. Man and Woman separately for different crops																					
5. The Children																					
6. The entire household together																					
7. Other Specify.																					
Q47	Who decides on what crop produce to sell? (for outcome 1.2)																				
Q48	Which animals are you rearing right now?																				
1	Cattle	5	Rabbits																		
2	Goats	6	Apiary/Bee keeping																		
3	Sheep	7	None																		
4	Pigs	8	Other Specify																		
Q49	Which poultry/birds are you rearing now?																				
1	Chicken	4	None																		
2	Turkeys	5	Other Specify																		
3	Ducks																				
Q50	Who decides on what livestock to be reared? (for outcome 1.2)		<table border="0"> <tr> <td>1. The Man</td> </tr> <tr> <td>2. The Woman</td> </tr> <tr> <td>3. Man and Woman jointly</td> </tr> <tr> <td>4. Man and woman separately for different crops</td> </tr> <tr> <td>5. The Children</td> </tr> <tr> <td>6. The entire household together</td> </tr> <tr> <td>7. Other Specify.</td> </tr> </table>	1. The Man	2. The Woman	3. Man and Woman jointly	4. Man and woman separately for different crops	5. The Children	6. The entire household together	7. Other Specify.											
1. The Man																					
2. The Woman																					
3. Man and Woman jointly																					
4. Man and woman separately for different crops																					
5. The Children																					
6. The entire household together																					
7. Other Specify.																					
Q51	Who decides on what livestock produce to sell? (for outcome 1.2)																				
Q52	How do you rate the overall performance of your farm?																				
1	Very Bad	4	Good																		
2	Bad	5	Very Good																		
3	Moderate																				
Q53	Why do you give that rating to your own farm? (Type in the space provided in brief or write in a notebook if very long together with household ID)																				

Household Collaboration to Stewardship			
Q54	What kind of activities do you and your other household members do together to improve the way you get along together in the household? <i>Click all that are mentioned</i>)		
1	Make decisions together	6	Discuss (and resolve) conflicts
2	Plant together	7	Discuss and divide roles and responsibilities
3	Hold regular family meetings	8	Praying together
4	Joint savings	9	Supporting each other where needed
5	Implementing family projects together	10	Other Specify
Q55	What best describes your household?		
1	When there are issues concerning the household, we usually discuss and solve all issues;	4	We hardly discuss these issues together
2	We usually discuss and solve most of these issues;	5	We never discuss these issues together
3	We usually discuss but rarely solve these issues;	6	Other Specify
Q56	Who decides on what the household income should be spent on?		
1	The Man	5	The Children
2	The Woman	6	The entire household together
3	Man and woman jointly	7	Other Specify
4	Man and woman separately		
Q57	Who decides on how household roles are distributed among household members?		
1	Father only	3	Father and mother only
2	Mother only	4	Father, mother and children
Environmental awareness and action			
Q58. a)	Do you experience any environmental challenges?		0. No 1. Yes
Q58. b)	If YES, what key environmental challenges do you face as a community? <i>(tick after a farmer mentions this challenge)</i>		
1	Loss of soils	6	Landslides
2	Loss of vegetation cover	7	Forest fire
3	Lack of enough and clean water for household use	8	I don't know
4	Inadequate water for farming purpose	9	Other Specify
5	Lack of enough fuel wood		
Q59	What causes the mentioned challenges? <i>Tick key words that are mentioned by the farmer)</i>		
1	Un regulated cutting down of trees	5	Changed climate
2	Lack of awareness by communities on importance of trees	6	Bad practices
3	God's punishment	7	Lack of knowledge
4	Too much rain	8	Other Specify
Q60	What practices do you know that can improve the condition of the environment? <i>(farmer talks, interviewer ticks)</i>		
1	Tree planting	6	Conservation of water
2	Agroforestry	7	Conservation of soils
3	Recycling waste	8	I do not know
4	Alternative source of fuel e.g., solar	9	Other Specify
5	Use of energy saving stoves and tools.		

Q61	What activities are you actively engaged into conserve, restore and/or protect the green vegetation cover? (farmer talks, interviewer ticks)		
1	Tree planting	6	Established tree nurseries
2	Agroforestry	7	Awareness rising within communities concerning the environment
3	Reforestation	8	Practicing Good/Sustainable farming
4	Afforestation	9	None
5	Using environmentally friendly sources of fuel e.g., coffee husks. Energy saving stoves	10	Other Specify
Q62. a)	Have you planted indigenous tree species, in the last twelve months?		0. No 1. Yes
Q62. b)	If NO, why haven't you planted any indigenous tree species?		
1	Lack of enough space/land for trees	4	Not enough equipment like watering cans
2	I do not have time for tree management	5	Distant/No Nursery beds (sources) nearby
3	No seedlings	6	Other Specify
Q62. c)	If Yes, which indigenous tree species have you planted in the last one year?		
1	Muvule	7	African alpine bamboo/mountain bamboo (Arundinaria alpine)
2	Midoto	8	Mikhuyu
3	Musizi	9	Tsisubi
4	Misubi	10	Lusoola
5	Mahogany	11	Albizia spp (silk tree)
6	Mighikiri	12	Other Specify
Q63. a)	Have you planted fruit trees, in the last twelve months?		0. No 1. Yes
Q63. b)	If No, why haven't you planted any fruit tree species?		
1	Lack of enough Land/Space for planting fruit trees	4	Expensive to manage
2	Negative attitude/Not a delicacy	5	Other Specify
3	No seeds/seedlings		
Q63. c)	If Yes, Which fruit tree species have you planted in the last one year?		
1	Mango	6	Pawpaw
2	Orange	7	Jackfruit
3	Avocado	8	Guavas
4	Apple	9	Other Specify
5	Moringa		
Q64	In your opinion, what is the role of trees in this area? (farmer talks, interviewer ticks)		
1	Tree roots help hold soils together	5	Trees are a source of firewood for fuel/cooking and lighting
2	Tree roots reduce the speed of water run off	6	Trees provide a good breeze, clean air, good temperature etc (weather/climate related)
3	Trees provide shade for the animals	7	Other Specify
4	Trees are a source of herbs for treatments of Some ailments		
Q65	In your opinion, how would you rate the role of trees in this area?		
1	Very important	4	Not important
2	Important	5	I don't know
3	Somewhat important		

Q66	What sources of energy do you use in your household? (<i>farmer talks, interviewer ticks</i>)		
1	Firewood	5	Biogas
2	Charcoal	6	Briquettes
3	Plant wastes/residues	7	Other Specify
4	Solar energy		
Q67	In your opinion, what sources of energy are good for the environment? (<i>farmer talks, interviewer ticks</i>)		
1	Firewood	5	Biogas
2	Charcoal	6	Briquettes
3	Plant wastes/residues	7	Other Specify
4	Solar energy		
Collective action towards restoration and conservation			
Q68	Are there currently actions being undertaken at community level to restore and conserve the natural resources?		0. No 1. Yes
Q69	If YES, what are these actions? (<i>farmer talks, interviewer ticks</i>)		
1	Afforestation	6	Partnering with other agencies to conserve natural resources
2	Reforestation	7	Establishment of tree nursery beds
3	Protection of water sources	8	Awareness raising within the community
4	Formation of by-laws to regulate use of natural resources	9	Other Specify
5	Formation of committees to oversee utilization and protection of natural resources		
Q70	Is knowledge innovations and best practices about how to protect, restore and conserve natural resources usually shared within the community?		
0	No	3	Yes
1	Yes, but rarely	4	I do not know
2	Yes sometimes		
Q71.	If Yes, how do community members share this knowledge, innovations and best practices within the community on natural resource conservation? (<i>farmer talks, interviewer tick</i>)		
1	Village meetings	4	Farmers' days
2	Farmer groups	5	Village Baraza
3	Exchange learning visits	6	Other Specify
Q72	Are there community-based plans to restore and conserve natural resources?		0. No 1. Yes
Q73	If YES, are these plans or part of these plans already implemented as agreed?		0. No 1. Yes
Q74	If NO, what can be done to ensure that these community plans are implemented to benefit the community? (<i>farmer talks, interviewer ticks</i>)		
1	Election of capable leaders	5	Forging and seeking partnerships with stakeholders interested in natural resource conservation
2	Formulation of specific community-based structures to implement specific plans.	6	Enactment and implementation of by-laws to protect and conserve natural resources
3	Mobilization of community members	7	Other Specify
4	Sensitization of community members of the importance of collective action and protection of natural resources		
Q75	Are there specific by-laws developed by the community to protect , restore and conserve the natural resources within the community?		0. No 1. Yes

Q76	What main collective activities has this community ever undertaken in the past 12 months?		
1	Building public structure like roads, bridges etc.		
2	Building water tanks		
3	Supporting community members in need		
Q77	What describes best the way how often your community undertakes collective activities?		
1	In this community we have often/frequent collective activities	4	In this community, we have rarely/seldom collective activities
2	In this community we have regularly collective activities	5	In this community we have never had collective activities
3	In this community, we only have collective activities when there is a need to do so.		
Q78	In your opinion, how do you rate the level of collective action by this community?		
1	Very bad	3	Moderate
2	Bad	4	Good
Q79	Do you have any other comments?		

Appendix 5: Community Meeting Guide

Goal: Restore resilience and stimulate stewardship of the Manafwa watershed

1. What are the main sources of income for most households? Why that specific source? What are other sources?
2. How many meals in a day does the households have? Why only that number of meals?
3. How many months in a year do households have steady supply of food in their households?

Outcome 1.1: Intrinsic motivation to invest in resilient farming.

1. What practices do you undertake to conserve soils, water and vegetation cover on your farms as a community?
2. What practices do you undertake in your farms to increase crop/tree/animal yields in this community?
3. What drives/inspires you as individuals and or community members to implement these practices?
4. Despite these practices in 1 and 2, why has environmental (soil, water and other natural resource) degradation continued in this community?

Outcome 1.2: Household Collaboration towards stewardship and better livelihoods

1. As a household, are there environmental issues that are of serious concern to you? What are examples of these issues?
2. As a house, how have you addressed these environmental issues?
3. What ways/platforms/mechanisms exists in the village that can be utilised to improve collaboration efforts towards better livelihoods and stewardship?
4. In the event that there is a conflict or misunderstanding among community, how is it handled?
5. What should be done to improve collaboration within the community so as to improve livelihoods and stewardship?

Outcome 2.1: Environmental awareness by community members?

1. How important is environment (land, soil, water, vegetation, air) to you and your household and why?
2. What environmental challenges do you face here in your area and what are the causes?
3. In your opinion, what should be done to mitigate these environmental challenges?
4. What have you done as an individual or a group to solve these environmental challenges?
5. Why is there less vegetation cover of indigenous tree species? What can be done to increase the coverage of indigenous tree species?
6. What are the main sources of fuel used in this community for cooking and lighting? Why only those sources?
7. What are the potential sources of fuel in this community that can be harnessed?

Outcome 2.2: Collective action to restore and conserve the natural resources.

1. What is the status (quality and quantity) of the natural resources (soil/land, water, tree/forest) you have in this village?
2. What actions are being undertaken by the community to conserve and or restore these natural resources and by who?
3. In your opinion, who is responsible for restoration and conservation of natural resources in this village/parish/sub county? And why?
4. Who is responsible for the state of natural resources in your community?

Appendix 6: Key Informant Interview Guide

Outcome 3.1: Stakeholders in the watershed are willing and ready for upscaling to other areas

1. What is your role at the district?
2. How does your role at the district relate to the conservation and restoration of Manafwa watershed and environment in general?
3. Has there been any effort from your office or at district level or from any other stakeholder towards development of concrete action vision plan towards the protection and restoration of the Manafwa watershed? If yes, how successful it been?
4. If no, would you recommend a development of such an action vision plan? Would you be willing to take an active role in its development?
5. If no, why?
6. What would you recommend so as to make this action vision plan a success?
7. What is your opinion on the formation of platform to champion issues of the Manafwa Watershed restoration and conservation? Would you be willing to be part of it?