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# EVALUATION

## Baseline Report: Impact Evaluation of the Feed the Future Tanzania Land Tenure Assistance Activity

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This publication was produced for review by the United States Agency for International Development. It was prepared independently for the E3 Analytics and Evaluation Project by Management Systems International, A Tetra Tech Company; and NORC at the University of Chicago.

## **COVER PHOTO**

**Caption:** A farmer and her child walking in Iringa, Tanzania.

**Credit:** Jacob Patterson-Stein, Management Systems International

# BASELINE REPORT

## IMPACT EVALUATION OF THE FEED THE FUTURE TANZANIA LAND TENURE ASSISTANCE ACTIVITY

Contracted under AID-OAA-M-13-00017

E3 Analytics and Evaluation Project

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### **DISCLAIMER**

The author's views expressed in this publication do not necessarily reflect the views of the United States Agency for International Development or the United States Government.

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## ACRONYMS

CCRO	Certificate of Customary Right of Occupancy
DDL	Development Data Library (USAID)
DLO	District Land Office
E3	Bureau for Economic Growth, Education, and Environment (USAID)
FTF	Feed the Future
GOT	Government of Tanzania
GSES	Generalized Self-Efficacy Scale
HH	Household
ICC	Intra-Cluster Correlation
IE	Impact Evaluation
KII	Key Informant Interview
LTA	Land Tenure Assistance
LU	Office of Land and Urban (USAID/E3)
MAST	Mobile Application to Secure Tenure
MDES	Minimum Detectable Effect Size
MSI	Management Systems International
NGO	Non-Governmental Organization
PLC	Office of Planning, Learning, and Coordination (USAID/E3)
RCT	Randomized Controlled Trial
SAGCOT	Southern Agricultural Growth Corridor of Tanzania
SOW	Statement of Work
VLUP	Village Land Use Plan
USAID	United States Agency for International Development

## ACKNOWLEDGMENTS

The evaluation team thanks the families and village leaders in Iringa District who shared their time to participate in this study. The Iringa District Land Office and the Tanzanian Ministry of Lands, Housing, and Human Settlements both deserve praise for their assistance, cooperation, and patience with the evaluation process and team members. Special thanks to Research Solutions Africa for conducting the household surveys throughout Iringa's rainy season, and to the LTA activity staff for their continued collaboration, cooperation, and communication. The team also thanks Gerald Usika for his quality oversight during data collection, his translation support, and general guidance as the local coordinator for this evaluation. The evaluation benefited from peer reviews of the evaluation design proposal from Seth Gitter and James Fenske, as well as review and input from USAID/Tanzania monitoring and evaluation staff. The evaluation team also appreciates the technical review and support for this report from Management Systems International's Carolyn Fonesca, Jeremy Gans, Andrew Green, Amanda Kitanga, and Irene Velez. The team also thanks Ioana Bouvier (USAID/E3/LU), Sarah Lowery (USAID/E3/LU), Harold Carey (USAID/Tanzania), and Bhavani Pathak (USAID/E3/PLC) for their continued support of this study.



# EXECUTIVE SUMMARY

This baseline report corresponds to the impact evaluation (IE) of the Feed the Future Tanzania Land Tenure Assistance (LTA) activity that the Office of Land and Urban in the United States Agency for International Development's (USAID's) Bureau for Economic Growth, Education, and Environment commissioned. The evaluation incorporates a randomized controlled trial design to rigorously test how mobile mapping and facilitation of land tenure certification affect income, women's empowerment, dispute prevalence, and other factors related to land use and tenure security in Iringa District, Tanzania. This document provides findings from the IE baseline, which show a snapshot of key demographics, household characteristics, and outcome variables. The document also investigates the balance between treatment and control groups and revisits the power calculations from the evaluation design proposal using parameters from the baseline dataset.

## LTA Activity Description

Tanzania presents a dynamic land tenure context. All land in Tanzania is owned by the state and held in trust by the president, but individuals residing on or using designated "Village Land" have the right to obtain formal documentation of their tenure rights in the form of a Certificate of Customary Right of Occupancy (CCRO).<sup>1</sup> However, insufficient capacity in district land offices (DLOs) that issue CCROs, a lack of funds to pay CCRO fees, unfamiliarity with formal land laws, and other factors have resulted in few villagers obtaining formal documentation for their plots. Increasingly, the Government of Tanzania (GOT) and the donor community are recognizing that improving the security of land rights is essential to protect the rights of smallholders, reduce disputes and tensions, and maximize the economic potential of the region.

USAID/Tanzania awarded the four-year, a \$6 million LTA activity to DAI in December 2015 to clarify and document land ownership, support local land use planning efforts, and increase local understanding of land use and land rights in Tanzania. The LTA activity assists villages and the local DLO in Iringa and Mbeya districts in completing the land use planning process and delivering CCROs in select villages. It also includes education on land laws, CCROs, and land management. The LTA activity is using the Mobile Application to Secure Tenure (MAST), an app that facilitates the mapping and CCRO process. The LTA activity will be implemented in 36 villages: 6 that were chosen for initial implementation and the additional 30 as part of the IE in Iringa District, Tanzania.

## Evaluation Questions

Table I shows five questions addressed by the LTA IE that the evaluation team developed and finalized in collaboration with USAID, derived from the LTA theory of change.

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<sup>1</sup> For more on Tanzania's land ownership system, see the USAID Country Profile, "Land Tenure and Property Rights: Tanzania" at [https://www.land-links.org/wp-content/uploads/2016/09/USAID\\_Land\\_Tenure\\_Tanzania\\_Country\\_Profile.pdf](https://www.land-links.org/wp-content/uploads/2016/09/USAID_Land_Tenure_Tanzania_Country_Profile.pdf).



**TABLE 1: THEMATIC AREAS OF INVESTIGATION AND EVALUATION QUESTIONS**

Thematic Area	Evaluation Questions
1. <b>Tenure security and land management</b>	1. In what ways and to what extent do landholders who have received formal land documentation through the assistance of LTA perceive their land rights to be more secure?
2. <b>Land disputes</b>	2. To what extent are landholders who have received formal land documentation through the assistance of LTA less likely to experience land disputes? 2.1 What kinds of disputes (if any) are affected and what are the mechanisms by which LTA affects them?
3. <b>Investment and land use</b>	3. To what extent do landholders who have received formal land documentation through the assistance of LTA change their investment and land use decisions in a manner that reflects strengthened incentives resulting from increased tenure security? 3.1 What (if any) are the specific decisions that are affected and how does LTA influence them?
4. <b>Empowerment</b>	4. To what extent do the LTA outreach and communication activities, as well as mapping, verification, and the formal registration of land, lead to a greater sense of empowerment on the part of women, youth, and pastoralists? 4.1 What (if any) are the specific aspects of empowerment that are affected and how does LTA influence them?
5. <b>Economic and environmental outcomes</b>	5. To what extent do the LTA interventions to strengthen land tenure lead to increased agricultural productivity, household income, and wealth, as well as more environmentally sustainable land-use practices and associated environmental benefits? 5.1 Which (if any) of these outcomes are affected and how does LTA influence them?

## Evaluation Design

The LTA IE uses a cluster randomized design with villages randomly assigned to receive the LTA activity or serve as control villages. Villages in Iringa tend to change over time, with villages subdivided and splitting. A unique aspect of this IE is that the evaluation team, in coordination with DAI, joined with the Iringa DLO and the GOT to conduct a field reconnaissance trip assessing the potential pool of villages ahead of randomization. This trip built support for the evaluation within the DLO and GOT, as well as assessed potential implementation challenges.

To ensure implementation fidelity, the evaluation team and DAI are working together to randomize assignment to LTA over two phases, as Table 2 shows. This two-phase approach was developed in coordination with the implementer to assuage its concerns about villages potentially subdividing over time. By conducting random assignment in phases, DAI would not receive village assignments for implementation through 2019 since those assignments may change in a way that inhibits LTA's approach over that period. For example, if the evaluation team provided DAI with randomly selected treatment villages for implementation through 2019 and these villages then subdivide or fall into an intractable dispute with a nearby non-study village, limited options would remain for reassigning villages for treatment.

Phase I will last from May 2017 to May 2018 and Phase II from May 2018 to September 2019, when the activity ends. In each phase, 15 villages are randomly assigned to the LTA activity and 15 are randomly assigned as control villages, resulting in 30 villages per evaluation phase. The evaluation is conducting a household panel survey of a random sample of respondents in each village prior to each implementation phase, with a midterm survey also taking place for Phase I villages while the first Phase II villages are surveyed.

**TABLE 2: PHASE-IN DESIGN OF THE LTA IMPACT EVALUATION**

Implementation Year	Control	Treatment
2017-2018	15 randomly chosen villages do not receive LTA	15 randomly chosen villages receive LTA
2018-2019	15 randomly chosen villages do not receive LTA	15 randomly chosen villages receive LTA

Baseline data collection consisted of two household interview surveys of 1,179 respondents in 32 villages<sup>2</sup> in Iringa District:

- The “**Head of Household Survey**” was given to the identified head of household. This survey lasted around 75 minutes.
- The “**Wives Survey**” was given to the spouse/partner of the head of household. This survey lasted around 40 minutes.

## Key Findings

Baseline findings in this report focus on the outcome variables for the treatment group that included 267 male heads of household, 122 female household heads, and 196 wives/female respondents.

### Baseline Characteristics

Key household characteristics among the treatment group show overlap between respondent types.

- 84 percent (n=225) of male respondents in male-headed households have a primary education, compared to 58 percent (n=71) of female household heads.
- The age range of respondents overlapped, with wives slightly younger on average. Male heads of household were 47 years old on average, while female heads of household were 55 years old, and wives were 41 years old.
- Male-headed households had an average of 4.3 household members, while this number dropped to 3.3 for female-headed households.

### Variables Associated with Outcomes

#### Tenure Security and Land Disputes

Most respondents viewed disputes as a small or non-existent problem in their village, and no evidence of village clustering among dispute prevalence or perception emerged. Of the 30 respondents who reported being involved in a dispute, 13 (43 percent) said they expected an increase in disputes. Eighty-nine percent of respondents do not perceive a risk that their land could be taken against their will in the next 5 years, but 11 percent do perceive such a risk, indicating a high level of insecurity for these respondents. The one exception is grazing disputes, which about a third of the treatment group perceived to be a big problem.

#### Land Holdings, Use, and Investment

Land holdings were one area of divergence between male- and female-headed households. However, the baseline survey relied on self-reported estimates, which are prone to inaccuracy, as the evaluation team learned during field reconnaissance.

<sup>2</sup> Two buffer villages were randomly assigned to treatment and control as part of Phase I data collection.

The average parcel size across all parcels (in acres) and the number of parcels for male and female head-of-household respondents differed greatly, with a large variance both across household types and within:

- Male-headed households reported an average parcel size of 7.7 acres, while female-headed households reported an average parcel size of 3.5 acres.
- 87.7 percent (n=107) of female household heads reported owning 2 parcels or fewer, while 72 percent of male-headed households (n=191) reported the same.

Few respondents in the treatment group reported making any investments in their land. The only area where respondents made parcel investments was in soil conservation, where 30 percent of male heads of household and 20 percent of female heads of household reported making these investments.

## Social and Empowerment Outcomes

The evaluation team examined food security, self-efficacy, and decision-making as part of the social and empowerment outcomes for this evaluation. Key findings from baseline data collection included:

- Approximately a quarter of male-headed households (n=68) and two-fifths of female-headed households (n=48) in the treatment group reported food insecurity, defined as the household not having enough to eat at least once in the past 12 months.
- Female-headed households reported more frequently going without their preferred foods, with 17 percent (n=21) reporting that this has happened more than 10 times.
- To examine how households view themselves and their level of self-confidence, the evaluation team employed the Generalized Self-Efficacy Scale to assess how respondents view their capability to deal with certain life stressors. A higher score represents stronger self-efficacy. For the female heads of household who share a household with a male head of household, the average self-efficacy score was slightly higher, at 2.95, than the overall average score of 2.78.
- In general, the head of household, whether male or female, was the main decision-maker regarding parcel use; however, male heads of household who reported owning eight parcels jointly made decisions or outsourced decision-making to another household member.
- Around 60 percent of respondents to the “wives survey” reported attending a meeting in the previous year. Village meetings account for 65 percent (n=128) of the meetings attended by wives, while school meetings were the second most common meeting type, accounting for about 5 percent (n=9).

## Conclusions

- **Household characteristics:** The baseline dataset includes 589 LTA beneficiary households. A substantial proportion of these (31 percent) are female-headed, with nearly all household heads reporting an education level of primary or less.
- **Tenure security and land disputes:** The data show substantial variability in perceived tenure insecurity, with many respondents expressing high confidence levels but some expressing major concerns.
- **Land holdings, use, and investment:** Most households use multiple land parcels, with a wide variety in the size of the landholding. Soil conservation is the most common type of investment.
- **Social and empowerment outcomes:** Food insecurity is prevalent among the treatment households, with a quarter of male-headed households and two-fifths of female-headed households not having enough to eat at least once in the past 12 months. Decision-making power related to land tends to be concentrated in male household heads, while roughly 60 percent of women regularly attend village meetings and feel comfortable speaking in them.

- As expected given the randomized design, no major differences were observed between the treatment and control groups that would raise concerns for the IE.
- The IE is expected to have sufficient statistical power to accurately measure the impacts of LTA on a broad range of outcomes. However, the fact that implementation is limited to 30 villages may mean that the IE is not able to reliably detect impacts for a limited number of the anticipated outcomes, such as food security.

# INTRODUCTION

This baseline report corresponds to the impact evaluation (IE) of the Feed the Future (FTF) Tanzania Land Tenure Assistance (LTA) activity that the Office of Land and Urban in the United States Agency for International Development's Bureau for Economic Growth, Education, and Environment (USAID/E3/LU) commissioned. The E3 Analytics and Evaluation Project designed and is implementing the evaluation.<sup>3</sup> The evaluation incorporates a randomized controlled trial (RCT) design, widely considered to be the “gold standard” for IE methodology, to rigorously test how mobile mapping and facilitation of land tenure certification affect income, women's empowerment, dispute prevalence, and other factors related to land use and tenure security in Iringa District, Tanzania. Annex A provides USAID's statement of work (SOW) for the evaluation.

This document provides findings from baseline data collection for the IE, which show a snapshot of key demographics, household characteristics, and outcome variables. The document also investigates the balance between treatment and control groups and revisits the power calculations from the evaluation design proposal using parameters from the baseline dataset.

## LTA ACTIVITY DESCRIPTION

### Background

The Tanzanian land rights system is based on public ownership of land, with all land owned by the state and held in trust by the president. The majority of land in Tanzania is designated as Village Land, which is governed by the 1999 Village Land Act. The act recognizes the rights of villages to hold and govern land according to customary law. Individuals residing on or using Village Land have the right to obtain formal documentation of their rights with a Certificate of Customary Right of Occupancy (CCRO), which the local government can issue.<sup>4</sup>

In practice, most villagers do not have CCROs for their plots and lack formal documentation of their land rights (Pederson 2010). In many villages, the land use demarcation and mapping that are required to issue the documents have not yet been completed. Moreover, the district land offices (DLOs) responsible for issuing CCROs frequently lack the capacity to do so, and rural land users are often unaware of their land rights under the law.

Meanwhile, multiple factors contribute to increasing pressure on land, particularly in the Southern Agricultural Growth Corridor of Tanzania (SAGCOT) region. The confluence of climate change, population growth, and the regular migration of pastoralist communities to the region cause tensions over land and give rise to many types of disputes at various levels (Mwamfupe 2015). Large-scale agricultural investments are increasing in the area, leading to insecurity on the part of smallholders due to weak land rights protection and limited bargaining power (Deininger 2011). Recognition is increasing on the part of the Government of Tanzania (GOT) and the donor community that improving the security of land rights is essential to protect the rights of smallholders, reduce disputes and tensions, and maximize the economic potential of the region.

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3 Management Systems International (MSI) implements the E3 Analytics and Evaluation Project in partnership with Development and Training Services, a Palladium company; and NORC at the University of Chicago.

4 For more on Tanzania's land ownership system, see USAID Country Profile, “Land Tenure and Property Rights: Tanzania,” at [https://www.land-links.org/wp-content/uploads/2016/09/USAID\\_Land\\_Tenure\\_Tanzania\\_Country\\_Profile.pdf](https://www.land-links.org/wp-content/uploads/2016/09/USAID_Land_Tenure_Tanzania_Country_Profile.pdf).

## LTA Overview

The LTA activity, which is a part of the United States Government's Feed the Future (FTF) initiative, is implemented through a four-year, \$6 million contract awarded by USAID/Tanzania to DAI in December 2015. The LTA activity will clarify and document land ownership, support local land use planning efforts, and increase local understanding of land use and land rights in Tanzania. The interventions under the LTA activity aim to increase land tenure security and lay the groundwork for sustainable agricultural investment for both smallholder farmers and commercial investors throughout the SAGCOT and in the value chains of focus for Tanzania's FTF program.

The LTA activity comprises two larger activities (1 and 2) and two smaller activities (3 and 4), described below. Local sustainability is a critical component of the overall activity. The goal of the LTA activity is to empower district and village land institutions in targeted districts to carry forward the capacity development and land administration process independently, and with little or no outside financial support, once the activity concludes. The LTA activity works within the current land management bureaucracy, but helps facilitate formal land certification and education through the following activities:

- Activity 1: Assist villages and district administrations in completing the land use planning process and delivering CCROs in select villages within two districts (Iringa and Mbeya).
- Activity 2: Educate and develop the capacity of village land governance institutions and individual villagers to complete the land use planning and CCRO process; effectively manage land resources; respect the land rights of women, youth, and pastoralists; and build agriculture-related business skills.
- Activity 3: Educate and develop the capacity of district-level land governance institutions in the Mbeya Region to complete the land use planning and CCRO process; effectively manage land resources; respect the land rights of women, youth, and pastoralists; and build agriculture-related business skills.
- Activity 4: Develop capacity to use the Mobile Application to Secure Tenure (MAST) application throughout the SAGCOT and nationally to assist with tenure certification.

## Development Hypothesis

USAID envisions that if the LTA activity provides clarification and documentation of land ownership, supports land use planning efforts, and increases local understanding of land use and land rights, then this will lead to increased agricultural investment, reduced land tenure risk, and more empowered people and local institutions. The LTA activity components work in tandem to promote inclusive agricultural development, food security and investment, and institutional capacity. Figure 1 in the Evaluation Questions section illustrates the causal linkages that USAID envisions for translating results under each of the activities into the LTA activity's intended intermediate and final outcomes.

## Project Implementation Status

DAI started implementing LTA in late 2016 in six pilot villages in Iringa District that will not be included in the IE. Full-scale implementation in 15 Phase I villages began immediately following baseline data collection for the IE in April 2017 and will continue through the year. DAI has developed implementation protocols to ensure consistent deployment of the intervention throughout each village.

# EVALUATION PURPOSE, AUDIENCES, AND USES

This IE comes at an opportune time, as USAID and the GOT are already investing elsewhere in land tenure programming while recognizing that additional research is needed to strengthen the evidence base for how land rights clarification and documentation affects investment, the incidence of disputes, women's empowerment, and tenure security. While USAID and implementers from international development organizations and non-governmental organizations (NGOs) have been exploring different approaches for documenting land ownership and sustainable land investment, few rigorous evaluations have measured the impact of more formal approaches and outcomes from customary tenure systems.

The LTA IE will make an important contribution to the evidence base on the efficacy of land tenure programming. Despite widespread recognition of the importance of strengthening land rights in rural contexts, rigorous evidence on land tenure interventions is lacking. A recent systematic review by Lawry et al. (2014)<sup>5</sup> brings together the existing evidence on the efficacy of land rights interventions in terms of stimulating agricultural investment and productivity. Following an exhaustive search process, the review identifies only 20 papers that use rigorous quantitative methods to measure the impact of land tenure programs around the world, none of which used a RCT design. To date, the only published RCT study of a land tenure intervention is a mid-process working paper by Goldstein et al. (2015)<sup>6</sup> that studies a Millennium Challenge Account program in Benin.

## Purpose

The purpose of this IE is to provide USAID with evidence on the impacts of its investment in the LTA activity and to contribute to research on the impacts of land mapping, registration, and formalization in rural customary land tenure settings in Tanzania. The results of this evaluation will be made widely available to assess lessons learned and, as applicable, encourage replication within or beyond Tanzania. As such, this evaluation will apply USAID's *Evaluation Policy* guidance with respect to using the most rigorous evaluation design and methods possible to demonstrate accountability for achieving results. The evaluation is also designed to capture practical lessons from USAID's experience with regard to increasing sustainable agricultural investment by securing land tenure through first-time registration.

## Audiences

The evaluation is aimed at several audiences. First, the findings are expected to be of value from an accountability and learning standpoint to USAID, specifically USAID/E3/LU and the USAID/E3 Office of Global Climate Change, as well as the Tanzania Mission. Findings and lessons learned from this evaluation will also be of interest to the GOT and donor community active in the sector, who aim to scale CCRO delivery rapidly across Tanzania, and to DAI and other practitioners in the land tenure sector working to document customary land rights. Finally, the evaluation will be of interest to donors such as those involved with the Land Tenure Support Program, a large-scale effort jointly funded by the United Kingdom's Department for International Development, the Swedish International Development Cooperation Agency, the Danish International Development Agency, as well as implementers and

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5 Lawry, S., Samii, C., Hall, R., Leopold, A., Hornby, D., Mtero, F. "The impact of land property rights interventions on investment and agricultural productivity in developing countries: a systematic review." Campbell Systematic Reviews, 2014:1.  
6 Goldstein, Markus, Kenneth Hounghbedji, Florence Kondylis, Michael O'Sullivan and Harris Selod (2015). "Formalizing Land Rights in West Africa: Early Evidence from a Randomized Impact Evaluation in Benin" World Bank Policy Research Working Paper 7435.



scholars more generally by making an important contribution to the evidence base on land tenure interventions.

## Intended Use

This evaluation will inform the design of future donor and government activities that aim to improve tenure security and generate economic benefits by strengthening land rights.

# EVALUATION QUESTIONS

## Theory of Change

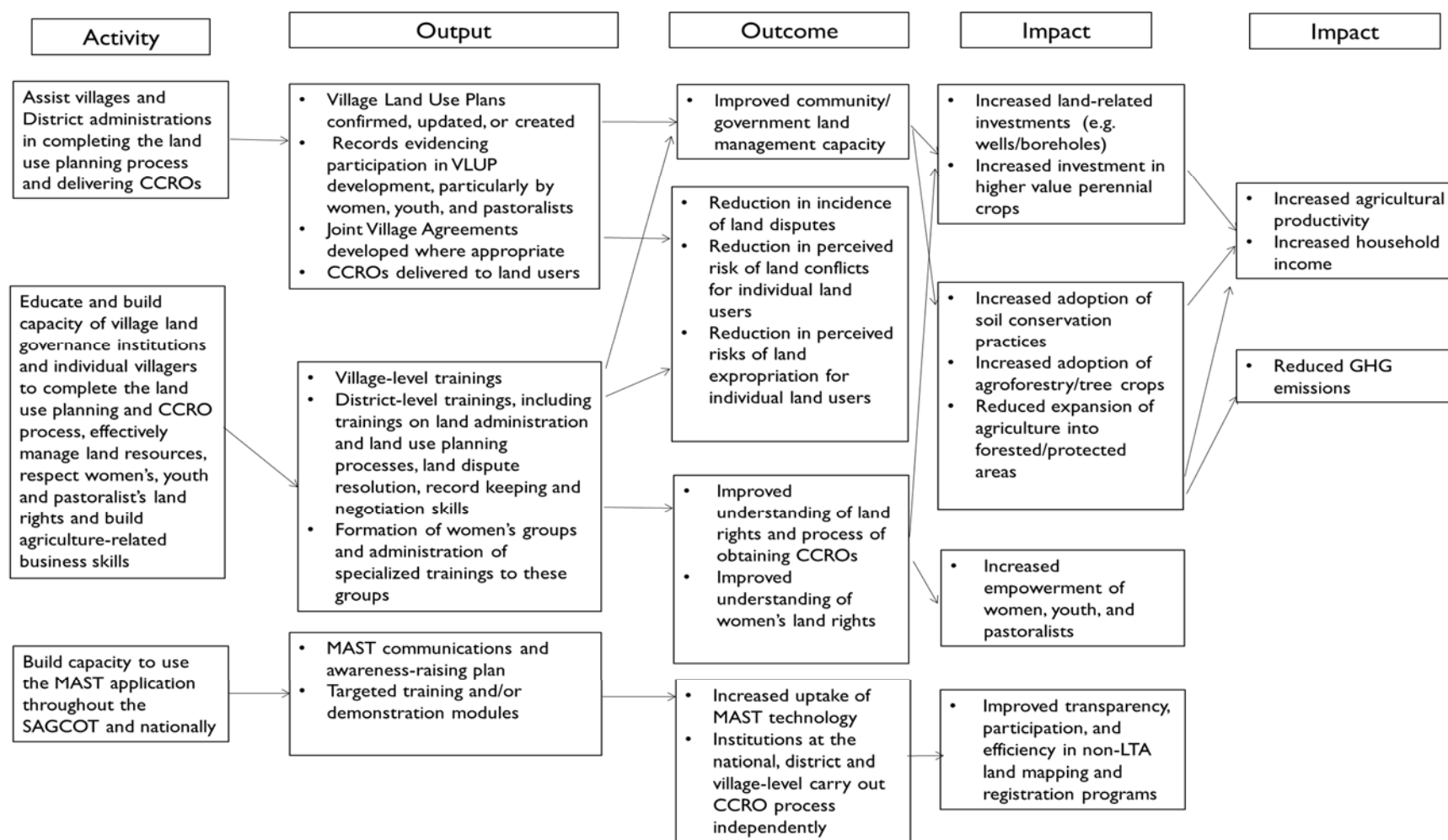
Figure 1 illustrates the causal linkages that USAID envisions for translating results under each of the activities<sup>7</sup> into LTA's intended intermediate and final outcomes. By contributing to the issuing of CCROs to land users, as well as education on the land laws and capacity-building components, the LTA activity will contribute to improved tenure security and reduced incidence of land disputes. These outcomes will, in turn, spur increased investment in agriculture as land users change their behavior in response to stronger incentives brought about by improved security. A greater sense of empowerment for women, youth, and pastoralists is expected to result for individual members of these groups who receive a CCRO. Empowerment should also result more broadly from LTA outreach and education on the land laws, which protect the rights of women, youth, and pastoralists. Developing the Village Land Use Plans (VLUPs), as well as some of the trainings for village and district officials, will improve the capacity of village and government institutions to manage land resources, including to identify and maintain protected areas, establish or strengthen the management of communal forest areas or woodlots, limit excessive expansion of areas under cultivation, and implement other environmental management practices or sustainable land uses within villages. Finally, activities under LTA to raise awareness about MAST and build capacity to use it within the GOT and donor community should result in greater uptake of the MAST technology in future land mapping and registration projects, leading to more transparent, participatory, and efficient processes to issue CCROs.

The IE is limited to measuring LTA's impacts on the direct beneficiaries of the activity through the issuing of CCROs and LTA's outreach and education component – i.e., the first two “activity” boxes in Figure 1. Assessing the extent to which other efforts to issue CCROs have taken up the MAST technology would require different data sources and methods, and would likely require a longer timeframe as well. Thus, the last benefit stream in Figure 1 will be beyond the scope of this IE.

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<sup>7</sup> Figure 1 shows only three activities, since Activity 3 is specific to Mbeya District and this IE focuses solely on LTA activities in Iringa District. This theory of change diagram has been updated since the SOW shown in Annex A, with USAID's approval.

**FIGURE 1: THEORY OF CHANGE FOR THE LTA ACTIVITY**



## Evaluation Questions

The LTA IE addresses five questions derived from the theory of change, shown in Table 3. The evaluation team developed and finalized these questions in collaboration with USAID.<sup>8</sup>

**TABLE 3: THEMATIC AREAS OF INVESTIGATION AND EVALUATION QUESTIONS**

Thematic Area	Evaluation Questions
1. <b>Tenure security and land management</b>	1. In what ways and to what extent do landholders who have received formal land documentation through the assistance of LTA perceive their land rights to be more secure?
2. <b>Land disputes</b>	2. To what extent are landholders who have received formal land documentation through the assistance of LTA less likely to experience land disputes? 2.1 What kinds of disputes (if any) are affected and what are the mechanisms by which LTA affects them?
3. <b>Investment and land use</b>	3. To what extent do landholders who have received formal land documentation through the assistance of LTA change their investment and land use decisions in a manner that reflects strengthened incentives resulting from increased tenure security? 3.1 What (if any) are the specific decisions that are affected and how does LTA influence them?
4. <b>Empowerment</b>	4. To what extent do the LTA outreach and communication activities, as well as mapping, verification, and the formal registration of land, lead to a greater sense of empowerment on the part of women, youth, and pastoralists? 4.1 What (if any) are the specific aspects of empowerment that are affected and how does LTA influence them?
5. <b>Economic and environmental outcomes<sup>9</sup></b>	5. To what extent do the LTA interventions to strengthen land tenure lead to increased agricultural productivity, household income, and wealth, as well as more environmentally sustainable land-use practices and associated environmental benefits? 5.1 Which (if any) of these outcomes are affected and how does LTA influence them?

## EVALUATION DESIGN AND METHODOLOGY

The goal of an IE is to generate objective, scientifically valid evidence of the *causal* impact of an intervention. The central methodological consideration for an IE is its approach to establishing causality. The challenge in this regard arises because for most interventions, the outcomes of interest are affected by a range of factors in addition to the intervention itself. For example, in the present context, one would expect beneficiaries of the LTA activity to experience increases in agricultural earnings as a result of their participation in the activity. However, changes in agricultural earnings are also affected by weather, prices, household labor availability, and other factors that are not related to the activity. Therefore, it is not sufficient for the evaluation to simply measure changes in outcomes for beneficiaries.

<sup>8</sup> The evaluation questions outlined in this section have been revised since the SOW provided in Annex A was prepared, and these changes have been approved by USAID as part of the evaluation design proposal.

<sup>9</sup> The economic and environmental outcomes covered in Evaluation Question 5 are expected to unfold over a longer period, and the full impact of LTA on these outcomes may not be observable over the timeframe of the evaluation. Thus, the endline analysis will provide a preliminary indication of these impacts, while a more comprehensive assessment would require an additional round of data collection. The evaluation team and USAID will explore the possibility of further data collection pending the endline findings.

The evaluation must also include an approach to identifying the extent to which observed changes are due to effects that the LTA activity, as opposed to other factors, induces over the evaluation timeframe.

To separate the impact of the intervention from the influence of other factors, IEs establish the causal impact of the intervention on an outcome for a beneficiary population by considering what *would have happened* to that beneficiary population over the same period of time in the absence of the intervention. To represent what would have happened, IEs use a control group to represent the counterfactual, i.e., the hypothetical outcomes for the beneficiaries in the absence of the activity. An important methodological consideration for IEs is the approach to selecting the control group.

The LTA IE uses a clustered RCT design. Prior to activity implementation in the areas of focus for the IE, a set of villages were randomly assigned to either a treatment group that will receive the LTA intervention, or a control group that will not participate in the activity. Randomized experimental designs such as this are widely considered to be the most methodologically rigorous IE approach, as they provide a more convincing demonstration of causality than alternative designs that require non-random approaches to select a comparison group. An RCT minimizes the potential for selection bias — which occurs when underlying differences between treatment and comparison groups lead to differences in outcomes — by assigning the intervention in a systematically random way.

## Village Selection Process

The IE will measure LTA's impacts on activity beneficiaries in 30 randomly selected villages<sup>10</sup> in Iringa District. Implementation in these 30 villages will occur in two phases: an initial set of 15 randomly chosen villages beginning in 2017, then a second set of 15 randomly chosen villages beginning in mid-2018. Ideally, all 30 villages would be selected at the outset with a single baseline collected prior to implementation. However, in response to concerns raised by DAI, selection of the villages will take place in two stages prior to the beginning of the two phases of implementation. These concerns stem from the fact that the context of the LTA activity may change over time as village administrative and geographic boundaries shift, an increasingly common occurrence as a village's population grows. Village subdivision or boundary changes present implementation challenges since the LTA activity relies on specific satellite imagery and has limited resources to work through VLUPs, sensitization, and other activities without repeating processes for newly created villages. These challenges could also affect the evaluation team's estimation strategy if changes occur in the local context, since any adjustments will require adding some kind of control or weights, and likely reduce analytical precision. Therefore, a list of potential LTA activity villages developed in 2016 may not be appropriate later, as a village on the list may merge with another, or may split into two villages. Criteria that once made a village suitable for the LTA activity in 2016 thus may no longer apply in later years.

The approach to village selection has been discussed in detail and agreed upon between DAI, USAID, the GOT, and the evaluation team. As a first step in this process, the Iringa DLO prepared a master list of 75 villages suggested for potential LTA activity implementation according to its own priorities. From this list, the evaluation team randomly selected 37 candidate villages to allow for 15 Phase I treatment

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<sup>10</sup> The number of villages in the study is determined by the size of the activity. LTA is also being implemented in a preliminary set of non-randomly selected villages in Iringa beginning in 2016, and is also anticipated to be implemented in a set of five test villages in Mbeya. These villages are not included in the IE and were not selected from the list of potential IE villages. The selected 30 villages were chosen randomly after accounting for key factors such as whether the village planned on subdividing, accessibility during the rainy season, and the presence of villagers capable of running the MAST application.

villages, 15 Phase I control villages, and up to 7 villages to be eliminated for implementation reasons prior to randomized assignment.<sup>11</sup>

After identifying potential villages, it was necessary to assess the suitability of these villages for LTA implementation. Villages may not be appropriate for implementation for a variety of reasons, such as the presence of other certification outreach programs, inaccessibility, or impending village subdivision. To address these issues, the evaluation team, DAI, and the Iringa DLO collaborated on a process of field reconnaissance in September 2016 to gather information to assess the suitability of each of the 37 candidate villages for implementation. From the remaining Phase I candidate villages, the evaluation team randomly assigned 15 villages to the Phase I treatment, and 15 to the Phase I control group. Two of the remaining villages were designated as “reserve” villages and candidates for implementation if for some reason implementation cannot take place in the originally designated treatment villages.

Phase II villages will be selected prior to spring 2018 using a similar process. The Phase I treatment, control, and reserve villages, as well as any villages that were unsuitable for implementation, will be removed from the original “master list” of 75 villages compiled by the DLO. The remaining villages will then be reviewed in coordination with the GOT and DAI to determine whether any should be removed from consideration due to circumstances such as changing administrative boundaries, new land tenure programs, or other concerns. To the greatest extent possible, the evaluation team will seek to adhere to the original list and remove villages only when necessary.

For the remaining villages on the DLO list, the evaluation team and DAI will repeat the field reconnaissance process to assess suitability for implementation. As in Phase I, DAI will determine which villages may need to be excluded, and the evaluation team will then randomly assign 15 to treatment, 15 to control, and up to 5 remaining villages as reserve. Table 4 summarizes this process.

**TABLE 4: PHASE-IN DESIGN OF THE LTA IMPACT EVALUATION**

Implementation Year	Control	Treatment
2017-2018	15 randomly chosen villages do not receive LTA	15 randomly chosen villages receive LTA
2018-2019	15 randomly chosen villages do not receive LTA	15 randomly chosen villages receive LTA

## Approach to Randomization

Rather than a simple random assignment, the approach to randomizing villages into treatment and control groups included stratification based on the following criteria, to improve the comparability of the treatment and control groups:

1. Constituency
2. Ward (location)
3. VLUP status
4. Average number of household parcels
5. CCROs reported
6. Crops grown
7. Reported NGO presence
8. Reported disputes prevalence

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<sup>11</sup> To improve balance, the initial 37 villages were selected by stratifying by constituency and blocking on whether the village had a VLUP, geographic location (constituency and ward), and the number of parcels in the village.

Villages were ordered by similarity based on each of these strata, in the order of priority shown above. For example, similar constituencies were grouped together and then grouped by ward, VLUP status, etc., to minimize the distance between each of these factors. Based on this stratification, villages were grouped into pairs and then randomly assigned to treatment or control groups within each pair.

The stratification criteria were chosen based on available data, as well as what criteria influence implementation. For example, stratifying by VLUP status means that villages in the initial pool that have completed VLUPs are equally divided between treatment and control groups, making the groups more comparable. During field reconnaissance, the evaluation team found many NGOs operating in Iringa District. Several of these groups, such as One Acre Fund, provide loans for farm inputs. Stratifying based on the presence of these programs allows the evaluation team to obtain a more balanced sample of treatment and control villages. The goal of this approach is to make sure that any changes in outcomes due to the number of household parcels or activities from outside groups are averaged out across treatment and control when adding more villages to the sample is not an option.

## **BASELINE DATA COLLECTION**

Baseline data collection for the IE provides a snapshot of the key outcome measures and relevant covariates between treatment and control groups prior to the start of LTA activity implementation. The endline analysis can account for any baseline differences across the groups. In addition to the outcomes of interest, the evaluation team examined basic demographic metrics.

### **Baseline Sampling Methodology**

The evaluation team conducted baseline data collection in April and May 2017. MSI subcontracted with Research Solutions Africa (RSA), a Kenyan survey research firm with an office in Dar es Salaam, to conduct the baseline survey. The RSA survey team included 24 enumerators, 6 team leaders, and an overall survey supervisor working with a local coordinator from MSI. The sampling frame consisted of households within all 32 villages in the 17 wards across Iringa District. The MSI team did not tell enumerators, field supervisors, or associated staff which villages were assigned to receive LTA interventions and which would serve as control villages. Figure 2 shows the number of surveys administered in each village.

Prior to the start of data collection, MSI's evaluation coordinator and local coordination, along with RSA's field supervisor and five enumerators, implemented a pretest for the baseline survey in Mayunga, Chamdindi, and Nyakavangala villages in Iringa District. The goal of the pretest was to refine the relevance, sequencing, and wording of survey questions, as well as ensure that the mobile platform could accommodate skip patterns and logic checks in the survey. The pretest villages were purposively selected based on their omission from the evaluation field reconnaissance process in 2016. The MSI coordinators and the RSA field supervisor met with the head land officer at the Iringa DLO to explain the baseline process and build support for the overall evaluation. DLO personnel were helpful in obtaining village leader contact information during the pretesting process.

In each pretest village, the survey team identified target households using a systematic random sampling approach, with the applicable skipping interval per village ranging from 2 to 4. In each identified household, the team interviewed the male and female household heads, as appropriate and simultaneously, if possible. The pretest team completed 58 interviews and went through 8 iterations of the survey instrument and daily updates to the mobile platform, Dooblo Survey to Go.<sup>12</sup> RSA scripted

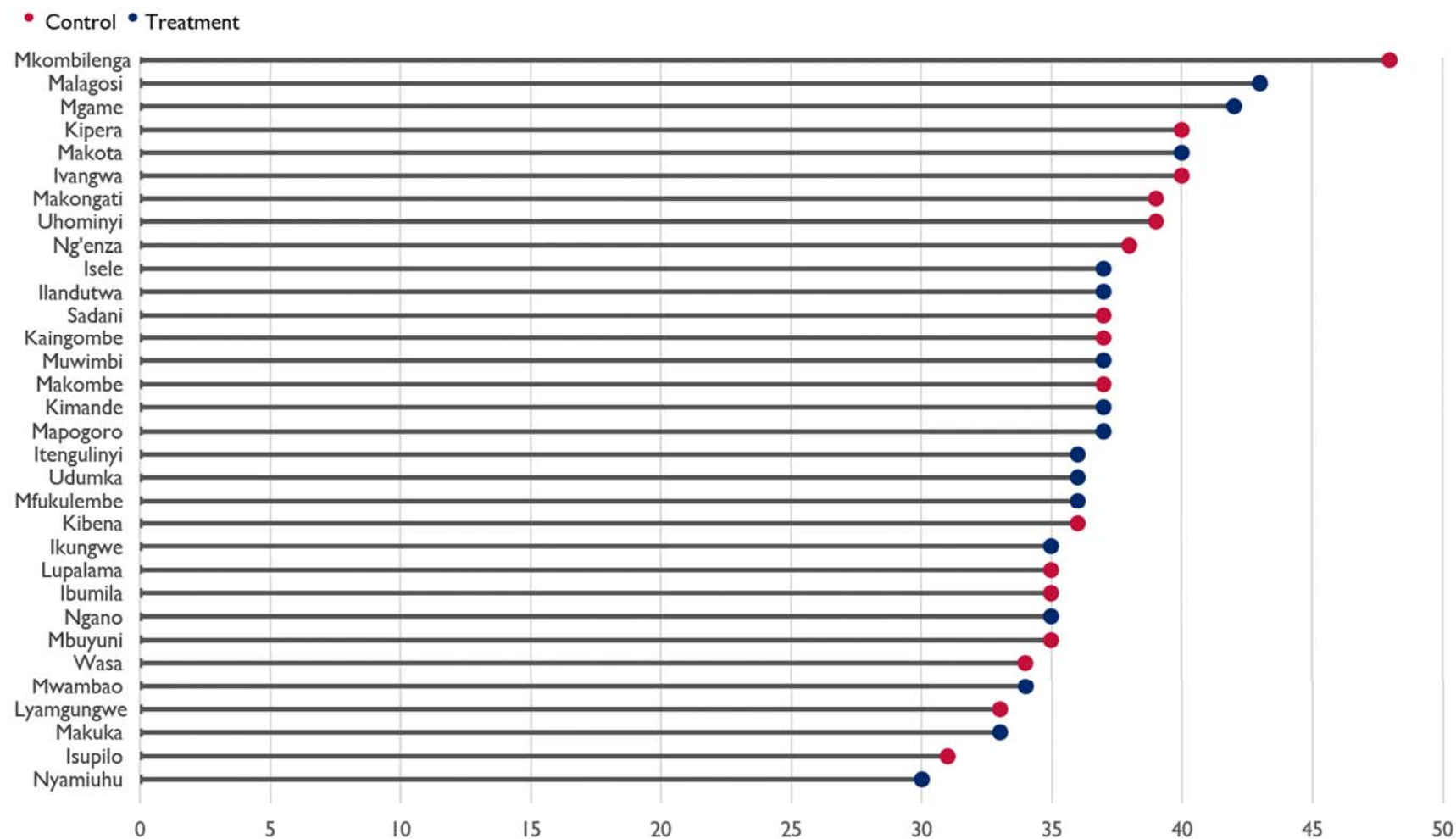
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<sup>12</sup> See [www.dooblo.net](http://www.dooblo.net).

English and Swahili versions of the questionnaire using the mobile platform to ensure translation accuracy and track changes to the software.



**FIGURE 2: 1,179 SURVEY RESPONDENTS IN 32 VILLAGES IN IRINGA DISTRICT**



Following the pretest, RSA's field coordinator led enumerator training in Iringa, with the MSI coordinators providing oversight. Over five days (including three plenary training days, one piloting day, and one piloting debriefing day), RSA's project manager, field manager, and 30 enumerators received training on best practices for interviewing, the ethics of research, electronic data collection devices, the household survey instrument, and the "wives survey" instrument. Both survey instruments were practiced in Swahili. The training contained lectures, roleplays, and group exercises and provided three days for enumerators to practice the survey in small groups, share their questions and advice, and practice using the mobile platform. The piloting exercise was implemented in two villages in Iringa District, Tana Ngozi and Tosa Maganga, where 41 interviews were completed. The pilot debrief consisted of a review of the participants' observations, experiences, challenges, comments, and recommendations, which informed additional improvements in the survey script.

The MSI evaluation coordinator worked with the RSA survey team through the pretesting and training period, with the MSI local coordinator staying on through the first week of data collection. Baseline data collection activities took place from April 19 to April 30, 2017. In addition to the MSI local coordinator and RSA field supervisor, each group of four enumerators was led by an enumerator team leader, who was responsible for team oversight, communicating with village leaders, and conducting sit-in checks, call-backs, and back checks to ensure that enumerators were properly conducting the survey. The field supervisor managed enumerator assignments, held daily check-ins with enumerator team leaders, and undertook random data quality checks. The use of electronic data collection allowed RSA to submit raw data daily to the MSI evaluation coordinator, as an additional level of oversight. The evaluation coordinator checked variation in duration, assessed the distribution of interview types by team and enumerator, and assessed missing and "don't know" responses to ensure survey implementation fidelity.

Each participant provided informed consent after reading a statement about the purpose of the evaluation and the content of the survey. The survey team assured participants that their involvement was voluntary and could be withdrawn at any point. Enumerators assured respondents that their answers would be kept confidential and all data would be anonymized prior to any publication or use.

Consent was provided verbally before the start of the survey. The survey team made follow-up visits to households in the following situations:

- When there was no one in the household at the time of initial (first and second) visits.
- When there were no adult household members/target respondents at the time of the visit.
- When the target respondent(s) were busy at the time of the initial visit, and requested that the enumerators come back at a later time.
- When the enumerators were not able to complete either one or all of the household interviews during their previous visit, but it was still possible for them to return at a later time.

## Household Sample Selection

Six field teams, each consisting of four enumerators and a field supervisor, conducted the household surveys. When possible, enumerators worked in pairs, with one enumerator interviewing the male head of household and another the female head of household. When both male and female respondents were available, enumerators sought to interview female respondents outside of earshot of male respondents, such as inside the home while the husband was interviewed outside of the home. However, in many cases only one member of the household was home due to planting taking place during the data collection period, which coincided with a period of heavy rains. In those cases, the team surveyed only one household member.

The survey team used systematic random selection to find respondents. After arriving in a village, the team followed these steps:

1. Met with the village leader, usually the village chairman. With guidance from the village leader, the teams would split up, each taking a direction and starting a random walk from an appropriate point (e.g., from the nearest intersection in the village or at the village meeting place).
2. Each enumerator pair applied a skipping interval based on the percentage of target households for the village to the total village population, with a minimum skipping interval of 10. Once a team reached a target household, it would then walk to, at a minimum, the 10<sup>th</sup> household after the one it just visited.
3. Informed consent was required for all household interviews. If a respondent refused to be interviewed or decided that they did not want to continue midway through the interview, the enumerator would then move on to the next household based on the skipping interval.

## Survey Instrument

Baseline data collection consisted of two main household interview surveys:

1. The **“Head of Household Survey”** was given to the individual who identified as the head of household when the enumerator presented themselves at the house for data collection. This survey lasted around 75 minutes.
2. The **“Wives Survey”** was given to the spouse/partner of the head of household. This survey lasted around 40 minutes.

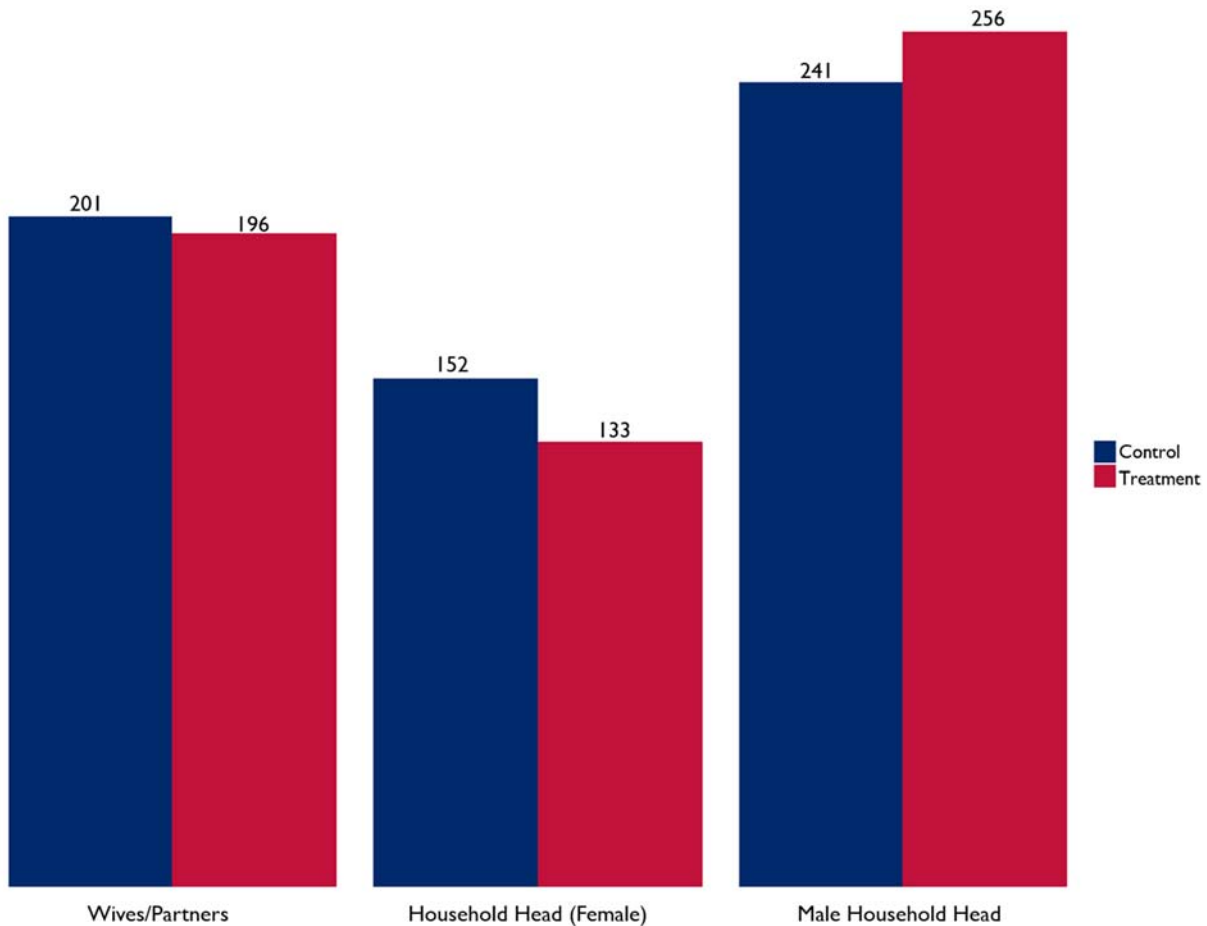
The survey team collected data via mobile devices. Both surveys included questions on disputes, self-efficacy, loans, decision-making, and familiarity with the land laws. The “head of household survey” also included a sketch map portion to use as a reference for follow-up interviews. The “wives survey” included a time-use component that asked respondents to describe their activities for the previous 24 hours. All surveys were geo-coded for additional quality assurance and to facilitate follow-up data collection rounds. Annex B provides the survey questionnaire that the evaluation team developed, and Table 5 shows the questionnaire’s 13 modules. Most questions are based on validated questions from the Tanzanian National Panel Survey questionnaires.

**TABLE 5: SURVEY QUESTIONNAIRE MODULES**

Modules		Indicators
I.	Household Roster and Information	<ul style="list-style-type: none"> <li>• Age, schooling, marital status</li> <li>• Household size, number of adults and children</li> <li>• Economic activity</li> </ul>
II.	Agricultural Organization, Services, Training	<ul style="list-style-type: none"> <li>• Farmer cooperative involvement</li> <li>• NGO activity involvement</li> </ul>
III.	Land Holdings and Characteristics	<ul style="list-style-type: none"> <li>• Parcels owned and rented, parcel size, documentation status</li> <li>• Parcel acquisition method, inheritance, planning</li> <li>• Topography and physical characteristics of parcels</li> <li>• Irrigation, fallowing, and parcel improvements</li> </ul>
IV.	Agricultural Production—Annual Crops	<ul style="list-style-type: none"> <li>• Parcels cultivated, crops grown by parcel, tools used</li> <li>• Seeds planted, amount paid for seeds</li> <li>• Use of inputs (e.g., fertilizer), cost of inputs, use of hired labor</li> <li>• Amount harvested, quantity sold, income from sales</li> </ul>
V.	Agricultural Production—Perennial Crops	<ul style="list-style-type: none"> <li>• Parcels cultivated, crops grown by parcel</li> <li>• Use of intercropping</li> <li>• Trees planted, planned use for trees</li> <li>• Amount harvested, quantity sold, income from sales</li> </ul>
VI.	Perception of Land Rights	<ul style="list-style-type: none"> <li>• Expropriation</li> <li>• Land tenure security</li> <li>• Knowledge of land laws, LTA, and CCROS</li> </ul>
VII.	Land Disputes	<ul style="list-style-type: none"> <li>• Dispute incidence</li> <li>• Nature of disputes</li> <li>• Dispute resolution</li> </ul>
VIII.	Non-Agricultural Income, Consumption, and Assets	<ul style="list-style-type: none"> <li>• Asset inventory</li> <li>• Livestock inventory</li> <li>• Household construction materials</li> <li>• Formal, non-farm employment</li> </ul>
IX.	Household Savings, Borrowing, and Shocks	<ul style="list-style-type: none"> <li>• Borrowing amount and lender</li> <li>• Household shocks</li> </ul>
X.	Food Security	<ul style="list-style-type: none"> <li>• Incidence of food insecurity in the past 12 months</li> </ul>
XI.	Self-Efficacy	<ul style="list-style-type: none"> <li>• Ability to make decisions, confidence, problem solving</li> </ul>
XII.	“Wives Survey”	<ul style="list-style-type: none"> <li>• Demographic information, education level</li> <li>• Expropriation in the event of husband’s death</li> <li>• Income activities, decision-making, disputes</li> <li>• Borrowing</li> <li>• Self-efficacy</li> <li>• Familiarity with land laws, LTA, and CCROs</li> <li>• Time allocation</li> </ul>
XIII.	Sketch Map	<ul style="list-style-type: none"> <li>• Respondent-drawn map showing parcels, terrain, and crop allocation</li> </ul>

Figure 3 shows the final sample sizes that resulted from the sampling process. The survey response rate was high, at 98.5 percent. The remoteness of the study area villages and the fact that many household members were unavailable at certain parts of the day due to farming activities meant that enumerators often made follow-up visits to the selected households. The evaluation team set out to interview both male and female representatives in each household, but this was often not possible given availability during the survey period, which coincided with the rainy season and increased farming activity.

**FIGURE 3: SURVEY RESPONDENTS BY ASSIGNMENT AND RESPONDENT TYPE**



### Challenges Encountered During Data Collection

In general, baseline data collection occurred with limited interruption. While RSA faced several scripting issues during the pretest period and there were several scripting anomalies that took a few days to resolve, these issues were resolved before data collection started. Each survey was geotagged to allow additional data quality oversight and help with respondent tracking for the next phase of data collection.

The biggest challenge that the evaluation team faced in the baseline survey was related to the timing of the survey, as it was undertaken during one of the main rainy periods in Iringa District. This affected the pace at which the survey could proceed due to poor road conditions and the availability of respondents, since many were farming on their parcels while the ground was wet. During pretesting and baseline data collection, the team experienced mechanical problems, largely in the form of flat tires, but in one case an enumerator team had to be picked up after its van broke down on a remote road. While these challenges resulted in delays in the timing, none raise concerns about the quality of the data.

## BASELINE FINDINGS

This section presents baseline findings on key demographics, household characteristics, and outcome variables for the treatment group that will receive the LTA interventions. The findings provide a snapshot of the characteristics, conditions, and outcomes that the IE will measure in the study area. The Balance and Power section includes a comparison of the treatment and control groups.

### Household Characteristics

Table 6 shows general characteristics of treatment households by respondent type. There are 267 male heads of household, 122 female/other household heads, and 196 wives/female respondents. In general, key characteristics among treatment group households overlap between respondent types. Overall, 84 percent of male respondents in male-headed households have a primary education, compared to 58 percent of female household heads. Two outliers include one male household head reporting having a university-level education, and one respondent in the wives group reporting having reached a diploma level. Overall, the age range of respondents overlapped, with wives slightly younger on average.

**TABLE 6: BASIC HOUSEHOLD CHARACTERISTICS BY RESPONDENT TYPE**

Variable	Male Household Heads					Female/Other Household Heads					Wives/Female Respondents				
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
Age	267	47.00	15.54	20	93	122	54.62	14.04	20	92	196	40.73	13.13	18	84
Cooperative membership (1 = Y, 0 = N)	267	0.20	0.40	0	1	122	0.11	0.32	0	1					
Education Level*	267	2.00	0.46	1	5	122	1.60	0.51	1	3	196	1.85	0.52	1	4
Number of HH Members	267	4.28	1.97	1	10	122	3.31	1.61	1	7					

\*Indicator variable where 1 = never/not currently schooling, 2 = primary, 3 = form, 4 = diploma, 5 = university

**FIGURE 4: NUMBER OF FAMILY MEMBERS BY GENDER OF HOUSEHOLD HEAD**



The cross-tabulation mosaic graph in Figure 4 shows the relationship between the number of family members and the household head gender; the wider bars represent a higher frequency within each category. Female-headed households reported smaller household sizes, while male-headed households reported having more family members, with 111 of 256 respondents reporting 5 or more children.

## Tenure Security and Land Disputes

Table 7 presents baseline data related to land rights and tenure security. The data on these outcome variables are mixed, with some respondents expressing confidence in their rights and others raising concerns. Eighty-nine percent of respondents do not perceive a risk that their land could be taken from them against their will in the next 5 years, but 11 percent do perceive such a risk, indicating a high level of



insecurity for these respondents. When asked about the degree of insecurity within their communities more broadly, male and female respondents answered similarly, with 16.1 percent of male respondents (n=43) and 17.2 percent of female respondents (n=21) indicating that worries about expropriation in their community were common.

**TABLE 7: LAND RIGHTS AND TENURE SECURITY VARIABLES**

Variable	Male Respondents					Female Respondents				
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
Is there community perception of expropriation risk (I=Y, 0=N)	267	0.16	0.37	0	1	122	0.17	0.38	0	1
Compared to one year ago, do you think the possibility that someone could try to take one of your parcels has increased? (I=Y, 0=N)	267	0.08	0.27	0	1	122	0.05	0.22	0	1
Do you have familiarity with land laws (I=Y, 0=N)	267	0.05	0.22	0	1	122	0	0	0	0
Expropriation possible in the next five years (I=Y, 0=N)	259	0.09	0.29	0	1	118	0.1	0.3	0	1
Heard of CCROs (I=Y, 0=N)	267	0.63	0.48	0	1	122	0.42	0.5	0	1
Is there a risk that someone will take over one of your plots if you leave it fallow? (I=Y, 0=N)	267	0.48	0.5	0	1	122	0.34	0.48	0	1
Possess land-related documentation (I=Y, 0=N)	265	1.81	0.39	0	1	121	1.93	0.25	0	1
Willingness to pay for a CCRO (in TZS)	167	\$35,682.63	\$47,058.81	\$ -	\$ 300,000.00	51	\$18,392.16	\$22,750.01	\$ -	\$100,000.00

The proportion of respondents worried about expropriation in the next five years was similar across genders. Ten percent of female respondents (n=12) and 9 percent of male respondents (n=24) answered “yes” about expropriation being possible in the next 5 years. Eighteen female respondents who self-reported as the head of the household (and were respondents to the head of household survey) also shared a household with a male head of household respondent. When accounting for household respondents across genders (i.e., when both male and female respondents reported being head of the household and both responded to the “head of household” survey), male head-of-household respondents reported being more concerned about expropriation in the next five years (n=21) compared to the female head-of-household respondents who share a household with another head-of-household respondent (n=1).

About 42 percent (n=51) of female heads of household and 63 percent (n=167) of male respondents had heard of CCROs. Among this group, a large variation occurred in willingness to pay for CCROs, with the median male respondents’ willingness to pay in shillings reported as about twice as much as female respondents’. The wide distribution of responses may say more about a general uncertainty about how to value the CCROs than about one group viewing them as more worthwhile compared to another group.

Compared with female respondents, male respondents were more worried about expropriation and land grabbing compared to a year ago. Similarly, a majority (57 percent, n=70) of female head-of-household respondents reported feeling “no risk” regarding someone taking over their plots if they fallowed, while 46 percent of male heads of household (n = 122) felt no risk in fallowing. Of the 267 male respondents in the treatment sample, 78 (around 30 percent) felt they would be at high risk of land grabbing if they left their plots fallow. As shown in Figure 5, Malagosi had 13 respondents who felt a “very high” risk of someone taking their land if they left it fallow. This is notable considering only 19 male respondents were interviewed in Malagosi. This village is worth highlighting largely due to the high prevalence of respondents who felt at risk.

**FIGURE 5: PERCEIVED RISK OF LAND GRABBING WHILE FALLOWING FOR MALAGOSI, BY GENDER**

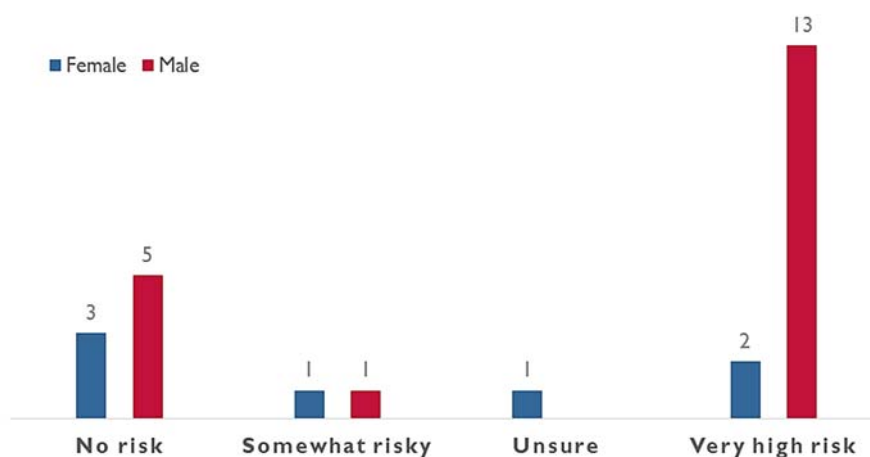


Table 8 presents baseline data on outcome variables related to land disputes. Only 30 respondents in the treatment group reported being in a dispute in the past 12 months, with an even split between male and female respondents. Perhaps unsurprisingly, those respondents who reported involvement in a dispute in the past year were more likely to report that they expected an increase in disputes in the next 12 months. Of the 30 respondents who reported being involved in a dispute, 13 (43 percent) said they expected an increase in disputes; 7 of these respondents were male heads of household and 6 were female heads of household. Around half (n=14) of these disputes related to “Land that the household owned or was using,” such as someone in the area trying to take a household’s land (n=9), someone from outside the area trying to take a household’s land (n=2), boundary disputes (n=2), and in one case, the government trying to take a household’s land; 20 percent (n=6) of reported disputed were related to inheritance. The other 30 percent of disputes that treatment respondents discussed were related to land rental and disputes around land acquisition, such as trying to buy land claimed by renters or other people in the village.

**TABLE 8: LAND DISPUTES SUMMARY STATISTICS**

Variable	Male Respondents					Female Respondents				
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
Number of disputes in the past 12 months	15	1	0	1	1	15	1.07	0.26	1	2
Border dispute risk in the next five years (I=Y, 0=N)	267	0.14	0.35	0	1	122	0.11	0.31	0	1
Expect an increase, decrease, or no change in the upcoming 12 months	267	2.24	0.74	1	3	122	2.40	0.69	1	3
Increase, decrease or no change in disputes over the past 12 months	267	2.30	0.75	1	3	122	2.45	0.72	1	3
Increase, decrease, or no change in risk of boundary dispute compared to a year ago	267	2.56	0.62	1	3	122	2.53	0.62	1	3

As Table 9 shows, the actual incidence of disputes reported by village was low in the sample, with only 30 reported in the past 12 months. The evaluation team investigated whether there was a clustering effect for disputes.

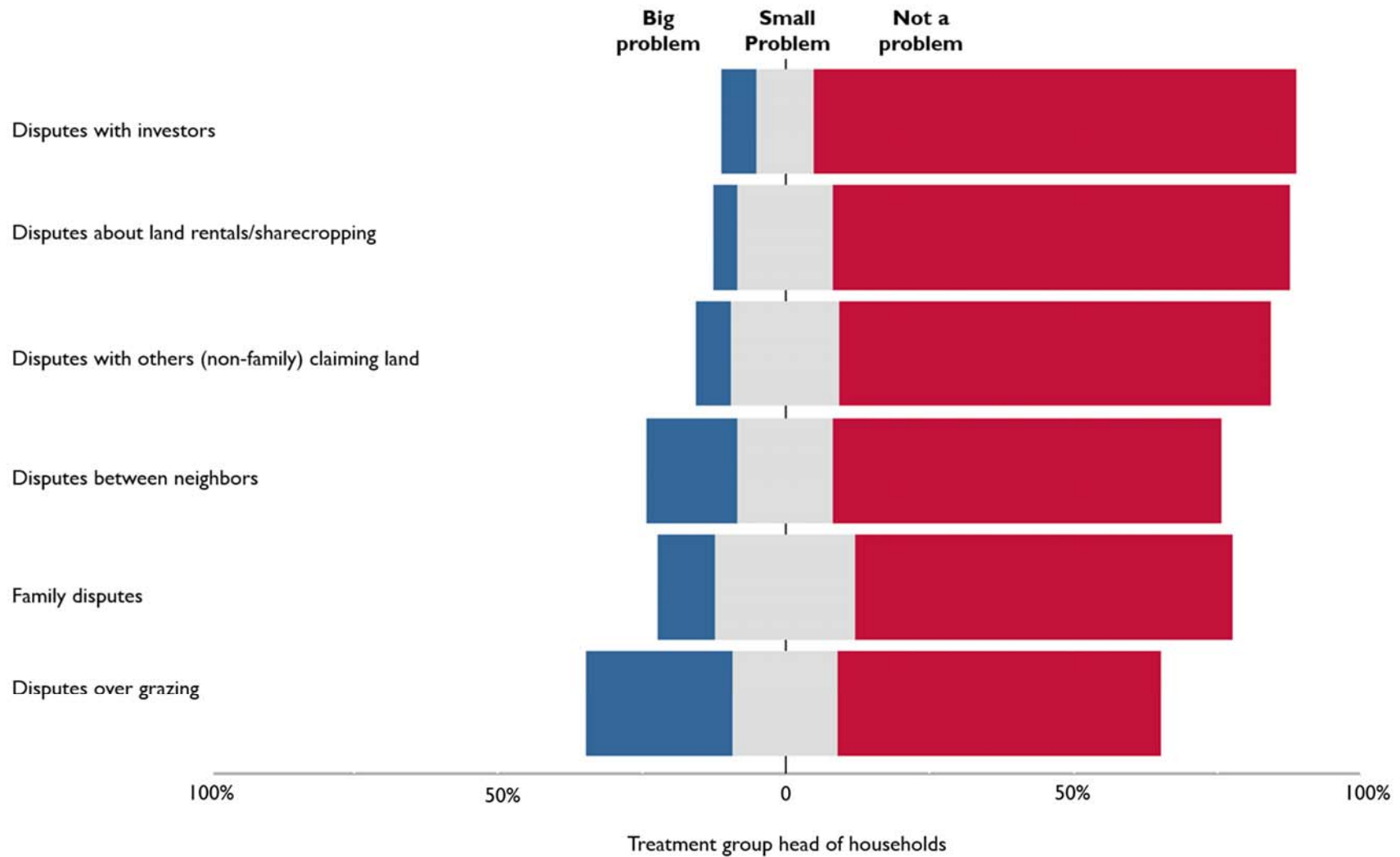
**TABLE 9: DISPUTES BY VILLAGE**

Village	Number of Disputes
Isele	4
Itengulinyi	4
Kimande	3
Makota	3
Makuka	2
Malagosi	4
Mapogoro	1
Mgame	1
Ngano	2
Nyamiuhu	2
Udumka	4

Figure 6 shows the geographic distribution of these villages. The evaluation team also investigated whether any clustering occurred within villages, such as disputes concentrated among respondents. However, the analysis did not reveal concentration across or within villages.

**FIGURE 6: GEOGRAPHIC DISTRIBUTION OF DISPUTES**

**FIGURE 7: HEAD-OF-HOUSEHOLD PERSPECTIVE ON DISPUTES OVER THE PAST FIVE YEARS**

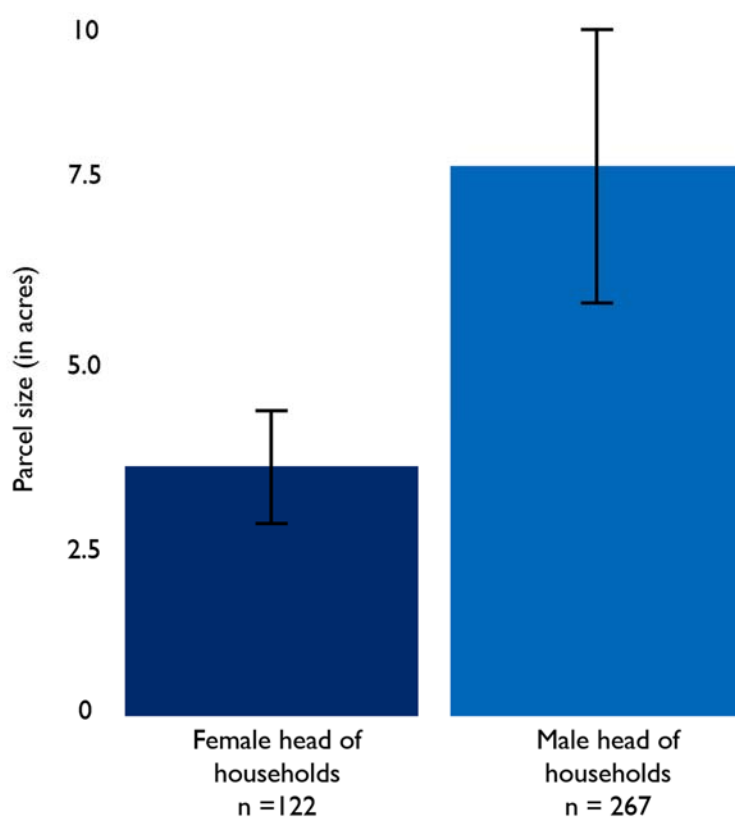


Treatment group respondents reported fairly low severity of different types of disputes. As Figure 7 shows, most treatment group respondents characterized various types of land disputes as either “not a problem” or “a small problem.” Slightly more respondents (25.4 percent, n=99) among both male and female household heads reported disputes over grazing as a big problem.

## Land Holdings, Investment, and Environment

The previously described similarities between male- and female-headed households is less prevalent in the baseline treatment group on metrics related to the number and size of parcels. Male heads of household reported having more parcels, as well as larger parcels. Figure 8 shows the average parcel size across all parcels (in acres) for male and female head-of-household respondents. As shown by the 95 percent confidence interval lines on each bar, variance in parcel size is much larger for households headed by a man. During field reconnaissance, the evaluation team learned through interviews with villagers, the DLO, and discussions with village leaders that parcel size figures are subject to high levels of inaccuracy.

**FIGURE 8: PARCEL SIZE BY GENDER**



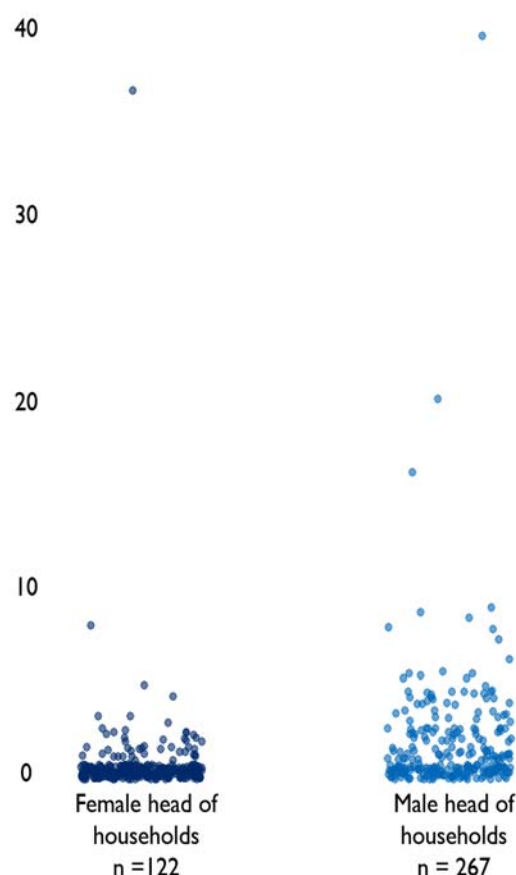
The general distribution of parcels by respondent type differs as well, with 87.7 percent (n=107) of female household heads reporting two or fewer parcels, while 72 percent of male-headed households (n=191) report the same. As Table 10 shows, the maximum number of parcels reported by a male head of household is 8 (n=1) and by a female head of household is 5 (n=1).

Baseline data on environment-related investments in parcels suggest that treatment group respondents have made few investments in their parcels through soil conservation, irrigation, terracing, or upgrades to fencing and buildings. Table 10 shows the responses for each parcel reported by male- and female-headed households. Many of the environment-related outcomes, such as tree planting, had few observations. For example, Figure 9 shows the responses for the total number of fruit trees planted in the past year. Most respondents are not planting trees of any kind (the average is less than one tree for all parcels), but, as the graph shows, there are a few outliers. Many of the environmental aspects of the evaluation are less proximate in the theory of change to activity implementation.

For the male heads of household in the treatment group, the most common improvement was soil conservation. In the treatment sample, 33 percent (n=88) of male heads of household reported making soil improvements in the past year. Female heads of household reported similar soil conservation improvements, with around 25 percent (n=30) making soil improvements to at least one of their plots in the past year.

The low numbers on fencing are not surprising given cultural norms. The labor- and capital-intensive terracing and building construction questions also suggest that given other constraints, households have not made these investments in the past year.

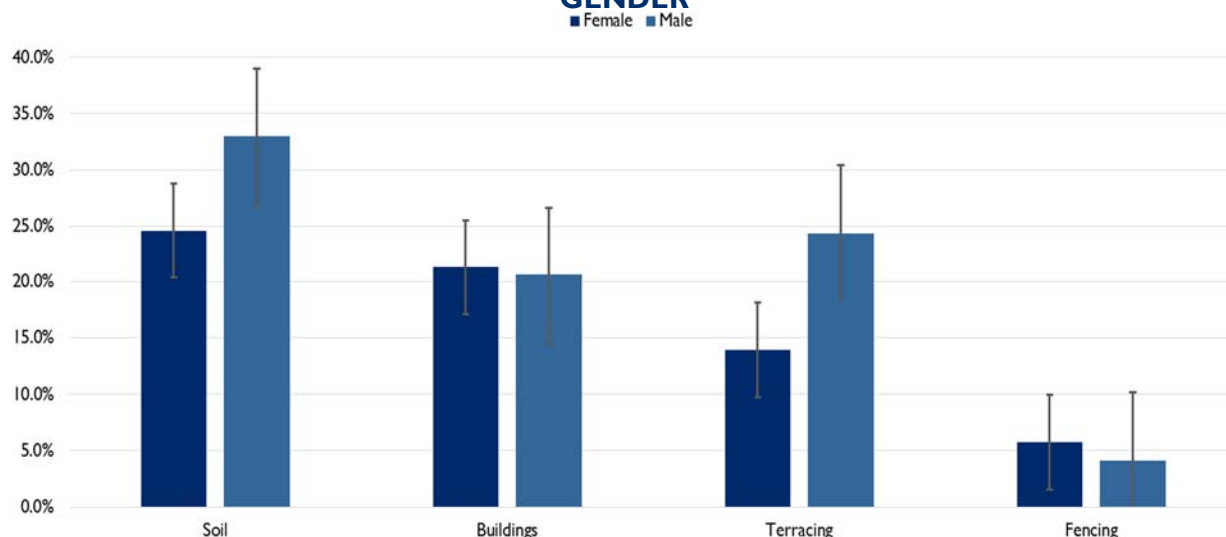
**FIGURE 9: NUMBER OF FRUIT TREES PLANTED IN THE PAST YEAR, BY GENDER**



**TABLE 10: LAND ENVIRONMENT, USE, AND INVESTMENT SUMMARY STATISTICS**

Variable	Male Respondents					Female Respondents				
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
Number of parcels owned or rented	267	2.13	1.15	1	8	122	1.67	0.81	1	5
Parcel size (in acres for all parcels owned)	267	7.70	15.80	0.0	214	122	3.49	4.43	0.2	35
Household invested in: (1=Y, 0=N):										
• Buildings	267	0.21	0.41	0	1	122	0.21	0.41	0	1
• Fencing	267	0.04	0.2	0	1	122	0.06	0.23	0	1
• Soil Conservation	267	0.33	0.47	0	1	122	0.25	0.43	0	1
• Terracing	267	0.24	0.43	0	1	122	0.14	0.35	0	1
• Fallow (1=Y, 0=N)	267	0.36	0.48	0	1	122	0.3	0.46	0	1
• Fruit trees planted (1=Y, 0=N)	267	0.10	0.30	0	1	122	0.03	0.18	0	1
• Non-fruit trees planted (1=Y, 0=N)	267	0.26	0.44	0	1	122	0.19	0.39	0	1

**FIGURE 10: PERCENTAGE OF RESPONDENTS REPORTING INVESTMENTS, BY GENDER**



The following and tree planting patterns between male and female head-of-household respondents provide further insights about the treatment group. Almost 30 percent (n=36) of female heads of household reported fallowing at least one of their parcels, while 36 percent (n=97) of male heads of household reported fallowing one or more parcels. Around 10 percent (n=27) of male respondents reported having perennial fruit trees and 26 percent (n=70) reporting planting non-fruit trees. Only 4 female heads of household said they had fruit trees on their parcels, while 23 (18 percent) reported growing non-fruit trees. The difference between male and female household head fruit tree planting may be related to the number of parcels reported. Male households that reported growing fruit trees had an average of 4.6 parcels, compared to 2 parcels for those who said that they did not grow fruit trees. Three female heads of household who reported having four parcels and one female head of household reporting five parcels also said they had fruit trees. Figure 10 shows the percentage of respondents reporting different investments, including environmental improvements such as soil conservation, as well as the standard deviation of these observations. As noted, these types of outcomes are less proximate to the LTA activity.

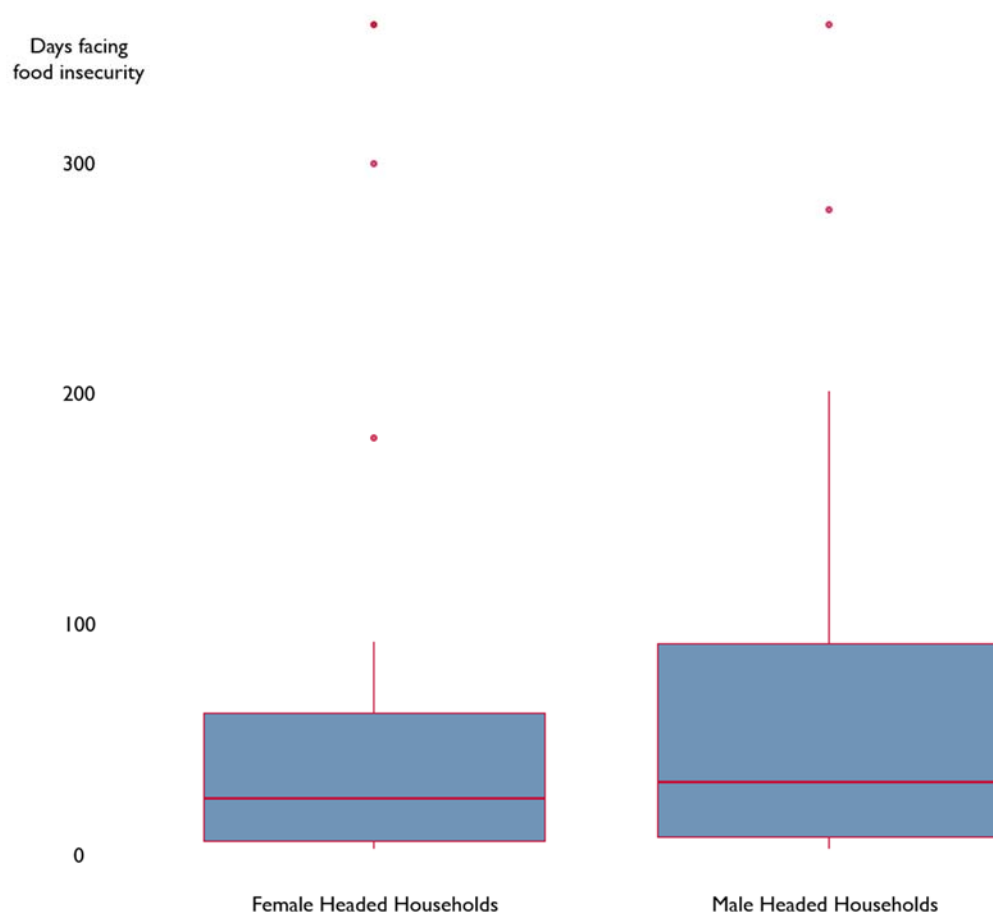
## Social and Empowerment Outcomes

### Food Security

The baseline survey examined economic and environmental outcomes of interest through questions related to food security, household and parcel improvements, and assets. Approximately one-quarter of male-headed households (n=68) and two-fifths of female-headed households (n=48) in the treatment group reported food insecurity, as defined by the household not having enough to eat at least once in the past 12 months. As Figure 11 shows, among households that reported facing food insecurity, male-headed households faced this situation for longer, on average, than female-headed households. This finding holds if outliers shown on the boxplot graph are dropped. The distribution of days facing food insecurity is somewhat even across villages, except for Makota and Ngano, which each have three households in the 90<sup>th</sup> quantile or above for days without food (both Makota and Ngano have two male-headed households and one female-headed household in this category; these respondents are from separate households).



**FIGURE 11: FOOD INSECURE DAYS BY HOUSEHOLD HEAD GENDER**



As Table 11 shows, almost all respondents reported no or rare food insecurity due to lack of resources, no or rare instances of going to sleep hungry, no or rare instances of lacking their preferred foods, and little worry about food insecurity in general over the previous 12 months. Female-headed households did report more frequently going without their preferred foods, with 17.2 percent (n=21) reporting that this has happened often (more than 10 times).

**TABLE 11: FOOD SECURITY SUMMARY STATISTICS**

Variable	Male Respondents					Female Respondents				
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
How often have you not had food in the house due to lack of resources to get food?	267	1.40	0.83	1	4	122	1.70	0.89	1	4
How often have you or any household member gone to sleep hungry because there was not enough food?	267	1.27	0.65	1	4	122	1.52	0.78	1	4
How often have you or any other household member had to eat fewer meals in a day because there was not enough food?	267	1.56	0.92	1	4	122	1.89	0.99	1	4
How often have you or someone in your household been unable able to eat the kinds of foods you would have preferred to eat because of lack of resources?	267	1.69	1.02	1	4	122	2.11	1.07	1	4
How often have you worried that your household would not have enough food?	267	1.60	0.91	1	4	122	1.93	0.97	1	4
Have you been faced with a situation when you did not have enough food to feed the household? (1=Y, 0=N)	267	0.25	0.44	0	1	122	0.39	0.49	0	1
For how long did you face this situation? (in days)	68	62.82	74.64	1	360	48	50.83	84.19	1	360

\*1= Never, 2 = Rarely (once or twice), 3 = Sometimes (3 to 10 times), 4 = Often (more than 10 times)

## Empowerment

Land tenure in Tanzania exists as more than just an economic asset. It holds cultural value and has deep ties to the way people view themselves and their communities. To gain a snapshot of how sampled households view themselves and their level of self-confidence, the evaluation team employed the Generalized Self-Efficacy Scale (GSES).<sup>13</sup> The GSES has been deployed in 25 countries and multiple contexts to assess how respondents view their “capability to deal with certain life stressors.” All respondent types (i.e., male heads of household, female/other heads of household, and wives) were asked the 10 self-efficacy questions from GSES. In general, higher scores suggest stronger self-efficacy. As shown in Table 12, male-headed households have the highest level of self-reported self-efficacy.

<sup>13</sup> Scholz, Urte, Benicio Gutierrez Dona, Shonali Sud, and Ralf Schwarzer (2002) “Is General Self-Efficacy a Universal Construct?” European Journal of Psychological Assessment 18 (2).

**TABLE 12: TREATMENT GROUP SELF-EFFICACY BY RESPONDENT TYPE**

Variable	Male Respondents					Female Head of HH					Wife Respondents				
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
Self-Efficacy: 1 = not at all true, 2 = hardly true, 3 = moderately true, 4 = exactly true															
I am certain I can accomplish my goals	267	3.17	0.84	1	4	122	2.75	0.92	1	4	196	3.14	0.88	1	4
I am confident that I could deal effectively with unexpected events	267	2.91	0.94	1	4	122	2.55	0.92	1	4	196	2.64	0.94	1	4
I can always manage to solve my problems if I try hard enough	267	3.17	0.85	1	4	122	2.78	0.85	1	4	196	2.82	0.89	1	4
I can remain calm when facing difficulties because I can rely on my strength to cope	267	3.07	0.8	1	4	122	2.75	0.85	1	4	196	2.92	0.91	1	4
I can solve most problems if I invest the necessary effort	267	3.15	0.81	1	4	122	2.73	0.92	1	4	196	2.96	0.85	1	4
If I am in trouble, I can think of a good solution	267	3.47	0.63	1	4	122	3.16	0.76	1	4	196	3.28	0.69	1	4
If someone opposes me, I can find the means and ways to get what I want	267	3.16	0.8	1	4	122	2.84	0.79	1	4	196	2.88	0.84	1	4
Thanks to my resourcefulness, I can handle unforeseen situations	267	2.85	0.93	1	4	122	2.7	0.86	1	4	196	2.92	0.91	1	4
When I am confronted with a problem, I always look for an alternative solution	267	3.46	0.67	1	4	122	3.21	0.75	1	4	196	3.26	0.74	1	4
I can handle whatever comes my way	267	3.03	0.9	1	4	122	2.53	0.94	1	4	196	2.75	0.96	1	4

The evaluation team will use follow-up surveys, as well as qualitative data collection at endline, to see how and whether self-efficacy changes as land tenure is formalized and households go through the mapping and certification process. For the female heads of household who also share a home with a male head of household, the average self-efficacy score was slightly higher, at 2.95, than the overall average self-efficacy score of 2.78. Additional comparisons with future data collection rounds and qualitative research will help determine why this sub-population reported higher self-efficacy.

Baseline data collection also included questions related to decision-making power. The survey asked heads of household about decisions around parcels to gain a snapshot of who is involved in deciding how land is used. In general, as shown in Table 13, the head of household — male or female — was the main decision-maker in parcel use. However, for the male heads of household who reported eight parcels, decision-making was jointly made or outsourced to another household member. Overall, female heads of household were more responsible for decision-making around their parcels, with spouses and joint decision-making having more input in male-headed households.

**TABLE 13: DECISION-MAKING SUMMARY STATISTICS**

Variable	Male Head of HH					Female Head of HH				
	n	Mean	SD	Min	Max	n	Mean	SD	Min	Max
Parcel use decision-making: 1 = Head of household, 2 = Spouse, 3 = Both Head and spouse together, 4 = Other male household member, 5 = Other female household member, 6 = Other										
Decision-making on use of parcel 1	267	1.75	1.05	1	6	122	1.26	0.99	1	6
Decision-making on use of parcel 2	180	1.6	0.94	1	4	62	1.16	0.73	1	6
Decision-making on use of parcel 3	76	1.76	0.99	1	4	15	1.13	0.52	1	3
Decision-making on use of parcel 4	27	1.81	1.04	1	4	4	1	0	1	1
Decision-making on use of parcel 5	11	2.09	1.38	1	5	1	1	NA	1	1
Decision-making on use of parcel 6	5	2	1.41	1	4					
Decision-making on use of parcel 7	1	4	NA	4	4					
Decision-making on use of parcel 8	1	3	NA	3	3					

Women's empowerment can be difficult to measure. In addition to decision-making power, the evaluation team collected data on attendance in meetings, choices around use of household resources, and familiarity with land laws to provide insights into a wife's role in the household.

Around 60 percent of wives survey respondents reported attending a meeting (of any type) in the previous year. Village meetings account for 65 percent (n=128) of the meetings attended by wives, while school meetings were the second most common meeting type, with about 5 percent (n=9). As Table 14 shows, most women (59 percent, n=116) in the treatment group said they feel comfortable speaking in meetings.

**TABLE 14: WIVES' DECISION-MAKING SUMMARY STATISTICS**

Variable	n	Mean	SD	Min	Max
Number of group meetings attended	196	2.51	2.56	0	17
Do you feel comfortable speaking in meetings? (1=Y, 0=N)	196	0.59	0.49	0	1
Are there women's groups in the village or surrounding area? (1=Y, 0=N)	196	0.57	0.5	0	1
Decision-making on general parcel use (wives)*	196	2.29	1.37	1	6
Decision-making on income use (wives)*	196	2.54	1.36	1	6
Livestock farming decisions (1=Self, 2=Spouse, 3= Joint decision-making)	60	2.40	0.83	1	3
Food crop farming decisions (1=Self, 2=Spouse, 3= Joint decision-making)	187	2.65	0.60	1	3
Did you or anyone else in the household borrow money in the past year? (1=Y, 0=N)	196	0.19	0.39	0	1
Familiarity with land laws (wives)	177	0.06	0.23	0	1

Parcel use decision-making: 1 = Head of household, 2 = Spouse, 3 = Both head and spouse together, 4 = Other male household member, 5 = Other female household member, 6 = Other

Most wives reported that their spouses were most often in charge of decisions related to food crops and livestock farming, and the number of wives who said that they participated in these decisions was somewhat low (n=53). Eighty-five percent of wives (n=167) had no familiarity with the land laws. This will be an important measure to track in subsequent rounds of data collection as LTA implementation informs villagers of their rights under land regulations.

## BALANCE AND POWER

In addition to the descriptive statistics presented in this document, the baseline data can also be used to test some of the statistical assumptions related to the evaluation methodology. This section investigates two such assumptions. First, balance tests assess the comparability of the treatment and control groups.

Secondly, the power calculations presented in the evaluation design proposal are revisited using parameters from the baseline data to assess statistical power given the sample size.

## Balance Tests

An important consideration in assessing baseline data for an IE is the balance between the treatment and control groups. If substantial differences exist between treatment and control group characteristics, the control group may not be a valid representation of the counterfactual.

The appropriate approach to assessing balance and interpretation of balance tests is not straightforward and has been the subject of recent discussion, summarized in a recent World Bank Development Impact Blog post by David McKenzie.<sup>14</sup> In practice, researchers often use t-tests or regressions using treatment indicator variables to assess balance. However, as Altman<sup>15</sup> and others have explained, no conceptual justification exists for using the statistical significance of such tests as a criterion for assessing balance. The evaluation team's approach to checking balance follows the "normalized differences" approach suggested by Imbens and Rubin.<sup>16</sup> They propose a statistic calculated by taking the difference between the treatment and control group means, divided by the square root of one-half the sum of the treatment and control group variances. An absolute value greater than one for this statistic raises concerns, while an absolute value of 0.25 or less indicates particularly strong balance.

In interpreting the results of balance tests, this IE's difference-in-difference methodology controls for any differences in initial outcomes or other characteristics between treatment and control groups at baseline, so that imbalance on any variable does not present a problem for the analysis. Rather, observed imbalances that are frequent or that suggest a systematic pattern would raise concerns about differences between the treatment and control groups in terms of unmeasured time-varying factors that the analysis cannot control for, and could thus confound the evaluation findings.

Table 15 shows the results of the "normalized differences" for 18 variables. The evaluation team chose these variables to reflect a broad range of the outcome categories and covariates that the IE analysis will use; these include household demographic characteristics, several measures of perceived tenure security, outcomes related to land disputes, women's empowerment, household wealth and economic outcomes, and several types of land related investment. In no cases are large differences between the treatment and control group sample means observed. As the last column illustrates, the "normalized difference" statistic falls below 0.25 for all of the variables, meeting the Imbens and Rubin standard for good balance. The evaluation team thus concludes with a high level of confidence that the treatment and control groups are well balanced, as would be expected given the randomized assignment between the two groups.

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<sup>14</sup> See: <https://blogs.worldbank.org/impactevaluations/should-we-require-balance-t-tests-baseline-observables-randomized-experiments>.

<sup>15</sup> Altman, Douglas (1985) "Comparability of Randomised Groups" *Journal of the Royal Statistical Society: Series D (The Statistician)* 34 (1), pp. 125-136.

<sup>16</sup> Imbens, Guido and Donald Rubin (2015) *Causal Inference for Statistics, Social, and Biomedical Sciences: An Introduction*. Cambridge: Cambridge University Press.

**TABLE 15: NORMALIZED DIFFERENCE BALANCE TESTS FOR SELECTED VARIABLES**

Variable	N	Treatment		Control		Normalized diff. stat.
		Mean	SD	Mean	SD	
Demographics						
Female headed households, %	782	0.39	0.49	0.34	0.47	0.09
Household size	782	3.92	1.98	3.97	1.92	-0.03
Perceived tenure security						
Expropriation in next five yrs. is possible, %	782	0.10	0.30	0.07	0.25	0.12
Most/all in village worried about losing land, %	782	0.15	0.36	0.16	0.37	-0.05
Has documentation for at least one parcel, %	779	0.11	0.32	0.15	0.36	-0.11
Land disputes						
Experienced land dispute in past year, %	782	0.10	0.30	0.08	0.27	0.07
Believe land disputes increased in past five years, %	782	0.17	0.38	0.16	0.37	0.03
Believe land disputes will increase in next five years, %	782	0.16	0.36	0.16	0.37	-0.01
Assets and economic outcomes						
Size of total land holdings, acres	782	5.17	6.68	6.03	12.74	-0.08
HH did not have enough to eat in past yr., %	782	0.35	0.48	0.30	0.46	0.12
Land-related Investment: % of HHs making each land-related investment on at least one parcel						
Wells/irrigation, %	782	0.06	0.24	0.10	0.30	-0.13
Erecting buildings, %	782	0.54	0.50	0.58	0.49	-0.07
Erecting fencing, %	782	0.13	0.34	0.13	0.33	0.02
Terracing, %	782	0.31	0.46	0.35	0.48	-0.09
Soil conservation, %	782	0.46	0.50	0.46	0.50	0.01
Women's empowerment (wives survey)						
Land use decisions make by male head of HH only, %	397	0.35	0.48	0.38	0.49	-0.06
Attended village meetings in past yr., %	397	0.74	0.44	0.73	0.45	0.02
Comfortable speaking in village meetings, %	397	0.59	0.49	0.59	0.49	0.00

## Power Calculations

The baseline data also allow the evaluation team to revisit the power calculations presented in the evaluation design proposal to improve their accuracy and reassess the expected statistical precision of the IE. In many IEs, power calculations are used to determine the minimum sample size that will be required for the desired level of statistical power. In the case of the LTA IE, however, the sample size is constrained by the fact that LTA implementation is limited to 30 villages. Thus, the task of the power calculations is to determine the level of statistical power that will be possible given that the number of villages is limited to 30, rather than the required sample to achieve a given power.

An important parameter in the power calculations is the village intra-cluster correlation coefficient (ICC), which measures the extent to which observed variation in a variable is due to village-level differences rather than individual differences. In the absence of similar datasets to draw on, power calculations must make assumptions about the ICCs. The design proposal thus presented statistical power for a range of assumptions about the ICCs and at varying Minimum Detectable Effect Sizes

(MDES). Table 16 shows these results. A power of greater than 0.8 is typically considered sufficient, while the appropriate MDES depends on the outcome and generally varies between 0.15 and 0.30. On the basis of Table 16, the design proposal concluded that the analysis was likely to be sufficiently powered for most outcomes, but that outcomes for which the ICC was greater than 0.10 and/or for which impacts were particularly small (MDES less than 0.2) the IE would be statistically underpowered. Being underpowered would mean that the IE would run a significant risk of finding no impact even if LTA did in fact have some impact on these outcomes.

**TABLE 16: STATISTICAL POWER BY EFFECT SIZE AND ICC FROM THE EVALUATION DESIGN PROPOSAL**

		Minimum Detectable Effect Size				
		0.10	0.15	0.20	0.25	0.3
ICC	0.01	0.3912	0.7126	0.8842	0.9800	1.0000
	0.05	0.3014	0.5629	0.7605	0.9222	0.9840
	0.10	0.2395	0.4451	0.6627	0.8184	0.9441
	0.15	0.1956	0.3513	0.5669	0.7725	0.8922

Following data collection, the evaluation team can use the baseline data to calculate the ICCs directly instead of using assumptions and thus make a more accurate assessment. Table 17 presents ICCs for selected variables. The results show that in most cases, the ICCs are low, so the analysis should be sufficiently powered to measure these outcomes at plausible effect sizes. There are two exceptions, however. Food security, as measured by the likelihood of the household not having enough to eat at any time in the past 12 months, has an ICC of 0.139, indicating that village-level factors impact food security to a greater degree than they do other outcomes. Moreover, the impact of receiving a CCRO would be expected to have a relatively small impact on this outcome. Thus, the data suggests that the IE will unlikely be able to measure impacts on food security. The likelihood of investing by erecting buildings is also associated with a high ICC, so measuring this outcome may not be possible for the IE. However, other types of land-related investment — such as small-scale irrigation, fencing, terracing, and soil conservation — exhibit lower ICCs and should thus be detectable for the IE.

**TABLE 17: POWER CALCULATIONS FOR SELECTED VARIABLES**

Variable	N	ICC
<i>Perceived tenure security</i>		
Expropriation in next five yrs. Is possible, %	782	0.043
Most/all in village worried about losing land, %	782	0.049
<i>Land disputes</i>		
Experienced land dispute in past year, %	782	0.050
Believe land disputes increased in past five years, %	782	0.063
Believe land disputes will increase in next five years, %	782	0.038
<i>Economic outcomes</i>		
HH did not have enough to eat in past yr., %	782	0.139
<i>Land-related Investment: % of HHs making each land related investment on at least one parcel</i>		
Wells/irrigation, (%)	782	0.056
Erecting buildings, (%)	782	0.163
Erecting fencing, (%)	782	0.049
Terracing, (%)	782	0.074
Soil conservation, (%)	782	0.038
<i>Women's empowerment (wives survey)</i>		
Land use decisions made by male head of HH only, %	397	0.054
Attended village meetings in past yr., %	397	0.066
Comfortable speaking in village meetings, %	397	0.039

Overall, the ICCs are consistent with the conclusions of the statistical power discussed in the design proposal. The data suggest that the IE will be sufficiently powered to measure impacts on the anticipated outcomes at effect sizes of 0.25 or less, though there may be some exceptions for certain variables.

## CONCLUSIONS

This baseline report presented background information about the LTA activity and the IE design, summarized the baseline data collection process, investigated some of the methodological assumptions in the evaluation design proposal, and presented descriptive statistics from the baseline data. The key conclusions that emerge from the baseline research are as follows:

- **Dataset quality:** The baseline dataset appears to be of high quality. The data collection process did not encounter any major challenges, and appropriate monitoring and quality control procedures were followed throughout the process.
- **Household characteristics:** The baseline dataset includes 389 LTA beneficiary households. A substantial proportion of these are female-headed households (31.3 percent), with nearly all household heads reporting an education level of primary or less.
- **Tenure security and land disputes:** The baseline data show substantial variability in perceived tenure insecurity, with many respondents expressing high levels of confidence but some expressing major concerns. For example, 11 percent believe they could lose their land against their will in the next 5 years. Land disputes are relatively unusual, having affected 7.8 percent of households in the past year, but are more than twice as prevalent among women compared to men.
- **Land holdings, use, and investment:** Most households use multiple land parcels, with wide variety across the sample in terms of the size of the landholding. The most common types of investment in land include soil conservation, terracing, and planting non-fruit trees.
- **Social and empowerment outcomes:** Food insecurity is prevalent among the sampled household, with approximately one-quarter of male-headed households and two-fifths of female-headed households reporting not having enough to eat at least once in the past 12 months. Decision-making power related to land tends to be concentrated among male household heads, while roughly 60 percent of women in the treatment group regularly attend village meetings and feel comfortable speaking in them.
- **Differences between groups:** As would be expected given the randomized design, no major differences were observed between the treatment and control groups that would raise concerns for the IE.
- **Statistical power:** The baseline data indicate that the IE is expected to have sufficient statistical power to accurately measure the impacts of LTA on a broad range of outcomes. However, the fact that implementation is limited to 30 villages may mean that the IE is not able to reliably detect impacts for a limited number of the anticipated outcomes, such as food security.
- **Future coordination:** Continued coordination and communication between the evaluation team, the LTA implementation team, and USAID will be important for ensuring fidelity of implementation and the success of the IE.



# **ANNEX A: EVALUATION STATEMENT OF WORK**

## **Impact Evaluation of the Feed the Future Tanzania Land Tenure Assistance Activity**

This Statement of Work is for an impact evaluation commissioned by the United States Agency for International Development (USAID) that will examine the Feed the Future Tanzania Land Tenure Assistance (LTA) Activity.

### **I. Project Information**

LTA is a four-year activity awarded by USAID/Tanzania to DAI in 2015 and is a part of the Feed the Future (FTF) initiative. The LTA activity seeks to clarify and document land ownership, support land use planning efforts, and increase local understanding of land use and land rights in Tanzania. It is envisioned that the interventions carried out under LTA will reduce land tenure-related risks and lay the groundwork for sustainable agricultural investment for both smallholder farmers and commercial investors throughout the Southern Agricultural Growth Corridor of Tanzania (SAGCOT) and in the value chains of focus for Tanzania's FTF program.

The LTA activity was designed in line with the Government of Tanzania's (GOT) land tenure objectives to safeguard USAID's ongoing agricultural and economic growth investments and to protect the interests of the private sector and local communities. The activity seeks to achieve these goals by:

1. Assisting villages in completing the land use planning process and delivering Certificates of Customary Right of Occupancy (CCROs) through the use of open source mobile technology developed under USAID's Mobile Application to Secure Tenure (MAST) pilot activity;
2. Developing the capacity of village and district land governance institutions, and individual villagers, to complete the land use planning and CCRO process, effectively manage land resources, respect women's land rights, and build agriculture-related business skills through education and awareness-raising activities; and
3. Raising awareness of the MAST technology within the GOT, civil society, academia, and the private sector, with the goal of increasing uptake of the technology on a national level.

LTA is comprised of two larger activities (1 and 2) and two smaller activities (3 and 4), described below. Local sustainability is a critical component of the overall LTA activity. The goal of LTA is to empower district and village land institutions in targeted districts to carry forward the capacity development and land administration process independently (and with little or no outside financial support) once the activity concludes.

- Activity 1: Assist villages and district administrations in completing the land use planning process and delivering CCROs in select villages within two districts (Iringa and Mbeya).
- Activity 2: Educate and develop the capacity of village land governance institutions and individual villagers to complete the land use planning and CCRO process, effectively manage land resources, respect the land rights of women, youth, and pastoralists, and build agriculture-related business skills.
- Activity 3: Educate and develop the capacity of district-level land governance institutions in the Mbeya District to complete the land use planning and CCRO process; effectively manage land resources; respect the land rights of women, youth, and pastoralists; and build agriculture-related business skills.
- Activity 4: Develop capacity to use the MAST application throughout the SAGCOT and nationally.

DAI plans to implement LTA in five to six test villages over the summer of 2016. These initial villages are likely to be in Iringa District, due to Ministry preferences, but may be in Mbeya District as part of the LTA's capacity development activities. Full rollout of LTA is expected to occur in early 2017 in Iringa District, with at least 30 villages selected to receive the interventions.

## 2. Development Hypothesis

USAID envisions that if the LTA activity clarifies and documents land ownership, supports land use planning efforts, and increases local understanding of land use and land rights, then this will lead to increased agricultural investment, reduced land tenure risk, and more empowered people and local institutions. The LTA activity components work in tandem to promote inclusive agricultural development, food security and investment, and institutional capacity.

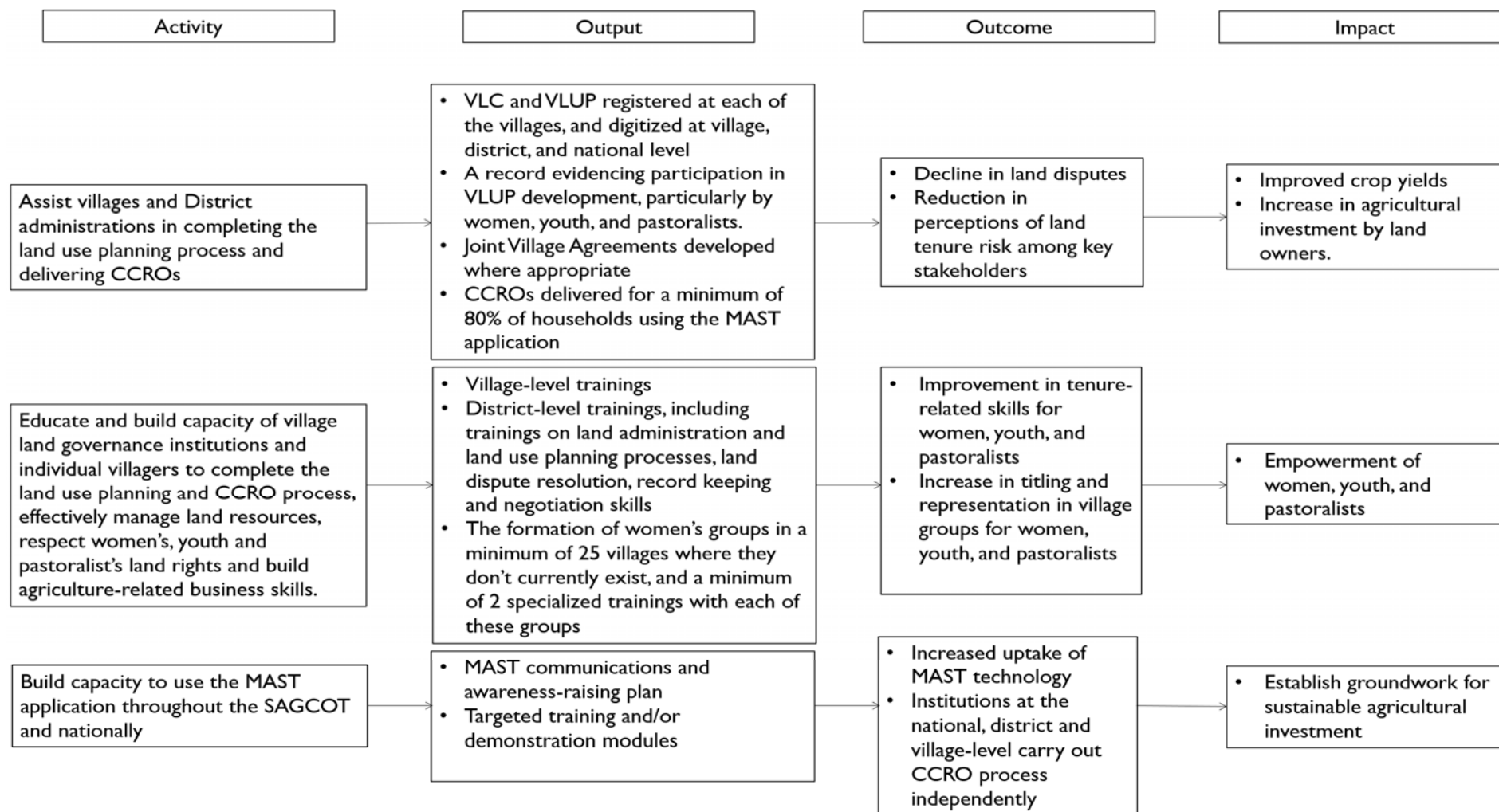
This section provides a preliminary version of the development hypotheses and causal linkages that the evaluation will consider, which will be refined and further elaborated in the Evaluation Design Proposal. Figure 1 illustrates the causal linkages that USAID envisions for translating results under each of the activities<sup>17</sup> into the LTA activity's intended intermediate and final outcomes and that this evaluation will be expected to examine. In this Theory of Change diagram, the proliferation of CCROs leads to increased investment and reduced disputes through improved perception of tenure security. As illustrated in the diagram, the possible hypotheses for examination within the LTA activity could include:

1. If villages and district administrations receive assistance for completing the land use planning process and delivering CCROs to formalize land rights, then disputes over land tenure will decline and crop yields will improve.
2. If village land governance institutions and individual villages are educated and trained on the land use planning and CCRO process, including on respecting the land rights of women, youth, and pastoralists, then women, youth, and pastoralists will experience an increase in titling, improvement in skills, and have better representation in their villages.
3. If the LTA activity develops capacity to use the MAST application throughout the SAGCOT and nationally, then communities and institutions at all levels will be able to sustainably certify land tenure, which will promote agricultural commercial activity and investment.

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<sup>17</sup> Only three activities are shown in the Theory of Change diagram, since Activity 3 is specific to Mbeya District, and this evaluation will largely focus on Iringa District.

**FIGURE 1: THEORY OF CHANGE FOR THE LTA ACTIVITY**



### 3. Existing Performance Information Sources

The LTA activity is currently in its start-up phase and is developing an inception report that will outline its approach to implementation. There have been similar, albeit smaller scale, land rights interventions in Tanzania that utilize mobile technology,<sup>18</sup> but these have not been rigorously evaluated. The evaluation team has received limited documentation on the LTA activity's implementation plans to date, but USAID and DAI have committed to share all implementation reports, results frameworks, and survey materials as they become available.

USAID has already provided the evaluation team with the following documents and data related to the LTA activity:

- Scope of Work for the LTA Request for Task Order Proposals (RFTOP)
- USAID/Tanzania letter to the Ministry of Lands, Housing, and Human Settlement Development
- Iringa Village Data
- Iringa District Map with potential selection sites

The following additional documents have not yet been provided to the evaluation team but will be shared as the evaluation progresses:

- DAI proposal for LTA RFTOP
- Results framework from DAI for LTA
- All future quarterly and annual project management and progress reports prepared by DAI for LTA
- Copies or detailed descriptions of content of land tenure campaigns
- Documents pertaining to the certification, selection, and implementation of tenure projects
- Annual USAID/Tanzania LTRM Survey materials, including M&E data, sampling plans, and survey instruments

In addition to information provided by USAID and DAI, the evaluation team may need to access other types of secondary data, including administrative information on the relevant Tanzanian municipalities from a variety of sources, including Government of Tanzania (GOT) statistical agencies. The evaluation team will work with USAID and DAI as needed to obtain relevant introductions and permissions to access any such data that are needed.

### 4. Evaluation Purpose, Audience, and Intended Use

#### Purpose

The purpose of this impact evaluation is to provide USAID with an evidence base on the impacts of its investment in the LTA activity and also to build the evidence base on the impacts of land mapping, registration, and formalization in rural customary land tenure settings in Tanzania. The results of this evaluation will be made widely available to encourage replication within or beyond Tanzania, as applicable. As such, this evaluation will apply USAID's *Evaluation Policy* guidance with respect to using the most rigorous evaluation design and methods possible to demonstrate accountability for achieving results. The evaluation is also designed to capture practical lessons from USAID's experience with regard to increasing sustainable agricultural investment by securing land tenure through first-time registration.

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<sup>18</sup> Mobile technology refers to MAST, which uses open source code and readily available mobile technologies (e.g., GPS/GNSS-enabled smart phones and tablets) coupled with broadly participatory crowd-sourced data collection methods.

## Audience

The evaluation is aimed at several audiences. First, the findings are expected to be of value from an accountability and learning standpoint to USAID. Secondly, findings and lessons learned from this evaluation will also be of interest to the GOT, which aims to scale CCRO delivery rapidly across the country, and to DAI and other practitioners in the land tenure sector working to document customary land rights. Finally, the evaluation will be of interest to donors, implementers, and scholars more generally by making an important contribution to the evidence base on land tenure interventions.

## Intended Use

This evaluation will be used to inform the design of future donor and government activities that aim to improve tenure security and generate economic benefits by strengthening land rights. One such activity is the upcoming Land Tenure Support Program, a large-scale effort jointly funded by DfID, SIDA, and DANIDA.

## 5. Evaluation Questions

The evaluation will address a specific set of evaluation questions that will be developed and finalized in close collaboration between USAID/E3/Land, USAID/Tanzania, the evaluation team, DAI, and other stakeholders as appropriate. This SOW will be updated following final agreement on the evaluation questions.

In general, the evaluation questions are expected to focus on the impact of the LTA activity on four types of outcomes:

1. Investment: by improving tenure security and reducing disputes, LTA is also anticipated to stimulate small-scale agricultural investment. Stronger land rights increase landholders' confidence that they will be able to reap the benefits of investments in their land that pay off over time. Such investments may include small-scale irrigation technology, soil conservation measures, or switching to perennial crops such as coffee, cashews, or fruit trees. The existing evidence on the relationship between land rights and these kinds of investments shows considerable variation in the levels and types of impacts that are observed; a summary and meta-analysis of the evidence from West Africa is provided by Fenske (2011).
2. Perceived tenure security: an important outcome associated with LTA is the extent to which beneficiaries perceive the activity as having strengthened their land rights. In practice, this means that LTA should reduce beneficiaries' concerns that their land could be expropriated, or that they could face costly disputes related to their land. Measuring the activity's impact on these kinds of perceptions requires careful attention to the context, so that survey questions can be structured around the particular issues and concerns that beneficiaries face. A number of previous impact evaluations commissioned by USAID/E3/Land have considered these issues, and the impact evaluation of LTA will draw on these experiences in developing its approach to measuring tenure security.
3. Incidence of land-related disputes or disputes: in addition to changing perceptions, another outcome that the evaluation may consider is the actual incidence of disputes and disputes over land. As above, careful attention to context is needed in designing the approach to measuring these outcomes. While reducing land dispute is an important outcome, a potential challenge with measuring impacts on dispute is that interventions such as those under LTA can actually increase the incidence of land disputes in the short run. For example, disputes may arise in the course of establishing boundaries, or latent disagreements about land rights may rise to the surface in the course of establishing formal claims. Such disputes were observed for the first

MAST pilot site, with several reported cases of border disputes, intra-family disputes over ramifications for inheritance, as well as former residents returning to try to reassert old claims when they learned that land registration was occurring. In course of finalizing the evaluation questions, the evaluation team should assess the potential for the evaluation to accurately measure these kinds of outcomes within the anticipated timeframe for the evaluation.

4. **Empowerment:** the evaluation will also consider outcomes related to empowerment. Empowerment is often considered from the standpoint of potentially vulnerable sub-groups such as women, youth, or the poor, and can also be conceptualized more generally. A World Bank study by Alsop and Heinsohn (2005) defines empowerment broadly as “as a person’s capacity to make effective choices; that is, as the capacity to transform choices into desired actions and outcomes,” and presents a framework for measuring different dimensions of empowerment. In the context of LTA, strengthening land rights is expected to act on empowerment by improving security of assets that are critical to people’s lives in the household, community, and economy.

For the impact evaluation of LTA, empowerment outcomes are of particular interest in the context of gender. A recent paper by Allendorf (2007), for example, found that land rights are closely linked to women’s empowerment in Nepal. In addition, USAID has funded the development of the Women’s Empowerment in Agriculture Index, which is widely used to measure women’s empowerment in FTF activities. The Index includes a battery of survey questions and methods to measure various dimensions of empowerment, and could be incorporated directly into the household surveys for the LTA impact evaluation.

The types of outcomes described above reflect changes in behaviors and attitudes that are expected to be measurable over a relatively short timeframe (approximately one to two years following the conclusion of implementation). LTA is also anticipated to potentially impact a broader set of economic outcomes in the longer term, as the benefits of these changes in behaviors and attitudes are realized over time. These include frequency of land transactions, access to credit, agricultural productivity, and ultimately improvements to household income, consumption, and food security. In light of the limited evidence base on the impact of land tenure interventions - particularly in a randomized controlled trial (RCT) setting – the evaluation may also examine these longer-term outcomes. One approach would be for the evaluation to include an initial round of follow-up data collection and analysis focused on the four intermediate outcomes above, with a second follow-up at a later date to measure longer term impacts. This would allow the evaluation to generate useful findings within one to two years of implementation, while still taking full advantage of the learning potential of a RCT to investigate broader economic outcomes.

## 6. Gender Considerations

In line with USAID’s Gender Equality and Female Empowerment Policy and Automated Directives System 203.3.1.5, the evaluation will consider gender-specific and differential effects of LTA. The evaluation team will disaggregate access and participation data by gender at multiple points along the Theory of Change diagram to analyze the potential influence these effects have on activities and outcomes. Data collected through surveys conducted under this evaluation will be gender-disaggregated to identify gender differences with respect to benefits and outcomes, as well as lessons learned from female title holders and farmers. The evaluation team will conduct further inquiry on gender themes as they emerge during data analysis.

## 7. Evaluation Methods

### Impact Evaluation Design

Impact evaluations identify activity impact by comparing outcomes between activity beneficiaries to those of a control or comparison group of non-beneficiaries. The control or comparison group is intended to represent the counterfactual, or what would have happened in the absence of the LTA intervention. As per the USAID Evaluation Policy, impact evaluations using experimental designs – whereby units are randomly assigned to treatment and control groups – provide the most rigorous evidence of activity impact, and this will be the preferred approach for the LTA impact evaluation. Where randomized assignment is not feasible, quasi-experimental impact evaluation designs can be employed as an alternative.

The evaluation team responding to this SOW will work with USAID/E3/Land, USAID/Tanzania, and DAI staff to develop a design that suits the objectives, timing, and constraints of the LTA evaluation. The evaluation team will produce an Evaluation Design Proposal to be approved by USAID/E3/Land prior to site selection or randomization taking place. It is expected that the evaluation questions will be answered using an experimental or, if necessary, quasi-experimental design, and that a mixed-method approach may be suitable to answer the evaluation questions.

### Data Collection Methods

A range of methodologies can be used in impact evaluations, and the most appropriate approach in any particular case depends on a variety of factors including the goals of the evaluation, the outcomes to be measured, the nature of the activity being examined and its implementation approach, and the resources and timeframe available for the evaluation.

USAID anticipates that data collection for this evaluation will involve the use of household-level surveys that cover all of the villages targeted for LTA. This is likely to include a baseline survey that would be conducted before major LTA interventions commence. The survey would collect information on basic demographics, household and individual characteristics, and the outcomes of interest that the evaluation will measure. The evaluation team responding to this SOW shall provide further details on data collection methods and the specific survey methodology in the Evaluation Design Proposal, including proposing specific data collection methods on a question-by-question basis.

Pending further discussion with USAID and DAI, data collection for this evaluation may also include collecting village-level information about potential activity sites that can be used to determine which villages may be eligible to participate in the activity.

## 8. Data Analysis Methods

In its Evaluation Design Proposal, the evaluation team responding to this SOW should propose specific data analysis methods on a question-by-question basis, including the appropriate mix of methods necessary to estimate the impact LTA has on the primary outcomes of interest. Potential data analysis methods include difference-in-difference and multivariate regressions. The Evaluation Design Proposal should also explain what statistical tests will be conducted on data collected to address all evaluation questions, how qualitative data will be analyzed, and whether that analysis will allow the evaluation team to transform some data obtained from qualitative into quantitative form.

The Evaluation Design Proposal should also indicate and justify the evaluation team's proposed sequencing of quantitative and qualitative data collection. For example, if key informant qualitative interviews are conducted during the endline data collection process, these lines of data may be collected and analyzed in parallel and only synthesized once data from all other sources are available.



## 9. Strengths and Limitations

The strengths and limitations of the LTA impact evaluation will depend on the final design proposed by the evaluation team in consultation with USAID and DAI. The final design should reflect a rigorous approach to answering the evaluation questions and contribute to the global knowledge on land tenure. One key contribution of this evaluation is that it is expected to specifically test the impact of LTA on women, youth, and pastoralists, which is a great contribution to the evidence base on land tenure and investment.

Sample size, activity reach, and implementation fidelity could all create internal validity limitations for this evaluation. Ensuring that the sample size achieves sufficient statistical power will be critical for identifying impact and answering the evaluation questions. In addition, ensuring that randomization is done properly and random assignment, if applied, is systematic will improve the internal validity of the evaluation but must be done in a transparent manner. Indirect contamination across treatment arms and control groups is always a possibility, which is why it is important for the evaluation team and the implementation team to coordinate from the outset.

## 10. Evaluation Deliverables

It is anticipated that the evaluation team responding to this SOW will be responsible for the deliverables listed in Table I. A final list of proposed deliverables and due dates will be included in the Evaluation Design Proposal for USAID's approval.

**TABLE I: EVALUATION DELIVERABLES**

<b>Deliverable</b>	<b>Estimated Due Date</b>
1. Concept Paper, describing design and methodological options to answer the evaluation questions	TBD in consultation with USAID
2. Draft Evaluation Design Proposal	TBD in consultation with USAID
3. Final Evaluation Design Proposal, including data collection and analysis methods, evaluation instruments, team composition, and proposed timeline	TBD in consultation with USAID
4. Baseline Report	o/a 60 days following completion of baseline data collection
5. Fully cleaned, redacted, and documented baseline data submitted to DDL	o/a 90 days following completion of baseline data collection
6. Draft Evaluation Report	o/a 60 days following completion of endline data collection
7. Final Evaluation Report	o/a 21 days following receipt of USAID comments on Draft Evaluation Report
8. Fully cleaned, redacted, and documented endline data submitted to DDL	o/a 90 days following completion of endline data collection

All documents and reports will be provided electronically to USAID no later than the dates indicated in the approved Evaluation Design Proposal. The format of the evaluation report should follow USAID guidelines set forth in the USAID Evaluation Report Template.



## **11. Team Composition**

The Evaluation Design Proposal should describe the specific composition and qualifications of the team members who will be carrying out this evaluation, including CVs for core team members. General qualifications and roles anticipated for the primary positions on the core evaluation team are listed below. Local survey research firm(s) with experience in the conduct of household surveys at the village level and/or qualitative data collection may also support the evaluation team, as necessary.

### **Principal Investigator**

The Principal Investigator for this impact evaluation will hold a Ph.D. in a relevant economic development field. S/he will have previous experience with land tenure programs and will have previously served as a team leader for one or more impact evaluation(s). Familiarity with a range of impact evaluation designs and with USAID evaluation guidance will be sought for this position. Experience in publishing evaluation research in peer-reviewed journals is desirable, as is experience working in East Africa. A demonstrated ability to gather and integrate both quantitative and qualitative findings to answer evaluation questions is expected. Demonstrated experience managing multinational teams and producing highly readable reports for USAID and its developing country partner audiences on a timely basis is expected. This individual will be primarily responsible for the quality of the evaluation design and its execution, particularly with respect to the evidence obtained on questions involving causality and the attribution of outcomes to USAID's intervention. This is not anticipated to be a full-time position.

### **Evaluation Specialist**

The Evaluation Specialist should have a graduate degree in a relevant social science field and may be a Tanzanian national. The individual will have sufficient previous experience with evaluations and other types of studies involving sample surveys to be actively engaged in efforts to oversee and ensure the quality of multiple rounds of household surveys, that data codebooks are clearly written, and that all study data prepared by local survey research firms can be properly transferred to USAID. Gender analysis experience is also desirable. This is not anticipated to be a full-time position.

## **12. USAID Participation**

The desirability of USAID participation in evaluation activities such as field reconnaissance will be considered in consultation with USAID and the evaluation team, and any specific roles and responsibilities of USAID staff will be described in the Evaluation Design Proposal.

## **13. Scheduling and Logistics**

Figure 2 provides a preliminary timeframe for impact evaluation activities, which will be updated and refined by the evaluation team in its Evaluation Design Proposal. It is anticipated that implementation of LTA will occur at the start of FY17.

**Figure 2: Preliminary Timeline for LTA Impact Evaluation**

Tasks	FY 16		Implementation Period for LTA Project												FY 20				FY 21			
			FY 17				FY 18				FY 19											
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Concept Paper																						
Scoping Trip																						
Evaluation Design Proposal																						
Survey Pre-Test																						
Enumerator Training																						
Baseline Data Collection																						
Baseline Data Analysis and Report																						
Oral Presentation of Baseline Findings																						
LTA Program Implementation (100%)																						
Endline Data Collection and Analysis																						
Endline Report																						
Draft Final Report																						
Oral Presentation(s)																						
Final Report																						

The evaluation team will be responsible for procuring all logistical needs such as work space, transportation, printing, translation, and any other forms of communication. USAID will offer some assistance in providing introductions to partners and key stakeholders as needed, and will ensure the provision of data and supporting documents as possible.

## 14. Reporting Requirements

The format of the evaluation report should follow USAID guidelines set forth in the USAID Evaluation Report Template (<http://usaidlearninglab.org/library/evaluation-report-template>) and the How-To Note on Preparing Evaluation Reports (<http://usaidlearninglab.org/library/evaluation-report-template>).

The final version of the evaluation report will be submitted to USAID and it is anticipated that it will not exceed 30 pages, excluding references and annexes.

All members of the evaluation team will be provided with USAID's mandatory statement of the evaluation standards they are expected to meet, shown in the following text box, along with USAID's dispute of interest statement that they should sign before field work starts.

## USAID EVALUATION POLICY, APPENDIX I

### CRITERIA TO ENSURE THE QUALITY OF THE EVALUATION REPORT

- The evaluation report should represent a thoughtful, well-researched and well organized effort to objectively evaluate what worked in the project, what did not and why.
- Evaluation reports shall address all evaluation questions included in the scope of work.
- The evaluation report should include the scope of work as an annex. All modifications to the scope of work, whether in technical requirements, evaluation questions, evaluation team composition, methodology or timeline need to be agreed upon in writing by the technical officer.
- Evaluation methodology shall be explained in detail and all tools used in conducting the evaluation such as questionnaires, checklists, and discussion guides will be included in an Annex in the final report.
- Evaluation findings will assess outcomes and impact on males and females.
- Limitations to the evaluation shall be disclosed in the report, with particular attention to the limitations associated with the evaluation methodology (selection bias, recall bias, unobservable differences between comparator groups, etc.).
- Evaluation findings should be presented as analyzed facts, evidence and data and not based on anecdotes, hearsay or the compilation of people's opinions. Findings should be specific, concise and supported by strong quantitative or qualitative evidence.
- Sources of information need to be properly identified and listed in an annex.
- Recommendations need to be supported by a specific set of findings.
- Recommendations should be action-oriented, practical, and specific, with defined responsibility for the action.

## 15. Budget

The evaluation team responding to this SOW will propose a notional budget for this evaluation, including cost implications of the methodological options proposed. A full detailed budget will then be prepared for USAID's approval.

## **ANNEX B: BASELINE SURVEY INSTRUMENT**

## A. Introduction and Consent

Greetings! My name is \_\_\_\_\_. I am from Research Solutions Africa (RSA) and is currently undertaking a survey on behalf of MSI/NORC, a contractor with the United States Agency for International Development, in conjunction with the Iringa District Land Office to learn more about villagers in this district.

We are currently visiting villages in Iringa to gain a better understanding of village land use, administration, and the local community. The answers from this questionnaire will be used to learn more about land-use and life in the village.

I will not tell anyone about your answers to these questions. Only the research team will view your responses. Although we will ask for information about this village and your experience here, we will never use personal information in our documentation and will not report sensitive village information to anyone. This survey does not mean that a project or NGO will come to this village, and your answers will not affect whether any future projects come to this village. The entire survey will take about 2 hours.

If you have any questions in the future, you can contact MSI via phone at +255 676 788 364 or +255 719 147 083

Are you willing to proceed with the interview?

1. Yes.... >>> **(Tick category of hhd respondent and proceed as appropriate)**
2. No.... >>> **(Tick respondent category and Terminate interview)**

Category of household respondent

1. Male household head >>> **Section B**
2. Female household head >>> **Section M**
3. Head of household (for households with only one household head: widows/widowers/single parents/single-member households, etc.) >>> **Section B**

## ADMINISTRATIVE INFORMATION

Household number	<div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div> </div>		
Date of interview:	DD <div style="border: 1px solid black; width: 20px; height: 20px;"></div>	MM <div style="border: 1px solid black; width: 20px; height: 20px;"></div>	YY <div style="border: 1px solid black; width: 20px; height: 20px;"></div>
Time of interview: <i>(24 hour clock)</i>	Start	HH <div style="border: 1px solid black; width: 20px; height: 20px;"></div> MM <div style="border: 1px solid black; width: 20px; height: 20px;"></div>	Stop
		<div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div>	<div style="border: 1px solid black; width: 20px; height: 20px;"></div> <div style="border: 1px solid black; width: 20px; height: 20px;"></div>
Name of interviewer:			
Code of interviewer			
Place of interview:			
Ward			
Village			
Point of interview	<ol style="list-style-type: none"> <li>1. Respondent's residence</li> <li>2. In one of the household's parcel of land</li> <li>3. Away from respondent's place of residence and/or parcel of land</li> </ol>		
GPS Coordinates			
<b>Number of visits <i>(max. of 3)</i></b>			
Reason for call back	Number of visits		
	1	2	3
Refused to be interviewed		1	1
Target respondent not at home		2	2
Target respondent requested for a call back			
No one in the household		3	3
Respondent not able to be interviewed due to medical reasons (very sick, dumb, etc.)		4	4
No adult member in the household		5	5
Language barrier		6	6
Not applicable		99	99
Outcome of final visit	Successful	Incomplete	Replaced

Field quality control checks <i>(sign as appropriate)</i>		
Activity	Activity undertaken by	
	Interviewer	Supervisor
Reviewed		
Accompanied		

Back checked		
Called back		

## B. Household Roster and Information

I would like to start this interview with a few questions about each of your household members.

	Name	Question	Response options/units	Notes/instructions
		Thank you for agreeing to take this survey. To start, I would like to ask you a few questions about your household and your role as the head of the household.		
BI	Hou_role	Are you the household head?	1 Yes 2 No	
BI.1	Hou_gender	What is the respondent's gender?	1 Male 2 Female	<ul style="list-style-type: none"> <li>If hou_role = 1 &amp;hou_gender = 1 continue to hou_num_n and end survey at</li> <li>If hou_role = 1 &amp;hou_gender = 2 continue through end of survey (all modules)</li> <li>If hou_role = 2 &amp;hou_gender = 2 go to Module L (Wives Survey)</li> <li>If hou_role = 2 &amp;hou_gender = 1, ask for household head, if the household head is not</li> </ul>

				available continue to hou_num_n.
B1.2	hou_num_n	How many members constitute this household?	Enter number of household members based on hou_nme.	
B1.3	hou_nme	Can you tell me the name of all the members of this household?		RECORD THE HOUSEHOLD MEMBERS BEGINNING WITH THE HOUSEHOLD HEAD, FOLLOWED BY THE SPOUSE AND THEN THE CHILDREN STARTING WITH OLDEST FIRST AND CONCLUDING WITH THE YOUNGEST.
B2	hou_tride_n	What tribe or tribes is each member of this household from?MARK ALL THAT APPLY (multiple answer)	1. Hehe 2. Bena 3. Kinga 4. Pangwa 5. Maasai 990.Other(specify)	Repeat questions indexed _n for each of n household members
B3	hou_gender_n	What is [NAME]'s gender?	1= Male, 0= Female	
B4	hou_rel_n	How is [NAME] related to the head of the household?	1. HEAD 2. SPOUSE 3. SON/DAUGHTER 4. STEP SON /DAUGHTER 5. SISTER/BROTHER 6. GRANDCHILD 7. FATHER/MOTHER 8. OTHER RELATIVE(SPECIFY) 9. LIVE-IN SERVANT 990.OTHER NON- RELATIVES (SPECIFY)	
B5	hou_age_n	How old is [NAME] in completed years?		Enter age. Enter 996 for Don't Know.
B6	hou_edu_n	What is the highest grade level that [NAME] has completed?	PRIMARY	Skip if younger than 15



			P1.....11 P2.....12 P3.....13 P4.....14 P5.....15 P6.....16 P7.....17 FORM F1.....21 F2.....22 F3.....23 F4.....24 'O'+COURSE.25 F5.....31 F6.....32 'A'+COURSE.33 DIPLOMA Diploma 1...34 Diploma 2 UNIVERSITY U1.....41 U2.....42 U3.....43 U4.....44 U5&+.....45	
B7	hou_rdwr_n	Can [NAME] read and write a simple sentence.	1. KISWAHILI 2. ENGLISH 3. KISWAHILI & ENGLISH 4. ANY OTHER LANGUAGE 5. NO 999.N/A (Younger than 15 years)	Skip to Hou_look_n if younger than 15  If 999 >>> Next household member OR >>> Next Section
B8		What is the marital status of [NAME]?	1. Married 2. Co-habitation 3. Divorced 4. Separated 5. Widow/er 6. Never married	

			990. Other (specify)	
B9	Hou_look_n	During the past 4 weeks, did [NAME] actively look for work?	1. Yes 2. No 996. Don't know	
B10	Hou_take_n	Was [NAME] available to start a job if he/she found one?	1. Yes 2. No 996. Don't know	If Hou_look_n = 1
B11	hou_fwrkwet_n	Did [NAME] work on the household farm, including fields and kitchen garden, during last year's short and long rainy season?	1. Yes 2. No 996. Don't know	
B12	Hou_fwrkdry_n	Did [NAME] work on the household farm, including fields and kitchen garden, during last year's dry season?	1. Yes 2. No 996. Don't know	
B13	Hou_status_n	Which of the following best describes the present situation of [NAME]?  READ OPTIONS OUT LOUD	1. Housework / housewife 2. Student 3. Retired 4. Ill, disabled 5. Not working and not looking for work 990. Other (specify _____)	
B14	Hou_emptytype_n	In what type of economic activity did [NAME] spend most of his/her time in the last 12 months:	1. ON OWN/FAMILY FARM OR SHAMBA 2. UNPAID FAMILY HELPER (AGRIC) 3. UNPAID FAMILY HELPER (NON-AGRIC) 4. A PAID EMPLOYEE 5. SELF EMPLOYED	

**C. Agricultural Organizations, Services and Training**

	Name	Question	Response options/units	Notes/instructions
C1	org_proforg	Are you a member of a farmer association or cooperative?	1. Yes 2. No 3. Don't know	
C2	org_coop	Are you a member of any other kind of cooperative not related to agriculture?	1. Yes 2. No 3. Don't know	If 2 >>> C3
C2.1	org_coop_prd	What kind of cooperative?  SELECT ALL THAT APPLY	1. Political party 2. Village group (non-agric) 3. Education group 4. Religious group 990. Other (specify: _____)	If org_coop = yes
C3	org_srv	Did you or anyone in your household receive any agricultural extension services in the past 12 months?	1. Yes 2. No 996. Don't know	If 2 >>> C5
C3.1	org_prd	What kind of services were provided?	1. Access to improved seed 2. Fertilizer, pesticides and other chemical inputs 3. Tractor services 4. Marketing services 5. Transport services 6. The opportunity to participate in a value chain scheme 7. Help to form or strengthen farmer groups 8. Contract farming 9. Post-harvest processing of ANY of crops (including drying, sorting, packaging, and/or storing) 10. Purchasing of ANY of the crops 11. Training on agricultural production and/or processing 12. Training on business practices	If org_srv = yes

			990. Other, SPECIFY _____	
C3.2	org_used_srv	How often has anyone in your household made use of extension services in the past 12 months?	1 3 times or more 2 Once or twice 3 Never	
C4	org_trnd	In the past 12 months, have you or anyone in your household received any kind of community or organizational assistance related to agriculture, such as assistance from an NGO or community group?	1. Yes 2. No 996. Don't know	If org_trnd != 1 skip to next module If 2 OR 996 >>>Next Section
C4.1	org_what	What kind of services were provided?	1. Free food/maize distribution 2. Food-for-work programme or cash-for-work programme 3. Inputs-for work programme 4. Attended a training or workshop 5. Had an agent visit my/our parcel(s) 6. Read a pamphlet 7. Other assistance (not listed above)	
C4.2	org_frequ	For how many days in the past 12 months did you or anyone in your household receive these services?	Enter days	
C5	org_name	Are you aware of these organizations working in your village?  MARK ALL THAT APPLY	1. One Acre Fund 2. Briten 3. Unicef 4. Eadd 5. Cuamm 6. Clinton Foundation 7. Tahea 8. Camfed 9. Cefa 10. Wopata 11. Jica 12. TIB 13. Concern 14. Tunajali 15. SNV 16. TNRF 17. TCD 18. IMO	Select all that apply

			19. Cheet 20. Restless Development 21. LEAT 22. Caltas	
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### D. Land Holdings and Characteristics

	Name	Question	Response options/units		Notes/instructions
Thank you for the earlier responses. I would now like to ask you a few questions about your land holdings and the parcels you farm.					
D1	Lan_num	How many different parcels does the household own, rent, or use?	Enter number		
D2	Lan_name	Please give each parcel a name so we can keep track during the interview			If lan_num> 1. From here down, ask for each parcel.
D2.1	Lan_own	Which parcels does the household own?	Enter PARCEL ID		This should be left blank if no parcels are rented.
D2.2	Lan_own	Which parcels does the household rent?	Enter PARCEL ID		This should be left blank if no parcels are rented.
D3	Lan_boun	Is [PARCEL ID] inside the village boundary?	1 = Yes 2 = No		
D4	Lan_cent	Is [PARCEL ID] near the village center	1 = Yes 2 = No		
D5	Lan_home	Is [PARCEL ID] near your homestead?	1 = Yes 2 = No		
D6	Lan_size_i	What is the size of [PARCEL ID]?	Quantity	Unit	Record local units/quantity.
D7	Lan_dist_i	How long does it take to get from your house to [PARCEL ID] on foot?			Record in minutes.
D8	Land_diffcom_i	Is [PARCEL ID] in a different village from the one you live in?	1. Yes 2. No 3. Don't know		
D9	Land_diffcomvi_i	What is the name of the village where [PARCEL ID] is?	Enter village name		If Land_diffcom_i = 1
D10	Lan_right_i	What is the ownership status of [PARCEL ID]?	1. Owned <b>by the household</b> 2. Used <b>by the household</b> free of charge 3. Rented <b>by the household</b> 4. Rented <b>by the household together with other people</b>		If 3 OR 4 >>> D13

			5. Owned by the household together with other people	
D11	Lan_othrent_i	Does someone else rent [PARCEL ID] from you?	1. Yes 2. No	
D12	Lan_doc_i	Do you or your household have any kind of documentation of your rights to [PARCEL ID]?	1. Yes 2. No 996. Don't know	If Lan_doc_i != 2 OR 996 skip to Lan_use_i (D13)
D12.1	Lan_docparcel_i	Which parcels?	Record Parcel IDs	
D12.2	Lan_typedoc_i	What kind of documentation? SELECT ALL THAT APPLY.	1. GRANTED RIGHT OF OCCUPANCY 2. CERTIFICATE OF CUSTOMARY RIGHT OF OCCUPANCY (CCRO) 3. INHERITANCE LETTER 4. OTHER GOVERNMENT DOCUMENT 5. OTHER DOCUMENT OR LETTER (NON-GOVERNMENT/UNOFFICIAL)	
D12.3	Lan_docobtain_i	What year did you obtain the documentation for [PARCEL ID]?	Year	If land_doc_i=yes next question. 996 if unsure/don't know.
D12.4	Lan_docobtainmon_i	What month did you obtain the documentation for [PARCEL ID]?	Month	Enter 996 if unsure/don't know
D12.5	Lan_docnum_i	How many people in household have their names listed on the documentation you have for [PARCEL ID]?		Enter number; If don't know, enter 996
D12.6	Lan_docwho_i	Who in the household is listed as the primary land user on the documentation for [PARCEL ID]?	1. Husband 2. Wife 3. Jointly listed (husband/wife) 4. Other 996. Don't know	Refer to HH roster
D12.7	Lan_docphys_i	Do you have a personal copy of the document?	1 Yes 2 No	If lan_typedoc_i == 2 (ccro) If 2 >>> D12.9

D12.8	Lan_docloc_i	Where do you store a copy of the document?	1. In homestead 2. With a nearby family member 3. At the village center 4. At the DLO/With the government	If lan_typedoc_i == 2 (ccro)
D12.9	Lan_docuse_i	Have you ever had to reference the document?	1 Yes 2 No	If lan_typedoc_i == 2 (ccro) If 2 >>> D13
D12.10	Lan_docusetype_i	Why did you reference the document?	1. To resolve a dispute 2. To obtain a loan 3. To plan inheritance 4. To prove ownership (not dispute related) 5. As part of a rental agreement 990.Other	Lan_docuse_i == yes
D13	Lan_use_i	During last year's agricultural seasons, did your household farm [PARCEL ID], leave it fallow, or use it for pasture or some other non-agricultural use?	1 Farmed this parcel 2 Left this parcel fallow 3 Used this parcel as pasture/other non-agricultural use	
D14	Lan_mth_i	What was the method by which [PARCEL ID] was acquired/claimed by your household?	1) Bought it 2) Inherited 3) Started renting/sharecropping 4) Cleared it 5) Distributed by village 6) Received as gift 7) Occupied	Context
D15	Lan_yr_i	What year did your household acquire [PARCEL ID]?		Enter 996 if don't know
D16	Lan_dcd_i	Who primarily decides how to use [PARCEL ID]?	1=Head of household 2=Spouse 3=Both Head and spouse together 4=Other male household member 5=Other female household member 990=Other, specify	
D17	Lan_inherp_i	Do you have an inheritance plan for your parcels?	1 Yes 2 No	If no skip to lan_svy_i



D17.1	Lan_inhe_who_i	Have you discussed this plan with anyone?	1 Yes 2 No	If not skip to lan_svy_i
D17.2	Lan_inhe_name	Who have you discussed this with?	1 Wife 2 Children 3 Other Family 4 Village leaders 5 Other	
D18	Lan_svy_i	Has [PARCEL ID] ever been mapped by surveyor?	1 Yes 2 No 996 Don't know	If 2 OR 996 >>> D21
D19	Lan_yrsvy_i	What year was [PARCEL ID] mapped by surveyor?	Year	If lan_svy_i = yes 99 if unsure/don't know. Skip to next section unless land_use_i = 1 Enter 996 if don't know
D20	Lan_mnsvy_i	What month was [PARCEL ID] mapped by surveyor?	Month	Enter 996 if don't know
D21	Lan_top_i	What is the topography of [PARCEL ID]?	1 Plain 2 Valley 3 Mountain top 4 Mountain side 5 Hill 6 Other	
D22	Lan_soiltyp_i	What is the primary soil type of [PARCEL ID]?	(1)Clay (2)Sandy (3)Loam (4)Other (996)Don't know	
D23	Lan_slp_i	Overall, what is the slope of [PARCEL ID]?	(1) Flat bottom (2) Flat top (3) Slightly sloped (4) Very Steep	
D24	Lan_irr_i	Is [PARCEL ID] irrigated?	1 Yes 2 No	
D25	Lan_restyn_i	Have you ever left [PARCEL ID] fallow?	1 Yes 2 No	If 2, skip to lan_imp_i
D25.1	Lan_rest_i	What was the most recent year in which [PARCEL ID] was left fallow?		Enter 996 if don't know;

D25.2	Lan_restperct_i	What portion of [PARCEL ID] was left fallow?	Enter percentage	Answer only if lan_restyn_i = 1
D26	Lan_imp_i	For each of the following items I am going to ask about, I want to know if you have made any of the following improvements to this parcel, either in the past year or before that?		Need to tailor these may need to add more investments
D26.1	Lan_imp_well_i	<ul style="list-style-type: none"> <li>Digging wells or pump irrigation</li> </ul>	1 In the past year 2 Before the past year 3 Both in the past year and before 4 No	
D26.2	Lan_imp_building_i	<ul style="list-style-type: none"> <li>Erecting buildings</li> </ul>	1 In the past year 2 Before the past year 3 Both in the past year and before 4 No	
D26.3	Lan_imp_fence_i	Erecting fencing	1 In the past year 2 Before the past year 3 Both in the past year and before 4 No	
D26.4	Lan_imp_terr_i	<ul style="list-style-type: none"> <li>Terracing</li> </ul>	1 In the past year 2 Before the past year 3 Both in the past year and before 4 No	
D26.5	Lan_imp_soil_i	<ul style="list-style-type: none"> <li>Soil conservation</li> </ul>	1 In the past year 2 Before the past year 3 Both in the past year and before 4 No	

**E. Agricultural Production****E.1 Annual Crops**

	Name	Question	Response options/units	Notes/instructions
<i>Now, I am going to ask about some of the annual crops that you grow here.</i>				
EI	Ann_wet_i	Which parcels did anyone in your household cultivate during the last rainy season?	[SELECT FROM LIST OF PARCELS COLLECTED ABOVE SECTION]	996 for OTHER and specify 000 for none
EI.1	Ann_dry_i	Which parcels did anyone in your household cultivate during the last dry season?	[SELECT FROM LIST OF PARCELS COLLECTED FROM ABOVE SECTION]	996 for OTHER (specify) 000 for none
EI.2	Ann_difcrop_i	How many different crops did you grow on [PLOT ID]?	Enter number	
EI.3	Ann_croprain_i	What crops were grown on [PLOT ID] during last year's rainy season?		See crop codes at the end of this document.
EI.4	Ann_cropdry_i	What crops were grown on [PLOT ID] during last year's dry season?		See crop codes
EI.5	Ann_perc_i	What percentage of [PLOT ID] is used to grow [CROP]?		
EI.6	Ann_soil_i	What did you use to till the soil on [PLOT ID]? (Select all that apply)	1 Hand hoe 2 Animal-drawn plows 3 Tractors or other machinery  990 OTHER, specify	
EI.7	Ann_seed_i	What was the name of the main seed variety for this [CROP] on [PLOT ID]?		Enter name
EI.8	Ann_varseed_i	How many varieties of seed for this [CROP] were planted on [PLOT ID]?		Enter number
EI.9	Ann_seed_quant_i	What was the total amount of seeds used on [PLOT ID]?	Enter number	
EI.9.1	Ann_seedamo_i	What units were used for ann_seed_qaunt_i ?	1. KG 2. 1 LITER CUP 3. 10 LITER BUCKET  4. 20 LITER BUCKET 5. SMALL CUP (handful) 6. OTHER, SPECIFY	
EI.10	Ann_seedcert_i	Did you receive a voucher/certificate for any of this [SEED]?		
EI.11	Ann_numseed_i	What was the total amount paid for seeds (Tsh)?		
EI.12	Ann_intype_i	What type of input did you utilize during [season] on [PLOT ID]  SELECT MULTIPLE	1. Fertilizer 2. Pesticide 3. Herbicide	

	Name	Question	Response options/units		Notes/instructions
			4. Fungicide 5. Other 6. None		
EI.13	Ann_fert_i	What type of fertilizer did you use on [PLOT ID]?	1. Di-ammoium Phosphate (DAP) 2. UREA 3. Triple Super Phosphate (TSP) 4. Calcium Ammonium Nitrate (CAN) 5. Sulphate of Ammonium (SA) 6. Nitrogen Phosphate Potassium (NPK) 7. Minjingu Rock Phosphate (MRP) 8. Organic Fertilizer 9. Other 10. 999 N/A		Answer if EI.122==1 This should only show up if ann_intype_i includes Fertilizer
EI.14	Ann_inputkg_i	In total, what quantity of [INPUT] was used for your crops during [season] on all parcels?	Quantity	Units: 1. KG 2. 1 LITER CUP 3. 10 LITER BUCKET 4. 20 LITER BUCKET 5. SMALL CUP (handful) 6. OTHER, SPECIFY	For overall plots.
EI.15	Ann_inputcost_i	In total, how much did you pay for the [INPUT] during [season]?	TZ shillings		
EI.16	Ann_rent_i	In the [season] did you rent farm equipment (tractors, combine, plough, bullock etc)?	1 Yes 2 No		If 2 >>> EI.18
EI.17	Ann_rentpay_i	In total, how much did you pay for the rented farm equipment during [season]?	TZ shillings		

	Name	Question	Response options/units	Notes/instructions
EI.18	Ann_irr_i	In [season], did your household spend money on irrigation (including electricity, diesel, pumpset rental, maintenance, repair of irrigation channels etc.) for all/any crops?	1 Yes 2 No	If 2 >>> EI.20
EI.19	Ann_irrcost_i	In total, how much did you spend on irrigation during [season]?	TZ shillings	
EI.20	Ann_labyn_i	Did you use hired labor during [season]?	1 Yes 2 No	
EI.20.1	Ann_labor_i	In total, how much did you spend on hired farm labor during [season]?	TZ shillings	
EI.21	Ann_laborday_i	Beyond the household labor and other hired labor already discussed, approximately how many days of shared/cooperative/community labor were used in total for all crops during [season]?		Days would be full working days, i.e. during day light hours.
EI.22	Ann_harv_i	During [season] how much [CROP] did your household harvest in total across all plots of land?	Record _quantity :	
EI.22.1	Ann_harv_i	What units were used to record harvest for ann_harv_i?	1. KG 2. Large Bag (100 KG) 3. Small Bag (50 KG) 4. 20 Liter Bucket 5. 10 Liter Bucket 6. Crate 7. Other (Specify)	if KG used, skip to Ann_cons_i
EI.23	Ann_harvkg_i	During [season] how much [CROP] in KG did your household harvest in total across all plots of land?	Record in KG if Ann_harv_i not reported in KG	
			1. 2.	
EI.25	Ann_consquant_i	What quantity of the [CROP] harvested during [season] has been consumed by members of your household?	Enter quantity	
EI.25.1	Ann_consunit_i	What units were used to record ann_conskg_i	1. KG 2. Large Bag (100 KG) 3. Small Bag (50 KG) 4. 20 Liter Bucket 5. 10 Liter Bucket 6. Crate 7. Other (Specify)	
EI.26	Ann_soldquant_i	What quantity of [CROP] harvested during [season] was sold at the marketplace (to any outlet)?	Enter quantity	
EI.26.1	Ann_sold_i	What units were used to record ann_soldquant_i?	1. KG 2. Large Bag (100 KG) 3. Small Bag (50 KG)	

	Name	Question	Response options/units	Notes/instructions
			4. 20 Liter Bucket 5. 10 Liter Bucket 6. Crate 7. Cart 8. Other (Specify)	
E1.27	Ann_soldkg_i	What quantity of the [CROP] harvested during [season] was sold at the marketplace (to any outlet) in KG?	Record in KG	
E1.28	Ann_earn_i	How much did you receive in total for [CROP] sold at the marketplace (to an agribusiness center or any other outlet)?	TZ Shillings	

## E.2 Perennial Crops

	Name	Question	Response options/units	Notes/instructions
		Thank you. Now, I want to ask you about perennial crops that you grow.		
E2.1	Pere_crop_num	How many different varieties of fruit trees and permanent crops do you grow on [PLOT ID]?	Enter number	
E2.1.1	Pere_crops	Please tell me all of the fruit trees and permanent crops that you grow on [PLOT ID]		List all fruit trees and permanent crops. These questions are asked for each fruit and permanent crop.
E2.1.2	Pere_cropcount	How many of these plants/trees are on [PLOT ID]?		Type=Fruit or Permanent Crop
E2.1.3	Pere_yearplant	When were most of these [CROP] planted on [PLOT ID]?	Month/Year	
E2.1.4	Pere_plants	How many trees/plants were planted on [PLOT ID] during the last 12 months?	#	
E2.6	Pere_trees	In the past 12 months, how many non-fruit trees did you plant on any of your plots?	#	
E2.6.1	Pere_treeuse	What do you plan to use these trees for?	1. Wood 2. Timber/Lumber 3. Erosion control 4. Border demarcation 990.Other	If Pere_trees is not 0, if Other record response
E2.7	Pere_intercrop	Was cultivation intercropped during the past long rainy season?	1 Yes 2 No	Skip to pere_prod_i if No
E2.7.1	Pere_interseason	What was the reason for intercropping?	1 More fertile for the soil 2 Substitute if either crop fails 3 To get the most out of my land	

	Name	Question	Response options/units	Notes/instructions
			4 Other	
E2.8	Pere_prod_i	What was the last harvest for the [CROP]?	Month/year	
E2.9	Pere_dec_i	Who in the household made the decisions concerning the use of [CROP] harvested in the past 12 months?	Select from list	
E2.10	Pere_amount_i	What was the total amount of [CROP] harvested in the past 12 months?	Enter quantity	
E2.101	Pere_amountunit_i	What units were used to record the amount in pere_amount_i?	1. KG 2. Large Bag (100 KG) 3. Small Bag (50 KG) 4. 20 Liter Bucket 5. 10 Liter Bucket 6. Crate 7. Other (Specify)	
E2.11	Pere_sell_i	Did you sell any of the [CROP] collected?	1 Yes 2 No	If 2 >>> Next Section.
E2.11.1	Pere_quant_i	What was the total quantity sold?	Enter quantity	
E2.11.12	Pere_quantunit_i	What units were used to record the amount in pere_quant_i	1. KG 2. Large Bag (100 KG) 3. Small Bag (50 KG) 4. 20 Liter Bucket 5. 10 Liter Bucket 6. Crate 990.Other (Specify)	
E2.11.2	Pere_value_i	What was the total value of [CROP] sold?	TZ Shillings	
E2.11.3	Pere_nego_i	Who in your household was responsible for negotiating the sale of the [CROP]?	Answer type/code	
E2.11.4	Pere_earnuse_i	Who in your household decided what to do with these earnings?	Answer type/code	
E2.11.5	Pere_locsell_i	Where did you sell most of the [CROP]?	Select all that apply: 1 purchased wholesale by a middleman 2 purchased wholesale by a processor 3 sold in the market directly 4 sold to a neighbor 5 Other	

Crops Codes

<b>Cereals/tubers/roots:</b> Maize.....11 Paddy.....12	<b>Fruits:</b> Passion Fruit....70 Banana.....71	<b>Vegetables:</b> Cabbage.....86 Tomatoes.....87	<b>Cash Crops:</b> Cotton.....50 Tobacco.....51	<b>Permanent Cash crops:</b> Sisal.....53
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Sorghum.....13 Bulrush Millet...14 Finger Millet....15 Wheat.....16 Barley.....17 Cassava.....21 Sweet Potatoes...22 Irish potatoes...23 Yams.....24 Cocoyams.....25 Onions.....26 Ginger.....27  <b>Legumes, Oil &amp; fruit:</b> Beans.....31 Cowpeas.....32 Green gram.....33 Chick peas.....35 Bambara nuts.....36 Field peas.....37 Sunflower.....41 Sesame.....42 Groundnut.....43 Soyabeans.....47 Caster seed.....48	Avocado.....72 Mango.....73 Papaw.....74 Orange.....76 Grapefruit.....77 Grapes.....78 Mandarin.....79 Guava.....80 Plums.....81 Apples.....82 Pears.....83 Peaches.....84 Lime.....851 Lemon.....852 Pomelo.....68 Jack fruit.....69 Durian.....97 Bilimbi.....98 Rambutan.....99 Bread fruit.....67 Malay apple.....38 Star fruit.....39 Custard Apple....200 God Fruit.....201 Mitobo.....202 Plum.....203 Peaches.....204 Pomegranate.....205 Date.....210 Tungamaa.....211 Vanilla.....212	Spinach.....88 Carrot.....89 Chilies.....90 Amaranths.....91 Pumpkins.....92 Cucumber.....93 Egg Plant.....94 Water Mellon.....95 Cauliflower.....96 Okra.....100 Fiwi.....101	Pyrethrum.....52 Jute.....62 Seaweed.....19	Coffee.....54 Tea.....55 Cocoa.....56 Rubber.....57 Wattle.....58 Kapok.....59 sugar Cane.....60 Cardamom .....61 Tamarind.....63 Cinnamon.....64 Nutmeg.....65 Clove.....66 Black Pepper....18 Pigeon pea.....34 Cassava.....21 Pineapple.....75 Palm Oil.....44 Coconut.....45 Cashew nut.....46 Green Tomato.....300 Monkeybread.....301 Bamboo.....302 Firewood/fodder..303 Timber.....304 Medicinal plant..305 "Fence tree" .....306 other.....990
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# F. Perceptions of land rights

	Name	Question	Response options/units	Notes/instructions
Ok. I would like to ask you about some issues around land in this village. I only want to talk about parcels here (in this village), not things you may have heard in nearby villages (or plots you may have elsewhere).				Leave out mention of parcels in other villages if it is not relevant.
F1	Per_takepos	In the next five years, do you think it's possible that someone could try to take one of your parcels from you without your permission?	1 Yes 2 No 996Don't know	If 2 OR 996 >>> F6
F2	Per_expro	How likely do think it is that someone would try to take one of your parcels from you in the next 5 years?	1 Possible but unlikely 2 Somewhat likely 3 Very likely/it is happening now	If per_takepos = yes
F3	Per_parcel_i	Which parcels do you feel are at risk?	Run through list of parcels	If per_expro != 1
F4	Per_source_i	Who do you think would try to take your parcels?	1. Government 2. Foreign investor 3. Tanzanian investor (from outside the village) 4. Someone inside the village 5. Absentee owner/land claimants 6. Extended family 7. Other	If per_expro != 1
F5	Per_reason	Which if any of the following are reasons why you think this could happen? Please rank from the most important reason to the least important reason 1. Ongoing or past disputes or expropriation 2. Lack of documents 3. Length of agreement (if lease agreement for example) 4. Problems experienced by others in the community	Enter rank order. If one or more options are not relevant, ask for top rank and then determine which seem the least irrelevant of the	If per_takepos = yes

			irrelevant options and work from there.	
F6	Per_changepos	Compared to one year ago, do you think the possibility that someone could try to take one of your parcels has increased, decreased, or stayed the same?	1 Increased 2 Decreased 3 Stayed the same	
F7	Per_comworry	In general, how many people in your community are worried that someone might try to take their land against their will?	1 None or very few 2 Some are worried but most are not 3 Most are worried but not all 4 All or nearly all are worried	
F8	Per_borpos	Do you think it's possible that you could have a dispute over the borders of one of your parcels with a neighbor in the next 5 years?	1 Yes 2 No	If 2 >>> F10
F9	Per_disputeprob	How likely do think it is that you could have a dispute over the borders of one of your parcels with a neighbor in the next 5 years?	1 Possible, but unlikely 2 Somewhat likely 3 Very likely/it is happening now	If per_borpos = yes
F10	Per_reasonwhy	Which if any of the following are reasons why you don't think this is possible? <ul style="list-style-type: none"> <li>• My family has owned/used the parcel for a long time</li> <li>• Lack of problems in the past</li> <li>• Land has been surveyed</li> <li>• HH has documentation of rights</li> <li>• Village Council/Elders/Leaders can easily address potential disputes</li> </ul>	Select all that apply.	If per_takepos = no
F11	Per_dispute_change	Compared to one year ago, do you think the possibility that you could have a boundary dispute with your neighbors has increased, decreased, or stayed the same?	1 Increased 2 Decreased 3 Stayed the same	
F12	Per_dispute_type_i	Over the past 5 years, how big of a problem have each of the following types of disputes about land been in your community? <ul style="list-style-type: none"> <li>• Family disputes</li> <li>• Disputes with investors</li> <li>• Disputes with others (non-family) claiming land</li> <li>• Boundary disputes between neighbors</li> <li>• Disputes about land rentals/sharecropping agreements</li> <li>• Disputes over grazing</li> </ul>	1 Not a problem at all 2 A small problem 3 A big problem	Ask for each kind of dispute

F13	Per_prob_change	Over the past year, would you say problems with land disputes have improved, stayed the same, or gotten worse?	1 Improved 2 Stayed the same 3 Gotten worse	
F14	Per_future	In the next 12 months, do you expect problems with land disputes will improve, stay the same, or get worse?	1 Improved 2 Stayed the same 3 Gotten worse	
F15	Per_coma	Do you use communal pasture land?	1 Yes 2 No	If 2 >>> F17
F16	Per_coml	Do you think it is possible that you will lose your existing rights on communal pasture land in the next 12 months?	1 Yes 2 No 996Don't know	Anser if per_coma=Yes If 2 OR 996 >>> F17
F16.1	Per_coml_why	How likely do you think it is that you would lose your existing rights on communal pasture land in the next 12 months	1 Highly likely 2 Somewhat likely 3 Possible but unlikely	If per_coml = Yes
F16.2	Per_comr	Why do you think you will lose your existing rights on communal pasture land in the future?	1= Local farmers encroaching onto communal land or access routes. 2= Village will decide to allocate the land for other uses. 3= The government will allocate the communal land to an investor 990= Other (please specify)	Answer if per_coml=Yes
F17	Per_fallow	How much of a risk is there that someone will take over one of your plots if you leave it fallow?	1 Very high risk 2 Somewhat risky 3 No risk 4 Unsure	
F18	Per_inheritforce	In general, do you feel that your plans for land inheritance will be enforced?	1 Yes 2 No 996Don't know/unsure	
F19	Per_landlaw	How well do you understand the official land laws?	1 Very well 2 Familiar but don't know the details 3	

			Familiar with some rules but don't know if they are official law 4 Unsure	
F20	Per_CCRO	Have you heard of CCROs?	1 Yes 2 No	If 2 >>>Per_LTA. DO NOT PROMPT IF RESPONDENT HAS NOT HEARD OF CCROs.
F20.1	Per_payCCRO	In general, how much (if anything) would you be willing to pay to have one of your parcels surveyed and to receive a CCRO?		
F21	Per_LTA	Have you heard of LTA?	1 Yes 2 No	If 2 >>> Next section. DO NOT PROMPT IF RESPONDENT HAS NOT HEAR OF LTA!
F21.1	Per_LTAvisit	Did LTA visit your parcel in the past 2 years?	1 Yes 2 No	If 2 >>> Next section
F21.2	Per_LTArec	Which of the following did you receive through LTA?  MARK ALL THAT APPLY	<ul style="list-style-type: none"> <li>Land was surveyed</li> <li>CCRO</li> <li>Notarized title</li> <li>None of the above</li> </ul>	If Per_LTAvisit= yes
F21.3	Per_LTAtime	When did LTA visit your parcel?	Month/Year	If Per_LTAvisit = yes
F21.4	Per_LTAmap	When did [Per_LTArec response] take place?	Month/Year	Based on Per_LTArec
F21.5	Per_LTAprocess	How long did the LTA process take?	Enter days	
F21.6	Per_LTAprob	Did you encounter any issues during the LTA process	1 Yes 2 No	If per_LTAvisit = yes If 2 >>> F21.8
F21.7	Per_LTAprodtype	What kind of issues did you encounter?	<ol style="list-style-type: none"> <li>Issue related to existing land dispute</li> <li>Issue related to new dispute caused by mapping</li> <li>Missed deadline</li> <li>Other</li> </ol>	If Per_LTAprob = yes

F21.8	Per_CCRO	How much time passed between mapping and receipt of your CCRO?	Enter months	If per_LTAreC = CCRO
F21.9	Per_LTAimpr	What was your impression of LTA?	1 Very positive 2 Somewhat positive 3 Neutral 4 Somewhat negative 5 Very negative	If Per_LTA = yes
F21.10	Per_docyben	Do you believe that having documentation of your land rights through LTA benefits your household?	1 Yes 2 No 996 Don't know	
F21.11	Per_LTAcom	What are the benefits to LTA in your village?  ALL THAT APPLY	<ul style="list-style-type: none"> <li>• Protects against losing land</li> <li>• Protects against disputes with neighbors</li> <li>• Makes it easier to rent out</li> <li>• Makes it easier to sell</li> <li>• Will make inheritance easier</li> <li>• Other</li> </ul>	If per_docyben = yes

**G. Land disputes**

	Name	Question	Response options/units	Notes/instructions
<b><i>This next line of questioning addresses disputes around land in the village. As a reminder, we are not going to share your responses with anyone else in the village or to anyone in the government. Your responses will not affect whether this village receives services or not. We just want to learn more about disputes here.</i></b>				
G1	Dis_dis	In the past year, has anyone in your household been involved in any dispute or argument about land- for example, about who owns or has rights to a parcel, boundaries of parcels, or inheritance of land?	1 Yes 2 No	If 2 >>> Next section
G1.1	Dis_disnum	How many disputes?	#	
G1.2	Dis_mem_j	Which household member had [DISPUTE ID]? SELECT ALL RELEVANT HH MEMBERS.	All hh members > 15, include "the whole household" as an option	Repeat questions indexed _j for each of j disputes
G1.3	Dis_own_j	Does the household currently use the parcel over which [DISPUTE ID] occurred?	1 Yes 2 No	
G1.4	Dis_nme_j	What is the name of the parcel on which [DISPUTE ID] occurred? SELECT ALL THAT APPLY.	Parcel names from section D	If yes to previous
G1.5	Dis_type_j	What was [DISPUTE ID] related to? Select all that apply.	1 Land that the household owned or was using 2 The household trying to acquire new land 3 Land rented from the household 4 Land rented by the household 5 Inheritance 6 Grazing 7 Other	If 1 >>> G1.6 2 >>> G1.7 3 >>> G1.8 4 >>> G1.9 5 >>> G1.10 6 >>> G1.11
G1.6	Dis_desct1_j	Which of the following best describes [DISPUTE ID]?	1 Someone who lives in the area tried to take the household's land 2 Someone from outside the area tried to take the household's land 3 Boundary dispute with neighbor 4 Government tried to take the land or stop the household from using it	If dis_type_j = 1
G1.7	Dis_desct2_j	Which of the following best describes [DISPUTE ID]?	1 The household bought/claimed/requested some new land, but someone else claimed to be the owner 2 The household did not buy the land but wanted land that someone else was using	If dis_type_j = 2

			3 None of the above	
G1.8	Dis_desc3_j	Which of the following best describes [DISPUTE ID]?	1 Payment of rent/crops 2 Length of rental agreement 3 Renter tried to claim ownership 4 Other	If dis_type_j = 3
G1.9	Dis_desc4_j	Which of the following best describes [DISPUTE ID]?	1 Payment of rent/crops 2 Length of rental agreement 3 Disagreement over ownership 4 Other	If dis_type_j = 4
G1.10	Dis_desc5_j	Which of the following best describes [DISPUTE ID]?	1 Disagreement with brothers/sisters over parents' land 2 Widow/widower whose land is being claimed by spouse's relatives 3 Other	If dis_type_j = 5 Need to tailor this one
G1.11	Dis_desc6_j	Which of the following best describes [DISPUTE ID]?	1 Disagreement with pastoralists over grazing on land 2 Disagreement with non-pastoralists from the village over grazing on land 3 Disagreement with non-pastoralists from outside the village over grazing on land 3 Other	If dis_type_i=6
G2	Dis_desc7_i	Describe [DISPUTE ID]	Write response	If dis_type_i= 7
G3	Dis_yr_j	In what year did [DISPUTE ID] begin?		
G4		How long did [DISPUTE ID] last?	Months	
G5	Dis_serious_j	Overall, how serious was [DISPUTE ID]?	1 Very serious 2 Somewhat serious 3 Not serious	Guidance: "serious" here means that it disrupted or altered normal life activities.
G6	Dis_mny_j	Did you lose money because of [DISPUTE ID]?	1 Yes, a little (less than TZS 10,000) 2 Yes, a lot (more than TZS 10,000) 3 No	
G7	Dis_safe_j	Did [DISPUTE ID] make you worried about your safety?	1 Yes, a lot 2 Yes, a little 3 No	
G8	Dis_resolved_j	Was [DISPUTE ID] resolved?	1 Yes 2 No	If 2 >>> G9

G8.1	Dis_who_resolved_j	Who resolved [DISPUTE ID]?	1 We resolved it amongst ourselves 2 Others in the community 3 The Village Council 4 District Courts 5 District Officials 6 Village land use committee 7 Ward land use committee 8 Other	If yes to dis_resolved_j Need to tailor
G8.2	Dis_satis_j	How satisfied were you with how [DISPUTE ID] was resolved?	1 Very satisfied 2 Somewhat satisfied 3 Not satisfied	If yes to dis_resolved_j
G9		How likely is it that you will have another dispute like [DISPUTE ID]?	1 Very likely 2 Somewhat likely 3 Not likely 4 Unsure	

#### H. Non-Agricultural Income, Consumption, and Assets

	Name	Question	Response options/units	Notes/instructions
H1	Inc_own	Does your household currently own any of the following items in good working condition: [READ EACH OPTION OUT LOUD AND MARK IF ANSWER "YES" or ' NO'		
H1.1	Inc_own_radio	<ul style="list-style-type: none"> <li>Radio or Radio Cassette</li> </ul>	1 Yes 2 No	
H1.2	Inc_own_mobile	<ul style="list-style-type: none"> <li>Telephone(mobile)</li> </ul>	1 Yes 2 No	
H1.3	Inc_own_sewm	<ul style="list-style-type: none"> <li>Sewing Machine</li> </ul>	1 Yes 2 No	
H1.4	Inc_own_tv	<ul style="list-style-type: none"> <li>Television</li> </ul>	1 Yes 2 No	
H1.5	Inc_own_dvd	<ul style="list-style-type: none"> <li>Video / DVD</li> </ul>	1 Yes 2 No	
H1.6	Inc_own_lanterns	<ul style="list-style-type: none"> <li>Lanterns</li> </ul>	1 Yes 2 No	
H1.7	Inc_own_otherstove	<ul style="list-style-type: none"> <li>Stove</li> </ul>	1 Yes 2 No	
H1.8	Inc_own_bicycle	<ul style="list-style-type: none"> <li>Bicycle</li> </ul>	1 Yes 2 No	
H1.9	Inc_own_watches	<ul style="list-style-type: none"> <li>Watches</li> </ul>	1 Yes 2 No	
H1.10	Inc_own_mnets	<ul style="list-style-type: none"> <li>Mosquito net</li> </ul>	1 Yes 2 No	



HI.11	Inc_own_iron	<ul style="list-style-type: none"> <li>Iron (Charcoal or electric)</li> </ul>	1 Yes 2 No	
HI.12	Inc_own_fanair	<ul style="list-style-type: none"> <li>Fan/Air conditioner</li> </ul>	1 Yes 2 No	
HI.13	Inc_own_fields	<ul style="list-style-type: none"> <li>Fields/Land</li> </ul>	1 Yes 2 No	
HI.14	Inc_own_solar	<ul style="list-style-type: none"> <li>Solar panel</li> </ul>	1 Yes 2 No	
HI.15	Inc_own_house	<ul style="list-style-type: none"> <li>Houses/housing addition</li> </ul>	1 Yes 2 No	
HI.16	Inc_own_poultry	<ul style="list-style-type: none"> <li>Poultry</li> </ul>	1 Yes 2 No	
HI.17	Inc_own_livestock	<ul style="list-style-type: none"> <li>Livestock</li> </ul>	1 Yes 2 No	
HI.18	Inc_own_other	<ul style="list-style-type: none"> <li>Other</li> </ul>	1 Yes 2 No	
HI.11	Inc_own_radio_num	<ul style="list-style-type: none"> <li>Radio or Radio Cassette</li> </ul>	Quantity	If Inc_own_radio = yes
HI.21	Inc_own_mobile_num	<ul style="list-style-type: none"> <li>Telephone(mobile)</li> </ul>	Quantity	If inc_own_mobile = yes
HI.31	Inc_own_sewm_num	<ul style="list-style-type: none"> <li>Sewing Machine</li> </ul>	Quantity	If own_sewm_num = yes
HI.41	Inc_own_tv_num	<ul style="list-style-type: none"> <li>Television</li> </ul>	Quantity	If inc_own_tv = yes
HI.51	Inc_own_dvd_num	<ul style="list-style-type: none"> <li>Video / DVD</li> </ul>	Quantity	If inc_own_dvd = yes
HI.61	Inc_own_lanterns_num	<ul style="list-style-type: none"> <li>Lanterns</li> </ul>	Quantity	If inc_own_lanterns=yes
HI.71	Inc_own_stove_num	<ul style="list-style-type: none"> <li>Stove</li> </ul>	Quantity	If inc_own_stove = yes
HI.81	Inc_own_bicycle_num	<ul style="list-style-type: none"> <li>Bicycle</li> </ul>	Quantity	If inc_own_bicycle = yes
HI.91	Inc_own_watches_num	<ul style="list-style-type: none"> <li>Watches</li> </ul>	Quantity	If inc_own_watches = yes
HI.101	Inc_own_mnets_num	<ul style="list-style-type: none"> <li>Mosquito net</li> </ul>	Quantity	If inc_own_mnets = yes
HI.111	Inc_own_iron_num	<ul style="list-style-type: none"> <li>Iron (Charcoal or electric)</li> </ul>	Quantity	If inc_own_iron = yes
HI.121	Inc_own_fanair_num	<ul style="list-style-type: none"> <li>Fan/Air conditioner</li> </ul>	Quantity	If inc_own_fanair = yes
HI.131	Inc_own_fields_num	<ul style="list-style-type: none"> <li>Fields/Land</li> </ul>	Quantity	If inc_own_fields = yes

H1.14I	Inc_own_solar_num	<ul style="list-style-type: none"> <li>Solar panel</li> </ul>	Quantity	If inc_own_solar = yes
H1.15I	Inc_own_house_num	<ul style="list-style-type: none"> <li>Houses/housing addition</li> </ul>	Quantity	If inc_own_house = yes
H1.16I	Inc_own_poultry_num	<ul style="list-style-type: none"> <li>Poultry</li> </ul>	Quantity	If inc_own_poultry = yes
H1.17I	Inc_own_livestock_num	<ul style="list-style-type: none"> <li>Livestock</li> </ul>	Quantity	If inc_own_livestock = yes
H1.18I	Inc_own_other_num	<ul style="list-style-type: none"> <li>Other</li> </ul>	Quantity by specified item	If inc_own_other = yes
H2	Inc_own_ani	Which of the following animals are owned by the household?	<ol style="list-style-type: none"> <li>Cows, oxens and bulls</li> <li>Horses, donkeys and mules</li> <li>Pigs</li> <li>Goats</li> <li>Sheep</li> <li>Poultry</li> <li>Other</li> <li>None</li> </ol>	
H3	Inc_hwalls	What is the major construction material of the walls of the main dwelling?	<ol style="list-style-type: none"> <li>POLES (INCLUDING BAMBOO), BRANCHES, GRASS)</li> <li>POLES AND MUD/MUD AND STONES</li> <li>MUD ONLY</li> <li>MUD BRICKS</li> <li>BAKED/BURNT BRICKS</li> <li>CONCRETE, CEMENT, STONES</li> <li>OTHER, SPECIFY</li> </ol>	Enumerator should directly observe to confirm response.
H4	Inc_hroof	What is the major construction material of the main roof?	<ol style="list-style-type: none"> <li>GRASS, LEAVES, BAMBOO</li> <li>MUD AND GRASS</li> <li>CONCRETE, CEMENT</li> </ol>	

			4. METAL SHEETS (GCI) 5. ASBESTOS SHEETS 6. TILES 7. OTHER, SPECIFY	
H5	Inc_act_n	Other than working on the household plots, did [NAME] do anything else to earn money including work for pay, work in business for (him/herself), work in a family business, making things to sell, casual labor, odd jobs, or any other activity to earn money, during the last 12 months?	1 Yes 2 No	Ask for each hh member older than 15 If 2 >>> H6
H5.1	Inc_jobtype_n	In this work, was [NAME] working for:	1. Work for non-household member/ firm/ company 2. "non-farm on own account/ household enterprise" 3. Farm owned or rented by household member	If Inc_act_n== Yes
H5.2	Inc_occtype_n	What activity did [NAME] do?	1. FISHING 2. MINING 3. TOURISM 4. GOVERNMENT OFFICE 5. PARASTATAL 6. PRIVATE SECTOR 7. NGO / RELIGIOUS 8. SELF-EMPLOYED (NOT AGRICULTURE): WITH EMPLOYEES 9. SELF-EMPLOYED (NOT AGRICULTURE): W/OUT EMPLOYEES	

			10. UNPAID HOUSEHOLD LABOUR		
H5.3	Inc_months	During the last 12 months, for how many months did [NAME] work in their job?	Enter months		
H5.4	Inc_hours	During the last 12 months, how many hours did [NAME] usually work in this job each day?	Enter hours		
H5.5	Inc_paid	Was [NAME] being paid in this job?	1 Yes 2 No		
H5.5.1	Inc_period_n	How much was [NAME] being paid?	<b>Amount (TZS)</b>	<b>Period of payment</b>  1 Month 2 Fortnight 3 Week 4 Day 5 Other	
H6	Inc_inc	For each of the following, can you tell me if anyone in your household earned income from this source in the past 12 months?  READ EACH OPTION OUT LOUD AND MARK IF ANSWER IS "YES"	1 Yes 2 No		
H6.1	Inc_inc_wage	<ul style="list-style-type: none"> <li>Wage and/or self-employment income</li> </ul>	1 Yes 2 No		
H6.2	Inc_inc_rent	<ul style="list-style-type: none"> <li>Rental of land / property</li> </ul>	1 Yes 2 No		
H6.3	Inc_inc equip	<ul style="list-style-type: none"> <li>Rental of farm equipment / animals</li> </ul>	1 Yes 2 No		
H6.4	Inc_inc_saleanim	<ul style="list-style-type: none"> <li>Sale of livestock</li> </ul>	1 Yes 2 No		
H6.5	Inc_inc_animprod	<ul style="list-style-type: none"> <li>Revenue from livestock products</li> </ul>	1 Yes 2 No		
H6.6	Inc_inc_asset	<ul style="list-style-type: none"> <li>Sale of household assets</li> </ul>	1 Yes 2 No		
H6.7	Inc_inc_remit	<ul style="list-style-type: none"> <li>Remittances from family outside the household, friends or others</li> </ul>	1 Yes 2 No		
H6.8	Inc_inc_ss nit	<ul style="list-style-type: none"> <li>Social Security National Insurance Trust, or SSNIT</li> </ul>	1 Yes 2 No		

H6.9	Inc_inc_pension	<ul style="list-style-type: none"> <li>Private pensions or other retirement payments</li> </ul>	1 Yes 2 No	
H6.10	Inc_inc_govt	<ul style="list-style-type: none"> <li>Social assistance payments from the government (i.e., scholarships, disability payments, etc.)</li> </ul>	1 Yes 2 No	
H6.11	Inc_inc_ngo	<ul style="list-style-type: none"> <li>Social assistance from aid programs, churches, NGOs, or other organizations</li> </ul>	1 Yes 2 No	
H7	Inc_earn	For each of the following YES responses in H6, can you tell me how much anyone in your household earned from this source?	Amount in TZS	
H7.1	Inc_earn_wage	<ul style="list-style-type: none"> <li>Wage and/or self-employment income</li> </ul>		If H6.1 == 1
H7.2	Inc_earn_rent	<ul style="list-style-type: none"> <li>Rental of land / property</li> </ul>		If H6.2 == 1
H7.3	Inc_earn_equip	<ul style="list-style-type: none"> <li>Rental of farm equipment / animals</li> </ul>		If H6.3 == 1
H7.4	Inc_earn_saleanim	<ul style="list-style-type: none"> <li>Sale of livestock</li> </ul>		If H6.4 == 1
H7.5	Inc_earn_animprod	<ul style="list-style-type: none"> <li>Revenue from livestock products</li> </ul>		If H6.5 == 1
H7.6	Inc_earn_asset	<ul style="list-style-type: none"> <li>Sale of household assets</li> </ul>		If H6.6 == 1
H7.7	Inc_earn_remit	<ul style="list-style-type: none"> <li>Remittances from family outside the household, friends or others</li> </ul>		If H6.7 == 1
H7.8	Inc_earn_ssmit	<ul style="list-style-type: none"> <li>Social Security National Insurance Trust, or SSNIT</li> </ul>		If H6.8 == 1
H7.9	Inc_earn_pension	<ul style="list-style-type: none"> <li>Private pensions or other retirement payments</li> </ul>		If H6.9 == 1
H7.10	Inc_earn_govt	<ul style="list-style-type: none"> <li>Social assistance payments from the government (i.e., scholarships, disability payments, etc.)</li> </ul>		If H6.10 == 1
H7.11	Inc_earn_ngo	<ul style="list-style-type: none"> <li>Social assistance from aid programs, churches, NGOs, or other organizations</li> </ul>		If H6.11 == 1

**I. Household Savings, Borrowing, and Shocks**

	Name	Question	Response options/units	Notes/instructions
<b>Thank you. I would like to ask a few questions now about how your household manages expenses.</b>				
I1	Fin_credsource	In the past six months, has anyone in your household borrowed money?	1 Yes 2 No	If 2 >>> I3
I1.1	Fin_credfrom	Who did they borrow from?	1. COMMERCIAL BANKS 2. MICRO-FINANCE INST 3. VILLAGE COMMUNITY BANK (VICOBA) 4. NEIGHBOURS / FRIENDS 5. FAMILY 6. NGO OR SELF-HELP GROUPS 7. OTHER INFORMAL MONEY LENDER 8. OTHER, SPECIFY	If fin_credsource = yes
I2	Fin_amtbrrw	In total, approximately how much has your household borrowed in the past 1.5 years?	TZ shillings	If yes to “has your household borrowed”
I3	Fin_wntloan	If you wanted to get a loan of to cover your expenses or buy farm inputs, do you think you or anyone in your household would be able to do that?	1 Yes 2 No 996 Don't know	
I4	Fin_bankacct	Do you or anyone else in your household have a bank account, either with a commercial bank, a credit union, or other similar institution?	1 Yes 2 No 996 Don't know	If yes or maybe to previous If 2 OR 996 >>> I6
I5	Fin_bankname	Please list up to 3 institutions with whom you or a member of your household has a savings account.	Enter name 998 Can't recall / remember	If Fin_bankacct = yes If 998 >>> I6
I5.1	Fin_bankyear	What year did you open the account?	Enter year 998 if can't recall	If Fin_bankacct=yes
I5.2	Fin_bankmonth	What month did you open the account?	Enter month 998 Can't recall / remember	If Fin_bankacct = yes
I6	Fin_shock	Did your household experience any unusual problems during the past year that affected your HH's ability to eat or changed what your household owned?	1 Yes 2 No 996 Don't know	If 2 OR 996, skip to next section.

17	Fin_typshock	Please select the first and second events that had the biggest impact on your household in the past 12 months.	1 DROUGHT/BAD RAINFALL 2 FLOODS 3 LANDSLIDES & MUDSLIDES 4 CROP PESTS & DISEASE 5 LIVESTOCK DISEASES 6 HIGH COST OF SEED, FERTILIZER 7 JOB LOSS FOR A HH MEMBER 8 SERIOUS ILLNESS, ACCIDENT, OR DEATH OF HH MEMBER 9 INSECURITY/VIOLENCE 990 OTHER, SPECIFY	If yes to previous Select top two.
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#### J. Food Security

	Name	Question	Response options/units	Notes/instructions
<i>In this next set of questions, I want to ask about your food situation. Thank you.</i>				
J1	Fd_season	In the last 12 months, have you been faced with a situation when you did not have enough food to feed the household?	1 Yes 2 No	If 2 >>> J2
J1.1	Fd_seasonday	For how long did you face this situation?	Enter days.	
J2	Fd_worry	During the past 12 months, did you worry that your household would not have enough food?	0 No (it did not happen) 1 Rarely (once or twice) 2 Sometimes (three to ten times) 3 Often (more than 10 times)	
J3	Fd_kinds	During the past 12 months, did it happen that you or someone in your household were not able to eat the <u>kinds of foods you would have preferred</u> to eat because of lack of resources?	0 No (it did not happen) 1 Rarely (once or twice) 2 Sometimes (three to ten times) 3 Often (more than 10 times)	(Note emphasis on KINDS of foods)
J4	Fd_fewml	During the past 12 months, did it happen that you or any other household member had to eat <u>fewer meals in a day</u> because there was not enough food?	0 No (it did not happen) 1 Rarely (once or twice) 2 Sometimes (three to ten times) 3 Often (more than 10 times)	
J5	Fd_nofood	During the past 12 months, did it happen that there was <u>no food to eat of any kind</u> in your house, because of lack of resources to get food?	0 No (it did not happen) 1 Rarely (once or twice) 2 Sometimes (three to ten times) 3 Often (more than 10 times)	

	Fd_bed	During the past 12 months, did it happen that you or any household member <u>went to sleep at night hungry</u> because there was not enough food?	0 No (it did not happen) 1 Rarely (once or twice) 2 Sometimes (three to ten times) 3 Often (more than 10 times)	
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**K. Self Efficacy**

	Name	Question	Response options/units	Notes/instructions
<b>Thank you. Now I am going to read out some statements to you; please tell me how true each of the statements is about you.</b>				
K1	Eff_solve	I can always manage to solve my problems if I try hard enough	I not at all true;2 hardly true;3 moderately true;4 exactly true	
K2	Eff_opp	If someone opposes me, I can find the means and ways to get what I want	I not at all true;2 hardly true;3 moderately true;4 exactly true	
K3	Eff_acco	I am certain I can accomplish my goals	I not at all true;2 hardly true;3 moderately true;4 exactly true	
K4	Eff_shocks	I am confident that I could deal effectively with unexpected events	I not at all true;2 hardly true;3 moderately true;4 exactly true	
K5	Ef_resour	Thanks to my resourcefulness, I can handle unforeseen situations	I not at all true;2 hardly true;3 moderately true;4 exactly true	
K6	Eff_effort	I can solve most problems if I invest the necessary effort	I not at all true;2 hardly true;3 moderately true;4 exactly true	
K7	Eff_calm	I can remain calm when facing difficulties because I can rely on my strength to cope	I not at all true;2 hardly true;3 moderately true;4 exactly true	
K8	Eff_alter	When I am confronted with a problem, I always look for an alternative solution	I not at all true;2 hardly true;3 moderately true;4 exactly true	
K9	Eff_troub	If I am in trouble, I can think of a good solution	I not at all true;2 hardly true;3 moderately true;4 exactly true	
K10	Eff_hnd	I can handle whatever comes my way	I not at all true;2 hardly true;3 moderately true;4 exactly true	

*Skip to section M after this Module for male head of households.  
Skip to section L.A Time Allocation after this Module for female head of households.*

**L. Wives/Partners Survey**

	Name	Question	Response options/units	Notes/instructions
<i>Thank you for agreeing to answer a few of our questions. We are going to start with some questions to record your basic information.</i>				
L1	wives_consent	Did the respondent consent?	1 Yes 2 No	If 2 >>> End Interview
L2	wives_wmarried	What is your marital status	1=Monogamously married 2=Polygamously married	
L3	wives_wage)	What is your age?	years	
L4	wives_wreligion	What is your religion, if any?	1. Christian (Protestant) 2. Christian (Catholic) 3. Muslim 4. None 5. Other	
L5	wives_wed	What is the highest level of education you have attained?	PRIMARY P1.....11 P2.....12 P3.....13 P4.....14 P5.....15 P6.....16 P7.....17 FORM F1.....21 F2.....22 F3.....23 F4.....24 'O'+COURSE.25 F5.....31 F6.....32 'A'+COURSE.33 DIPLOMA...34 U1.....41 U2.....42 U3.....43 U4.....44 U5&+.....45	
L6	wives_wborn	Were you born in this village?	1 Yes 2 No	If 1 >>> L9
L7	wives_wborndist	Where is the village where you were born?		

L8	wives_wyrslive	How many years have you lived in this village?		
L9	Wives_looshus	In the next 5 years, how worried would you be about losing your land if your husband died?	1 Very Worried 2 Somewhat Worried 3 Not worried at all 996 DK 997 Refused to answer	
L10	wives_takeextfam	In the next 5 years, how likely is it that someone from within your extended family will take over the use of this field without your HH's permission/agreement?	1=Very Likely 2=Likely 3=Neutral 4=Somewhat unlikely 5=Very unlikely 996=Don't know 997=Prefer not to reply	
<b>Now I'd like to ask you some questions about your participation in certain types of work activities and on making decisions on various aspects of household life</b>				
L11	wives_part	Did you yourself participate in [ACTIVITY] in the past 12 months (that is, during the last [one/two] cropping seasons), from [PRESENT MONTH] last year to [PRESENT MONTH] this year?  A) Food crop farming B) Cash crop farming C) Livestock raising D) Non-farm economic activities. E) Wage and Salary employment F) Fishing or fishpond culture G) Major hh expenditures H) Minor hh expenditures	1 Yes 2 No	If emp_part==No -> skip to next activity. Activity:
L12	wives_decision	When decisions are made regarding [ACTIVITY], who is it that normally takes the decision?	1. Self 2. Spouse 3. Both spouse and self (joint decision making) 4. Other HH member 5. Other Non-HH member 999. N/A	If emp_decision==1, skip to next activity. No response needed if activity==G or H.
L13	Wives_decisionfreq	When decisions are made regarding [ACTIVITY], how often does the decision maker inform you about the decision?	1 Always 2 Sometimes 3 Rarely 4 Never 5 Unsure	If emp_decision != 1 answer this

L14	wives_input	How much input did you have in making decisions about [ACTIVITY] in the past 12 months?	1. No input or input in few decisions, 2. Input into some decisions, 3. Input into most or all decisions, 98. No decision made/Not sure	If emp_input==98, skip to next activity
L15	emp_extent	To what extent do you feel you can make your own personal decisions regarding [ACTIVITY] if you want(ed) to?	1. Not at all, 2. Small extent, 3. Medium Extent, 4. To a high extent.	
L16	emp_use_inc	How much input did you have in decisions on the use of income generated from [ACTIVITY]	1. No input or input in few decisions, 2. Input into some decisions, 3. Input into most or all decisions, 98. No decision made/Not Sure	No response needed if activity==G or H.
L17	Wives_landlaw	Do you know about the national land laws?	1 Yes 2 Yes, but don't know the details 3 No	
L18	Wives_hearing	How confident are you that you would receive a fair hearing if you had a land dispute?	1 Very confident 2 Somewhat confident 3 Unsure 4 Not confident 5 Very unconfident	
L19	Wives_takepos	Do you think it's possible that someone could try to take one of your parcels from you without your permission, say in the next 5 years?	1 Yes 2 No	Enumerator should specify only the parcels in targeted commune if the respondent has parcels in other communes  If 2 >>> L22
L20	Wives_expro	How likely do think it is that someone would try to take one of your parcels from you in the next 5 years?	1 Unlikely 2 Somewhat likely 3 Very likely/it is happening now	If wives_takepos = yes
L21	Wives_reason	Which if any of the following are reasons why you think this could happen? <ul style="list-style-type: none"> <li>• Ongoing or past disputes or expropriation</li> <li>• Lack of documents</li> <li>• Length of agreement (if lease agreement for example)</li> <li>• Problems experienced by others in the community</li> </ul>	1 More important reason 2 Less important reason 3 Not a reason	If per_takepos = yes
L22	Wives_meet	How many group/village meetings have you attended in the past six months?	Enter number	

L22.1	Wive_meet_n	What kind of meetings have you attended?	1. Kitongoji Meetings 2. Village Meetings 3. Farmers' cooperative meetings 4. SACCOS or self-help group meeting 5. School meetings (SMC or parents) 6. Other	If wives_meet !=0
L22.2	Wives_meetfreq_n	How many times did you attend [MEETING]?	Enter number	
L22.3	Wives_speak	How many of those meetings have you spoken to the group?	Enter number	
L22.4	Wives_speakfreq	How many times did you speak at [MEETING]?	Enter number	If wives_speak != 0
L23	Wives_comfort	Do you feel comfortable speaking at village meetings or in group settings?	1 Yes 2 No	
L24	Wives_wgroup	Are there women's groups in the village or surrounding area?	1 Yes 2 No	If yes, continue If 2 >>> L26
L25	Wives_wattend	How many women's group meetings have you attended?	Enter number	If >0, continue
L25.1	Wive_totattend	How many women would you estimate were at the meeting?	Enter number	If many meetings (>10) were attended, this should refer to average.
L26	Wives_Lan_dcd_i	Who primarily decides how to use this household's parcel(s)?	1=Head of household 2=Spouse 3=Both Head and spouse together 4=Other male household member 5=Other female household member 990=Other, specify	
L27	Wives_Lan_inco_i	Who decides how to use any income generated from the use of this household's parcel(s)?	1=Head of household 2=Spouse 3=Both Head and spouse together 4=Other male household member 5=Other female household member 990=Other, specify	
<b>Next I'd like to ask about your household's experience with borrowing money or other items in the past 12 months.</b>				
L28	Wives_loan	Over the past 12 months, did you or anyone else in this household borrow from someone outside the household or from an institution receiving either cash, goods, or services?	1 Yes 2 No	If 2 >>> L29
L28.1	Wive_loan_source	What was the source of the loan(s)?	1 COMMERCIAL BANKS 2 MICRO-FINANCE INST	Select all that apply

			3 VILLAGE COMMUNITY BANK (VICOBA) 4 NEIGHBOURS / FRIENDS 5 FAMILY 6 NGO OR SELF-HELP GROUPS 7 OTHER INFORMAL MONEY LENDER 990 OTHER, SPECIFY	
L28.2	Wives_loan_dec	Who made the decision to borrow from [SOURCE] most of the time?	1 SELF 2 SPOUSE 3 Both spouse and self (joint decision making) 4 OTHER HH MEMBER 5 OTHER NON-HH MEMBER 999 NOT APPLICABLE	Select all that apply
L28.3	Wives_loan_decuse	Who makes the decision about what to do with the money/ item borrowed from [SOURCE] most of the time?	1 SELF 2 SPOUSE 3 Both spouse and self 4 OTHER HH MEMBER OTHER NON-HH MEMBER 999 NOT APPLICABLE	Select all that apply
L28.4	Wives_loan_use	What did you use this loan/credit for?	1 SUBSISTENCE NEEDS 2 MEDICAL COST 3 SCHOOL FEES 4 CEREMONY/WEDDING 5 PURCHASE LAND 6 PURCHASE AGRIC. INPUTS 7 OTHER BUSINESS INPUTS 8 PURCHASE AGRIC. MACHINERY 9 BUY/BUILD DWELLING 990 OTHER(SPECIFY)	
L29	Wives_Lan_doc_i	Do you or your household have any kind of documentation of your rights to your HH's parcels?	1 Yes 2 No	If 2 >>> L3I

L29.1	Wives_Lan_typedoc_i	What kind of documentation? SELECT ALL THAT APPLY	1. GRANTED RIGHT OF OCCUPANCY 2. CERTIFICATE OF CUSTOMARY RIGHT OF OCCUPANCY 3. INHERITANCE LETTER 4. OTHER GOVERNMENT DOCUMENT 5. OTHER DOCUMENT OR LETTER (NON-GOVERNMENT/UNOFFICIAL)	If land_doc_i=yes next question
L29.2	Wives_Lan_docobtain_i	When did you obtain the documentation?	Year/Month	If wives_land_doc_i=yes next question
L29.3	Wives_Lan_docobtain_i	How many people have ownership rights under this documentation?		Enter number
<b>Now I am going to read out some statements to you; please tell me how true each of the statements is about you.</b>				
L30	Wives_Eff_solve	I can always manage to solve my problems if I try hard enough	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L31	Wives_Eff_opp	If someone opposes me, I can find the means and ways to get what I want	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L32	Wives_Eff_acco	I am certain I can accomplish my goals	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L33	Wives_Eff_shocks	I am confident that I could deal effectively with unexpected events	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L34	Wives_Ef_resour	Thanks to my resourcefulness, I can handle unforeseen situations	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L35	Wives_Eff_effort	I can solve most problems if I invest the necessary effort	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L36	Wives_Eff_calm	I can remain calm when facing difficulties because I can rely on my strength to cope	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L37	Wives_Eff_alter	When I am confronted with a problem, I always look for an alternative solution	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L38	Wives_Eff_troub	If I am in trouble, I can think of a good solution	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L39	Wives_Eff_hnd	I can handle whatever comes my way	1 not at all true;2 hardly true;3 moderately true;4 exactly true	
L40	Per_landlaw	How well do you understand the official land laws?	1 Very well 2 Familiar but don't know the details 3 Familiar with	

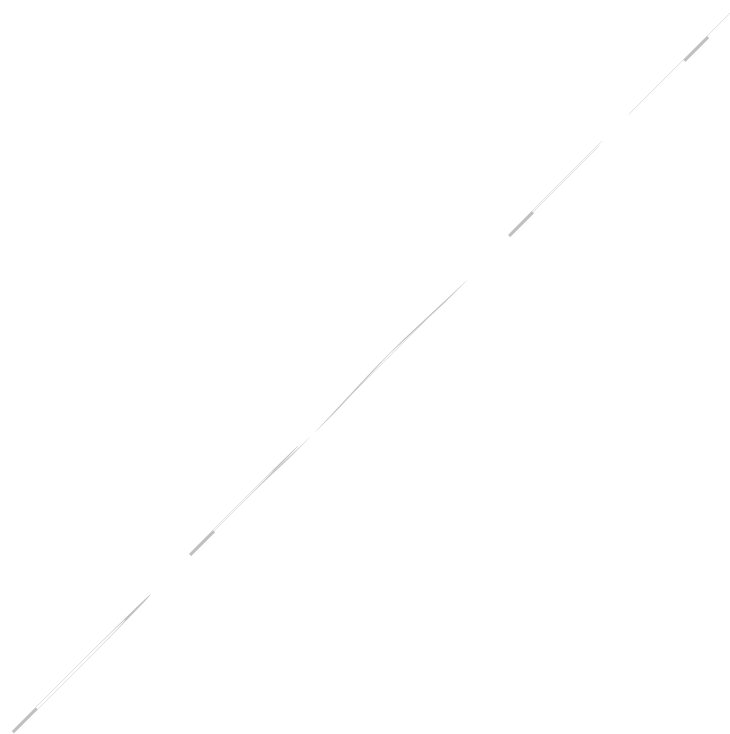
			some rules but don't know if they are official law 4 Unsure	
L41	Wives_CCRO	Have you heard of CCROs?	1 Yes 2 No	If 2 >>>Wives_LTA
L41.1	Wives_payCCRO	In general, how much (if anything) would you be willing to pay to have one of your parcels surveyed and to receive a CCRO?		Enter amount in TShs.
L42	Wives_LTA	Have you heard of [LTA]?	1 Yes 2 No	If 2 >>> Next section. DO NOT PROMPT IF RESPONDENT HAS NOT HEARD OF LTA.
L42.1	Wives_LTArec	Which of the following did you receive through LTA?	<ul style="list-style-type: none"> <li>• Land was surveyed</li> <li>• CCRO</li> <li>• Notarized title</li> <li>• None of the above</li> </ul>	If Wives_LTA= yes
L42.2	Wives_LTAimpr	What was your impression of LTA?	1 Very positive 2 Somewhat positive 3 Neutral 4 Somewhat negative 5 Very negative	If Wives_LTA = yes
L42.3	Wives_docyben	Do you believe that having documentation of your land rights through LTA benefits your household?	1 Yes 2 No	
L42.4	Wives_LTAcom	<p>Do you think LTA has benefited your community in any of the following ways:</p> <ul style="list-style-type: none"> <li>• Protects against losing land</li> <li>• Protects against disputes with neighbors</li> <li>• Makes it easier to rent out</li> <li>• Makes it easier to sell</li> <li>• Will make inheritance easier</li> <li>• Other</li> </ul> <p>SELECT ALL THAT APPLY</p>	<p>1. YES</p> <p>2. NO</p>	If Wives_docyben = yes



#### L.A Time Allocation

Now I'd like to ask you about how you spent your time during the past 24 hours. We'll begin from yesterday morning, and continue through to this morning. This will be a detailed accounting. I'm interested in everything you do (i.e. resting, eating, personal care, work inside and outside the home, caring for children, cooking, shopping, socializing, etc.), even if it doesn't take you much time.

PLEASE RECORD A LOG OF THE ACTIVITIES FOR THE INDIVIDUAL IN THE LAST COMPLETE 24 HOURS (STARTING YESTERDAY MORNING AT 4 AM, FINISHING 3:59 AM OF THE CURRENT DAY). THE TIME INTERVALS ARE MARKED IN 15 MIN INTERVALS AND ONE ACTIVITY CAN BE MARKED FOR EACH TIME PERIOD BY DRAWING AN X THROUGH THAT ACTIVITY.





**Capture GPS at this point**

**FOR FEMALE HEAD OF HOUSEHOLDS CONTINUE TO SECTION M AFTER FILLING OUT THE TIME USE SURVEY.**

#### M. Sketch map instructions

The purpose of the sketch map exercise is to improve the accuracy with which parcels can be re-identified in follow-up rounds of the survey. The sketch map exercise should be carried out just prior to the Land Holdings and Characteristics section of the questionnaire. The enumerator should draw the sketch map, with instructions from the respondent and any other household members present. The parcel on which the interview is being conducted should be located in the center of the map. Each of the household's other parcels should be indicated on the map according to the distance and direction and the respondent indicates. On the sketch map, the enumerator should record the following for each of the parcels:

- Time it takes to reach that parcel by foot from the home
- Name of the parcel
- Size of the parcel
- How long ago did the household acquire (or begin renting) the parcel?
- Type of terrain
- Land use in the past season (agriculture, left fallow, non-agricultural use)
- If agriculture, the main crop that is grown on the parcel

The map should also show geographic features such as rivers, roads, mountains, and the village center that will help to show where the parcel is.

**[TAKE PHOTO OF SKETCH]**

**GPS STAMP.**