Second Level Land Certification Outcome Survey

SIAPAC

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LAND INVESTMENT FOR TRANSFORMATION PROGRAMME

UKaid from the British people

MINISTRY OF AGRICULTURE

Contents

Acknowledgements

This research was commissioned by LIFT but has been conducted by an independent consultancy and does not necessarily represent the views of LIFT.

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Acronyms

CAPI	Computer Assisted Personal Interviewing
DAI	Development Alternatives Incorporated
DFID	Department for International Development (of the United Kingdom)
EETSP	External Evaluation Technical Service Provider
EEU	Economic Empowerment Unit (of the LIFT Programme)
FLLC	First Level Land Certification
GoE	Government of Ethiopia
GESI	Gender and Social Inclusion
ITSP	Internal Technical Service Provider
KLAC	Kebele Land Administration Committee
LIFT	Land Investment for Transformation Programme
M4P	Making Markets Work for the Poor
M&E	Monitoring and Evaluation
M&E and ToC	Monitoring and Evaluation and Theory of Change
MEL	Monitoring, Evaluation and Learning
MoA	Ministry of Agriculture
NRLAIS	National Rural Land Administration Information System
RLAS	Rural Land Administration System
RLAUD	Rural Land Administration and Use Directorate
SIAPAC	Social Impact Assessment and Policy Analysis Corporation
SLLC	Second Level Land Certification
SNNPR	Southern Nations, Nationalities and People's Regional State
ToC	Theory of Change
WLAO	Woreda Land Administration Office. Generic term. In Amhara, it is known as the Woreda Environmental Protection, Land Administration and Use Office. In Oromia, it is known as the Woreda Rural Land and Environmental Protection Office. In SNNP, it is known as the Woreda Land Administration, Use and Environmental Protection Core Process. In Tigray, it is known as the Woreda Environmental Protection and Use Office

Executive Summary

The primary purpose of this survey is to provide evidence regarding the LIFT programme's key theory of change assumptions relating to increased tenure security, reduced disputes, expanded land rental and credit markets, and increased short and long-term investments leading to increased productivity of land. The survey also probed participation in and satisfaction with the SLLC process and provides evidence on the impact of SLLC on women in male-headed households, female-headed households and other vulnerable groups. 2,880 households were sampled across Amhara, Tigray, Oromia and SNNPR. Random sampling with replacements was followed in the same enumeration areas that were already used for the *2015 LIFT Baseline survey*. As a result, a before-after comparison between the 2015 Baseline survey and this survey can be drawn for selected indicators.

Respondents were randomly selected at the household using a Kish Grid approach, meaning that a representative sample of all landholders was created including females in male-headed households, female household heads, youth and elders. As a result, 45% of the respondents are females, including female household heads and females in male-headed households. This allows for a meaningful gender analysis of perceptions, attitudes and behaviour relating to SLLC. For factual questions, multiple household members were allowed to be present to crowd-source responses, while questions relating to attitudes, tenure security and investment were probed with the randomly selected respondent only.

To provide more nuanced analysis, several indices were created to summarise data across several variables. This includes an Investment Score Index, a SLLC Participation Index, and a Trust Index. Furthermore, multivariate regression analysis was conducted to understand how different variables correlate with statistical significance. Regression analysis allows to tell more significant trends apart from less significant ones and helps to identify driving factors in investment behaviour especially. As a result, findings can be confirmed as being significant or not.

The analysis provides rich evidence to confirm LIFT's key theory of change links, including on increased perceived tenure security, reductions in disputes, trends of expanding credit and land rental markets as well as increased investment and productivity effects. Furthermore, indicative evidence regarding the programme's impact statement can be derived (*Impact 1: Percentage of farmers that have increased income by 20%).* An overview of key findings is summarised below.

SLLC Process, Participation and Trust

Key Finding 1: Participation in the SLLC process was high and created trust in the rural land administration system (RLAS). Participation across the different SLLC processes was high across landholders. While participation was higher for males, levels of trust are also high for female-headed households when compared to male-headed households. A multivariate regression model confirms that participation in the SLLC process varies positively with perceptions of trust in RLAS (high statistical significance). (links to Hypothesis 1 and 2)

Key Finding 2: The SLLC process was perceived as fair, both by male and female respondents, and by male and female-headed households. This includes equal perceptions that both males and females were equally involved in the process by LIFT field teams, perceptions of female respondents confirming that they were not discriminated against, and perceptions regarding the treatment of peoples with disabilities and poor and non-poor households. (links to Hypothesis 2 and 3)

Key Finding 3: Certification rates are high and confirm findings from previous surveys. In the LIFT programme area reached by the survey, 93.4% of all landholding households were reached with SLLC certification. Measured as a percentage of parcels SLLC certified, of the total of 12,825 parcels held by all listed households, 96.1% were SLLC certified. (links to Hypothesis 2)

Key Finding 4: Almost all parcels in households with married couples included the wife on the certificate. Overall 71% of all parcels were held jointly by husband and wife, while 73.8% of households in the sample were married couples. This implies that for almost all households with married couples, the process of including the wife on the certificate was implemented effectively. This is a testimony to the effective implementation of the SLLC process and presents a large improvement to how the FLLC was administered in terms of gender inclusion. (links to Hypothesis 3)

Key Finding 5: Engagement in the SLLC process was more substantive and more sustained than engagement in the FLLC process, especially for females.

SLLC Leads to Increased Perceptions of Tenure Security

Key Finding 6: Perceived land tenure security is high with most landholders linking this to SLLC. Risk perceptions of land loss through various means (13 were assessed) was very low, with an average of 95% indicating that risk was 'low' or 'none'. When asked whether SLLC had reduced risk perceptions, over 85% agreed that SLLC has 'reduced risks' across all 13 measures. Female-headed households had lower levels of perceived risk with the exception of encroachment on their parcels by a powerful neighbour. 'Land grabbing' was noted to have been often sorted out through the SLLC process.

Key Finding 7: Female-headed households and wives in male-headed households feel empowered as "rightful landholders". Both female household heads and wives in male-headed households agree that they are now treated as "rightful landholders" as indicated in attitudinal scale questions (more than 95% "strongly agree").

SLLC Reduces Disputes

Key Finding 8: The SLLC process has resolved existing disputes. The survey found that the SLLC process resolved 83.6% of all existing disputes. Two-thirds of these disputes were resolved after initial notification of SLLC and resolved before the formal SLLC process began in a kebele. Many of the remainder were resolved during the SLLC process itself, often with the second party (within the family, with a neighbour), but also in discussions with the Kebele Land Administration Committee (KLAC) and/or village elders. Boundary disputes were argued to have gone down with SLLC with clearly demarcated boundaries by 95.3% of the respondents, holding for both males and females.

Key Finding 9: Fewer disputes arose after the SLLC process was completed when compared to before. When comparing the number of disputes that arose two years before the Baseline survey and the number of disputes that arose around 2 years after the SLLC, it can be found that less than half the number of disputes arose after SLLC. This indicates that the SLLC did not only solve existing disputes, but also contributes to an environment where new disputes are less likely to arise.

Key Finding 10: Landholders perceive a general decline in disputes. Findings 8 and 9 are underlined by landholder's perceptions relating to disputes. A total of 80.1% of respondent argued that disputes had gone down after SLLC was completed, reflecting an awareness of actual trends by respondents. Over 80% also argued that the 'intensity' of disputes had reduced due to SLLC. Findings hold for male- and female-headed households.

Key Finding 11: Most landholders incur costs to resolve disputes, some of which incur significant costs. 63.1% of landholders with a recent dispute indicated that they incurred expenses relating to the dispute, while 40% indicated they spent at least 250 Birr and 20% indicated that they spent more than 1,000 Birr. Travel expenses are the key cost driver, indicating multiple trips to attend meetings at different government authorities.

Expanding Land Rental and Credit Markets

Key Finding 12: The rental market is expanding, draws-in more first-time renters and female-headed households, and reaches out to tenants from outside of the community more often. The percentage of households engaging in cash rental and sharecropping have significantly increased since Baseline. Cash rental has nearly doubled with an increase of 81.6% since Baseline (4.9% at BL, 8.9% at EL), while sharecropping has increased by 23.5%. Especially the expansion of cash rental is significant as it implies a more risky and formal type of rental agreement. First time renting grew significantly following SLLC, at 20.2% out of all rental agreements, while 6.5% of those had rented out more land. One-quarter of those who were renting out land argued that they were renting out for longer periods following SLLC. Three-quarters of landlords felt that they would further expand renting in the next two years. A lower, but still higher than expected, number of households rented out to tenants from outside their communities for the first time (11.2%). SLLC was an important factor in this decision for over half of all households. Furthermore, female-headed households were more likely to have rented out land for the first time following SLLC than male-headed households, showing that increased tenure security expands to female heads.

Key Finding 13: Access to finance has overall increased, especially for female-headed households and in locations where EEU is available. The percentage of households that have taken-out credit has increased by 20.5% since Baseline (from 34% to 41% of all landholders). The increase in access to credit is

especially pronounced for female-headed households and households living in locations where the SLLC-linked loan is available.

SLLC Contributes to an Increase in Short-Term and Long-Term Investments

Key Finding 14: SLLC contributes to landholders' decision to increase investments, including short-term and long-term investments. 91.3% of landholders increased investment in at least one investment type since SLLC. 47% of all landholders argued that the additional tenure security resulting from SLLC partially contributed to making the investment decisions. 30% of landholders argued that SLLC was "very important" in making additional investment decisions. The contribution of SLLC to increased investment was confirmed through a multivariate regression model, which found a statistically significant correlation between the two factors.

Key Finding 15: Investment effects develop over time and are higher and more often linked to SLLC in locations where SLLC was administered a longer time ago. Investments are more likely to have increased in areas where SLLC has been administered a longer time ago, indicating that it takes time for investment effects to build-up. Investments for those reached in 2015 with SLLC were substantially higher than for those reached after 2018, based on the expected 'treatment' effect of SLLC. This holds especially for the number of landholders that claim that SLLC contributed to their decision to place an investment. This correlation is statistically significant, as confirmed through a multivariate regression model.

Key Finding 16: Landholders that have participated more in the SLLC process are more likely to have increased investment, especially long-term investments. This is shown through a multivariate regression analysis making use of the Investment Score Indices and the Participation Index discussed in Section 4. Results show a correlation between a more intensive participation in the SLLC process, and the likelihood of increasing investment. The effect is more strongly pronounced for long-term investments, which underlines one of LIFT's key Theory of Change assumptions: the SLLC process increases security of tenure leading landholders to take more risks and placing long-term investments to improve the productivity of their land.

Key Finding 17: Increased investments correlate positively with increased yield, especially for investments that were placed as a result of SLLC. A strong positive correlation between higher investment scores and increased yield can be identified, with landholders that experienced an increase in yield having much higher investment scores. The effect is pronounced strongest for the "Investment Due to SLLC Index", suggesting that the likelihood of improved yields increases when landholders place an investment as a result of SLLC. In other words, this indicates a trend where investment decisions that were influenced by the arrival of SLLC seem to be more productive as compared to other investments.

Investments Motivated by SLLC Lead to Increased Productivity of Land

Key Finding 18: SLLC investments contribute to increases in productivity of the land. 51% of landholders indicate that their yield has increased since SLLC was administered. When asked whether the investments placed as a result of SLLC contributed to the yield increase, 37% of landholder indicated that this was partially the case, while 11% of landholders indicated that the yield increase was entirely due to the additional investment placed as a result of SLLC. This indicates that there is a positive relationship between investments placed as a result of the additional tenure security provided through SLLC and increases in the productivity of the land.

Key Finding 19: Indicative evidence for Impact Indicator 1 can be provided (Percentage of farmers with SLLC that benefit from a 20% income increase). It can be found that 27% of landholders partially attribute a yield increase of 20% or more to SLLC, 9% attribute this entirely to SLLC. This can be interpreted as an indication of SLLC translating into productivity increases, which in-turn will translate into income increases. Note that a positive correlation between yield increases and attitudinal statements regarding income increases were found.

GESI Findings

Key Finding 2: SLLC process was perceived as fair, both by male and female respondents, and by male and female-headed households. This includes equal perceptions that both males and females were equally involved in the process by LIFT field teams, perceptions of female respondents confirming that they

were not discriminated against, and perceptions regarding the treatment of peoples with disabilities and poor and non-poor households. (links to Hypothesis 2 and 3)

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Key Finding 13: Access to finance has overall increased, especially for female-headed households and in locations where EEU is available. The percentage of households that have taken-out credit has increased by 20.5% since Baseline (from 34% to 41% of all landholders). The increase in access to credit is especially pronounced for female-headed households and households living in locations where the SLLC-linked loan is available. A total of 12.5% of households indicated that they were more likely to have taken out a loan since SLLC took place.

Theory of Change and Survey Hypotheses

LIFT Theory of Change

Insecure land tenure, limited investment by smallholders on their land, weak land rental markets and poor market linkages contribute to low productivity and high levels of land degradation, reinforcing poverty traps in rural Ethiopia. LIFT supports the GoE in the provision of land certificates to land holders across four regions (Amhara, Oromia, Tigray and SNNPR) and in developing the rural land sector to help rural landholders and land users to increase their income by increasing investment and productivity.

A basic premise of stronger and more secure land tenure is that the clarification of land rights, together with the associated potential to more easily demonstrate claims and enforce rights, lessens the risk to landholders of being forcibly displaced from their land. It also allows for a degree of long-term security and a sense of permanence that is expected to encourage new and different types of land related investments. Further, it encourages improved environmental practices consistent with longer term decision processes.

This survey tests one of the key assumptions on which this programme is designed, namely the causal link between SLLC and tenure security and how this may lead to increased investment on land. SLLC and the process that comes with it is expected to lead to increased perceptions of tenure security and access to finance (through the SLLC-linked loan), in turn leading to change in farmer behaviour that is manifested as increased investment, leading to increased productivity and improved livelihoods. The key hypothesis of LIFT's ToC can be summarised as follows:

> If land users are tenure **secure through Second-level Land Certification**, able to operate in a stronger rural land market and land administration system (including access to finance, formalised land rental services and clean agricultural inputs), then they will confidently **invest in land and be able to employ more efficient inputs for production**, leading to an increase in incomes. This will be achieved because of the confidence created by the protection of formalised land transactions and the improvement in capabilities and incentives to increase production through better utilisation of land.

The Second Level Land Certification methodology used for LIFT builds on the registration methodology developed in Rwanda under the DFID-funded Rwanda Land Tenure Regularization Support Programme (DFID, 2013) also implemented by DAI. Orthophotos are used to produce high resolution maps on which land holders identify their parcel boundaries on-farm, and in the presence of their neighbours and local leaders. The resulting boundaries and occupancy data are computerized locally by LIFT programme technical support teams. After verification, this data is further processed and approved for inclusion on a register of land rights. After approval, hard copy certificates demonstrating parcel boundaries, occupancy and land rights are printed and made available to land holders.

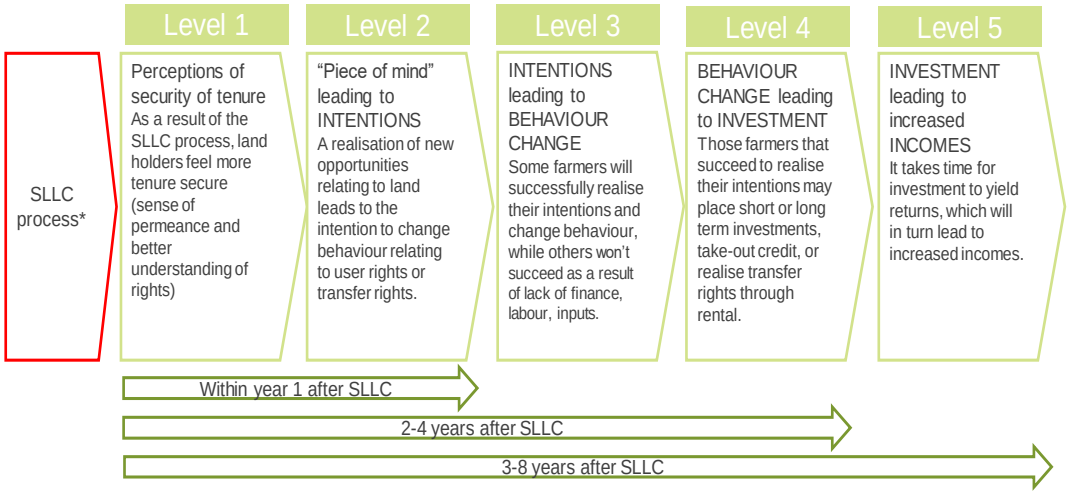
Alongside the Second Level Land Certification Process, LIFT is also supporting the Government in the implementation of a rural land administration system in LIFT programme woredas (third-level administrative divisions) that will sustain the certification process and ensure farmers' long-term security of land holding. This includes clarifying and reinforcing the procedures for land administration, and training land administration personnel in the effective and transparent deployment of these procedures. The project is supporting the development and roll-out of a new Rural Land Administration Information System, which enables land transactions to be digitally recorded, monitored, and reported.

In addition to more straightforward resourcing and capacity building activities, the programme integrated a unique and innovative Economic Empowerment component, which deploys a market systems development approach on a large-scale land reform programme for the first time. LIFT's Economic Empowerment Unit (EEU) aims to improve the effectiveness of the land sector in maximizing productivity and incomes for farmers who have obtained security of tenure through LIFT. The EEU aims to address constraints in the rural land market that prevent farmers from fully capturing the benefits of second level certification. Applying a market systems approach allows the programme to develop systemic interventions in the rural land market and other closely related markets (e.g. finance) that will enable LIFT to maximize and accelerate the impacts of its second level land certification activities and the accompanying improvements to the rural land administration system.

Research Framework

The pathway from changed perceptions relating to tenure security towards changing behaviour to increase investment can be a long process that faces different constraints at different stages. The following figure aims at visualising the landholders' journey, highlighting different stages along the behaviour change pathway:

Figure 1: Pathway from Increased Perceptions of Security of Tenure to Increased Incomes



* The **SLLC process** is defined as the treatment and encompasses not only certificate distribution, but includes the entire participatory intervention provided by LIFT – from initial awareness raising, to demarcation, dispute resolution in the field, outreach to vulnerable households, public display events, and distribution events.

At an initial stage, the SLLC process is assumed to give landholders a 'peace of mind'. The SLLC process includes a range of preparatory actions, handover, and thereafter certificate holdership. In this respect it includes awareness raising around the SLLC, discussions that spark as a result of going through the process in the community at large, and certificate issuance and handover. A change in perceptions relating to land use may then occur (Level 1 above), leading landholders to realise new opportunities relating to their land. In other words, an investment idea starts to take shape (Level 2 above), which leads to the intention (Level 3 above) to change behaviour. Realising the investment idea may be attempted, but the landholder may run into practical constraints to carry-out the investment (such as a lack of resources, lack of access to finance, or a change in his situation). Depending on how much time has passed since SLLC, the landholder may simply still be in the process of preparing the investment. The actual behaviour change can then only be measured once the investment is carried out, which may take time (Level 4 above). It then takes further time for the investment to yield returns, and in turn lead to increased income, as it may take several seasons especially for longer term investments to pay-off (e.g. planting trees) (Level 5 above).

Here it is important to note the time element in behaviour change and investments resulting from SLLC, which this study needs to be wary of. To pick-up on changes at different levels along the pathway from perceptions towards behaviour, the study compares woredas where SLLC was carried-out 4-3 years ago ('old woredas') with woredas where SLLC was carried-out more recently (1-2 years ago) ('new woredas'). More behaviour change relating to investment in 'old woredas' as compared to 'new woredas' is expected, due to the rationale outlined in the figure above.

Survey Hypotheses

In preparing for this survey, testable hypotheses were identified from core assumptions and asserted relationships in the Theory of Change. A total of seventeen hypotheses were identified, grouped into seven elements of the Theory of Change:

Table 1: Survey-Tested Hypothesis by Theory of Change Subject

Theory of Change	Hypotheses
1. Theory of Change: Rightful Landholders Receive SLLC and Register Land Transactions in RLAS	Hypothesis 1: The way that the SLLC process was administered, which included a high degree of local participation, created more awareness, knowledge and trust in the rural land administration system (RLAS) Hypothesis 2: As a result of Hypothesis 1, landholders value their SLLC, as shown by higher collection rates, keeping the SLLC up-to-date, and increased perceptions of usefulness, including for women and vulnerable groups Hypothesis 3: The ownership rights of female-headed households, females in male-headed households, and other vulnerable groups were strengthened through the SLLC process, and are now perceived as rightful landholders by other community members more broadly
2. Landholders Perceive Increased Security of Tenure	Hypothesis 4: SLLC leads to a change in perceptions of risks relating to land, such as loss of land, border disputes, or lack of access to land, which in turn leads to increased perceptions of tenure security

Theory of Change	Hypotheses
	Hypothesis 5: As a result of the SLLC process landholders realise new opportunities relating to their land rights, including their user rights, mortgaging rights, and land transfer rights Hypothesis 6: HH, FMHH, youth, and other vulnerable groups feel empowered through the SLLC process, leading to an increased perception of tenure security. For FMHHs in particular this leads to more involvement in decision making relating to land within the household
3. The Rural Land Market Improves	Hypothesis 7: As a result of SLLC and increased tenure security, landholders rent-out and/or rent-in more land more often and make rental contracts with people outside of their extended family Hypothesis 8: Landholders change their behaviour as a result of realising their transfer rights and transfer land through rental, gifting, exchange, or consolidation more often
4. Landholders Change Behaviour and Invest More on Land	Hypothesis 9: Landholders change their behaviour as a result of realising their land use rights and invest more in their land, especially in longer-term investments (both on- and off-farm) Hypothesis 10: Landholders change their behaviour as a result of realising their land use rights and take-out credit to invest in their land more often (mainly relating to on-farm short-term investments in inputs such as fertilizer, seeds, pesticides, machinery) Hypothesis 11: Behaviour change, and behaviour intentions are observed more frequently in woredas where the SLLC process was conducted a longer time ago, since it takes time for landholders to realise an opportunity and act upon it Hypothesis 12: Female landholders, both FHHs and FMHHs, benefit from SLLC and observe behaviour change and behaviour intentions to realise new investment opportunities, especially regarding longer-term investments (both on- and off-farm)
5. Land is Used More Productively and Landholder's Incomes Increase as a Result	Hypothesis 13: As a result of landholders changing their behaviour and realising their land rights, land is used more productively – including by women and vulnerable groups

Methodology

Approach

This survey follows a theory-based contribution analysis (CA) approach,[1] where evidence for the different causal linkages in the Programme's Theory of Change are provided. These causal linkages were translated into the hypotheses outlined in the section above, and findings in this paper will be structured alongside these hypotheses and the programme's theory of change. While some evidence on the different Theory of Change assumptions already exists, this survey provides crucial evidence using quantitative approaches especially relating to security of tenure and how this translates into behaviour intentions and behavioural change, as outlined above. To derive evidence for changes in security of tenure perceptions, behaviour intentions and behavioural change, a mix of time-series and cross-sectional analysis will be applied as outlined below:

Method 1 – Cross-sectional analysis using 2019 data: Participants were asked to re-call historic information relating to perceptions, intentions and behaviour since the SLLC process was conducted. This allows to understand changes for variables, where a comparison between the baseline and this survey is too spurious.

Method 2 - Before-After comparison using Baseline data from 2015: After a thorough review of the Baseline data and questionnaire, the ITSP has concluded that the Baseline can be used to compare the status of landholders before the SLLC process was conducted with how this has developed over time until 2019. The actual treatment effect, meaning whether the SLLC process was administered or not, was verified by the ITSP for each Woreda and Kebele in the Baseline sample (including for the Baseline treatment and the baseline control group). Locations confirmed by the programme as "treated" were included in the sampling frame for this survey.

While this survey is not a direct follow-up to the Baseline Survey conducted in 2015[2], a number of questions from the Baseline Survey are included in this SLLC Survey, or approximated, allowing statistical and non-statistical comparisons.

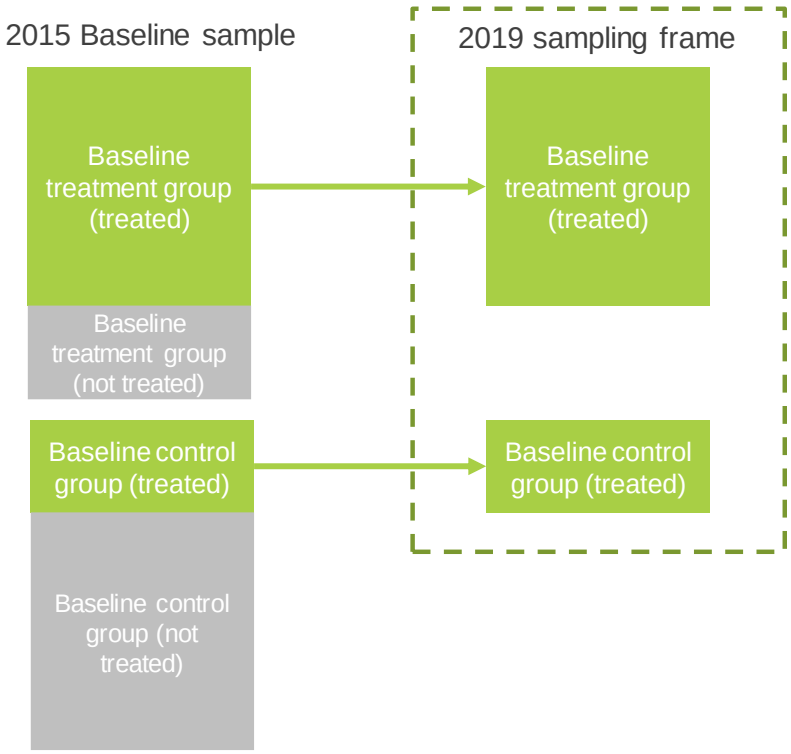
[1] Befani, Barbara. *Choosing Appropriate Evaluation Methods: A Tool for Assessment and Selection*. Bond, 2016, www.bond.org.uk/sites/default/files/caem_narrative_final_14oct16.pdf.

[2] LIFT Programme (2016). Internal Technical Service Provider Baseline Survey Report, prepared by the LIFT Programme M&E Team of DAI for DFID/Ethiopia, Addis Ababa, Ethiopia.

Sampling Design

The 2019 SLLC Survey consists of a quantitative questionnaire where 2,880 households were selected from a listing of 7,920 households across 112 enumeration areas. These were randomly selected from a single sampling frame across 144 clusters in 77 kebeles in 68 woredas across the four LIFT Programme regional states of Amhara, Oromia, Southern Nations, Nationalities and Peoples (SNNP), and Tigray.

Figure 2: Sampling frame for SLLC outcome survey



A **sampling with replacement approach** was used for 2015 – 2019 comparisons, where the sampling frame for the 2019 survey only included enumeration areas that were also visited for the 2015 Baseline survey. Comparability with the 2015 Baseline was ensured by creating a sampling frame that consistent of treated baseline enumeration areas only. Sampling with replacement was applied in these Baseline enumeration areas. Through random selection of respondents in the same enumeration areas as at baseline, on average results should be comparable across the 2015 baseline and the 2019 survey. Demographics and sample split are similar between the two samples are discussed in the next sub-section.

Figure 2 to the left summarises the suggested sampling design. As explained above, this **survey samples from treated baseline enumeration areas only**. The sampling frame includes a sub-set of Baseline treatment and Baseline control locations. This is due to the fact that the actual roll-out of SLLC did not strictly follow the plan that was laid-out in 2015. We therefore have a sub-set of baseline treatment locations that was not treated – these will not be included in the sampling frame. We also have a sub-set of baseline control locations that were indeed treated. These were included in the sampling frame. As a result, all enumerations areas in the sampling frame can be confirmed as treated.

A **three-stage stratified cluster sampling design** was applied. The first stage of sampling uses treated EAs from the 2015 LIFT baseline survey as primary sampling units (PSUs). **PPS (probability proportional to size)** was applied to select EAs from the sampling frame, while household size was used as a measure to determine the weight of each EA. At the second stage of sampling, clusters with an approximate household size of 50 were defined as secondary sampling units (SSUs) and were randomly selected from each of the selected EAs (PSUs). In the final stage the ultimate sampling unit, defined as eligible households, were randomly drawn from the cluster while administering a *random walk* through the cluster, where the starting point was randomly chosen. 20 eligible households were sampled from each cluster of 50 households.

Households were classified as either eligible for interview (held rural land in the respective kebele, had been through second level land certification and had a certificate for at least one parcel) or not eligible (all other households). Furthermore, respondents for the main interview in eligible households were selected at random using an electronic Kish-Grid approach. To be included in the random selection, household members had to be registered landholders, meaning that their name had to be mentioned on the SLLC certificate. As a result,

the survey results are based on a representative sample of landholders, not land-holding households, with 45% of respondents being females. This will allow for meaningful gender analysis of perceptions, attitudes and behaviour, as well as disaggregation by age.

The total number of interviews conducted per regional state is indicated in the following table:

Table 2: Number of Interviews by Regional State

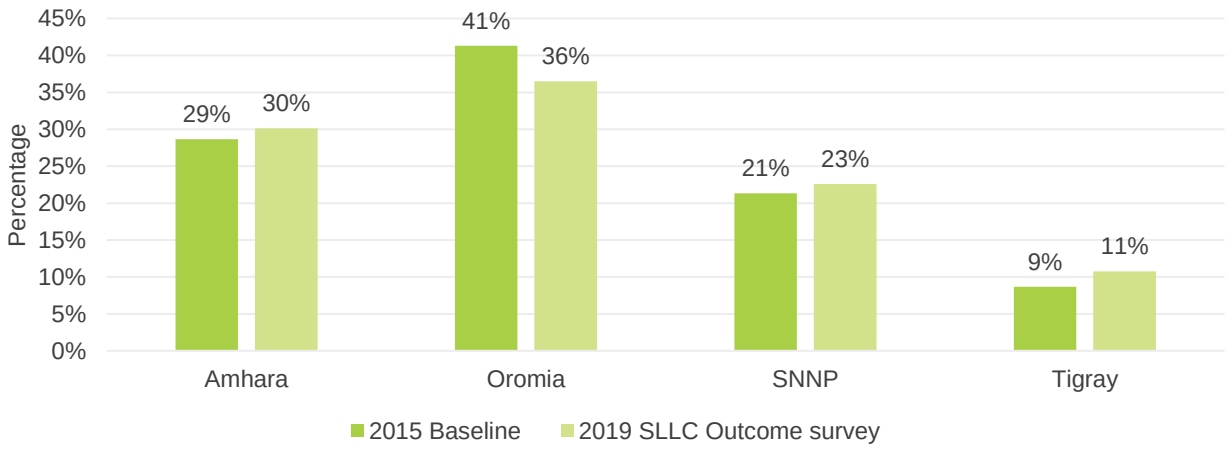
Response	All	Amhara	Oromia	SNNP	Tigray
Regional State	2880	880	1000	620	380
Percentage (unweighted)	100.0	30.6	34.7	21.5	13.2

Comparability Between 2015 Baseline and 2019 SLLC Outcome Survey Data

As described above, sampling with replacements was conducted in treated 2015 Baseline enumeration areas. By randomly selecting households from the same enumeration areas that were used at Baseline, on average a cross-sectional comparison of the two datasets should be feasible. To show that the two samples drawn have indeed similar characteristics, the sample split across regions and across different demographic characteristics is discussed here.

To show that the sample drawn for the 2019 SLLC Outcome survey has the same regional composition as the 2015 Baseline survey, the sample split by region in shown in Figure 3 below.

Figure 3: Percentage of sampled respondents at 2015 Baseline and 2019 SLLC Outcome survey by region



With a small margin of between 1 and 5 percentage points, the regional composition of the Baseline sample matches that of the 2019 SLLC Outcome survey. The small variations are to be expected as a result of the random selection of enumeration areas from the Baseline sampling frame of treated enumeration areas. Overall, the regional composition matches well.

Table 3: Demographic of Baseline and SLLC Outcome survey samples

Demographic characteristics	2015 Baseline	2019 SLLC Outcome
Gender of household head		
Male	85%	77%
Female	15%	23%
Household head's education level		
Primary	34%	29%
Secondary	4%	4%
Higher Than Secondary	1%	1%
None	61%	66%
Household size	5.6	5.7
Age of household head		
Below 30	10%	11%
Age 31 to 45	36%	36%
Age 46 to 60	33%	34%
Above 60	21%	19%

To compare characteristics of respondents, it is important to not use variables that can be affected by the treatment, meaning being part of the SLLC process and receiving the SLLC. A basic set of demographic and sociological variables was selected to derive comparability as shown in Table 3 below, including gender of

household head, household head's education level, household size and age of household head. Economic variables, such as poverty levels, were not included here as these are expected to be impacted on by the SLLC. Overall, it can be found that variations between the two samples are small and that a comparison based on the sampling methodology and similarity of demographic characteristics should be feasible.

Data Analysis

The use of CAPI devices in the field meant that data were sent to a centralised server daily, internet permitting. These data were converted into SPSS format (Statistical Package for the Social Sciences) for data checking and finalisation. Analysis took place using SPSS and STATA.

In preparation for analysis, data were weighted as follows:

To correct for the outcomes of fieldwork, to ensure probability proportionate to size (PPS).
To weight up to the estimated population size.

Statistical tests were conducted using the data weighted to population size but checked against situations of small number of cases to avoid the problem of over-stated statistical results.

Different indices were created to produce a single score for a given household that combines responses to several questions. The following indices[3] were created and will be discussed at more length in the respective sections (detailed methodologies for each index are available upon request):

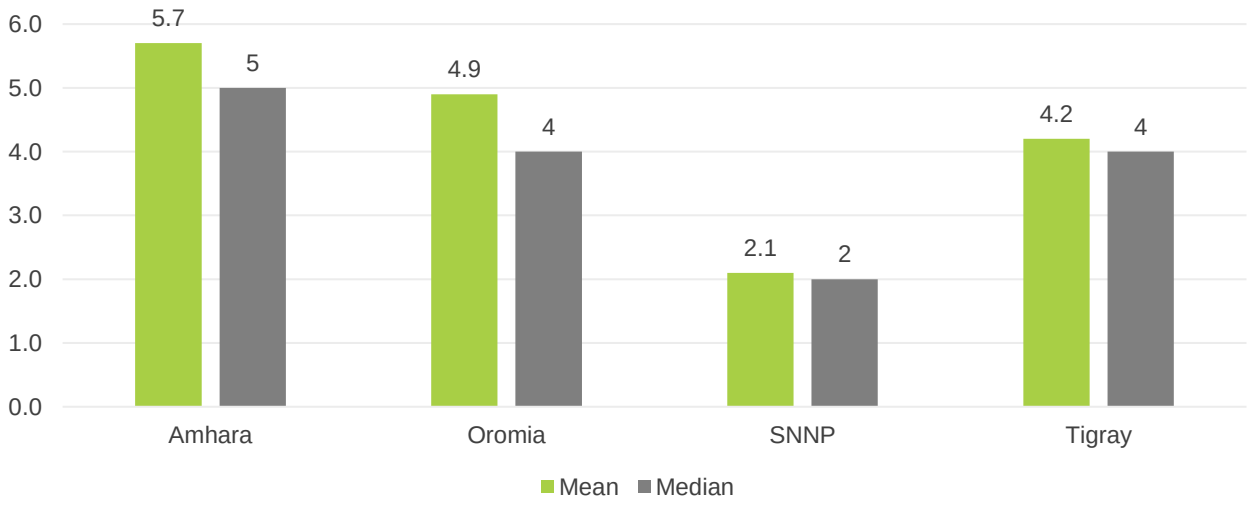
Participation Index
RLAS Trust Index
Investment score index
Investment score index for short-term investments
Investment score index for long-term investments
Investment "due to SLLC" Index

Furthermore, different multivariate regressions were run to test how different variables correlate. Regressions were run on the cross-sectional dataset including data from the 2019 SLLC Outcome survey only.

Land Holdership, Demographics, and Socio-Economic Status

Land Holdings

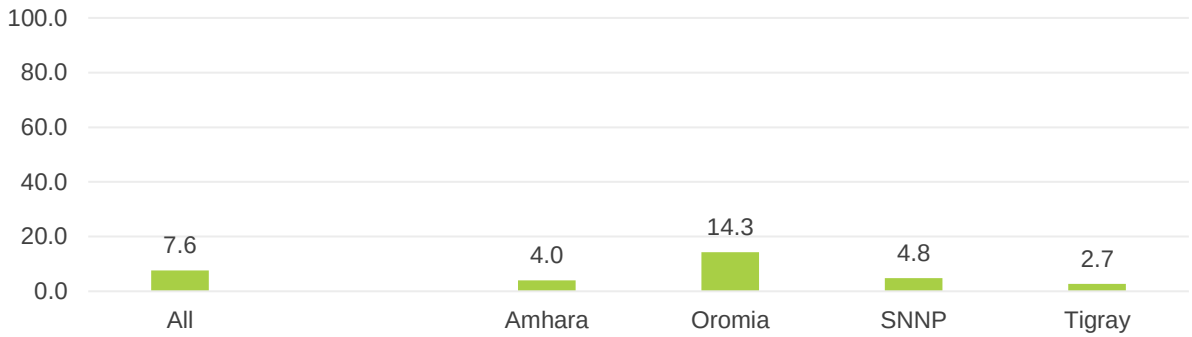
Figure 4: Number of Parcels by Regional State



The median number of parcels was four, which varies across regional state as shown in Figure 4 below. Under 20% only held a single parcel. There was no variation across male-headed and female-headed households, with the same median (4) and similar means (4.42 for male-headed households and 4.32 for female-headed households).

[3] The analysis on indices and multivariate regression analysis is still being finalised at the stage of this draft and will be added in the next iteration.

Figure 5: Landholding Households without SLLC



The listing sheet used before the interview started including criteria for interview. If a household had land, but none of their land was certified, they were excluded from the interview. Findings are indicated in Figure 5.

As the figure shows, a total of 7.6% of all landholding households in the sampled locations had land but did not have any parcels that were second level certified.

During the listing process, a rapid interview was conducted to establish whether a household was eligible for interview. As a result, landlessness can be estimated, which was found to be 11.3% of the rural population on average.

Demographic Findings

Initial demographic questions were included in the questionnaire covering the interviewee, and thereafter the household head. Findings are indicated in the following table:

Table 4: Household Member Interviewed

Response	%
Interviewee Gender	
Male	54.4
Female	45.6
Interviewee household position	
Head of household - male	76.9
Head of household - female	23.1
Spouse - female	20.2
Father	0.8
Mother	0.6
Adult daughter	0.5
Adult son	1.1
Other adult male	0.2
Other adult female	0.2
Others Present for Interview (front sections)	
None	62.0
Male household head	2.6
Female household head	0.6
Spouse of household head	7.0
Other male	22.1
Other female	12.2
Level of Education of Interviewee	
None	72.5
Partial primary	22.7
Full primary	1.9
Partial secondary or higher	3.3
Current Age of the Interviewee	
Mean (years)	48.7
Median (years)	47
Disability Status of Interviewee	
None	86.9
Difficulty seeing, not corrected by glasses	6.5
Difficult hearing, even with hearing aid	2.3
Difficulty walking or climbing stairs	3.7
Difficulty remembering or concentrating	0.8
Difficulty with self-care such as washing all over and dressing	0.9
Other physical impairment	2.0

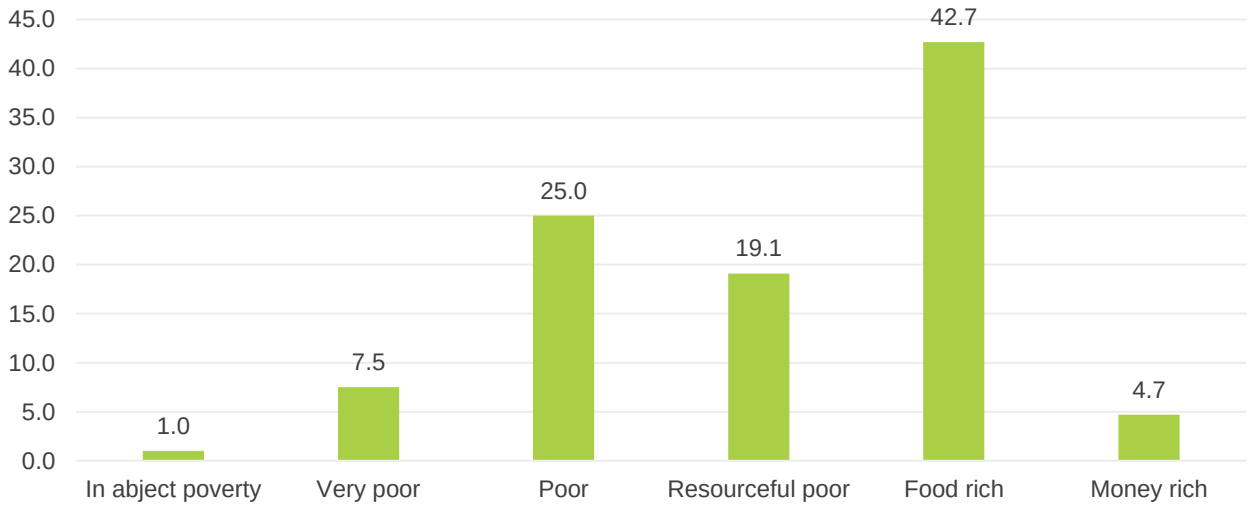
The majority of interviewees comprised household heads, including both male-headed and female-headed households. Interviewees were split almost evenly across males and females. In one-third of all cases, another household member was present, mostly 'other male or female'. Education levels were very low, with almost three-quarters with no education, and almost all the remainder with only some primary school education. One-in-seven of the interviewees were living with one or more disabilities.

Of the households interviewed, 76.9% were headed by males and 23.1% were headed by females. Widows and widowers were second most common, at 14.4%, while 6% were in female-headed households where the woman was married, in over half of the cases as a second wife to a male living in another household. Only 3.3% were divorced, or some 95 households in total.

Socio-Economic Findings

A few socio-economic measures that had proven to work in previous surveys were also used here. These are generally used to check for co-variation on other measures, and therefore appear throughout the report. Here the basic findings are included. The first measure involves enumerator ratings of the poverty status of households. Findings are indicated in the following figure:

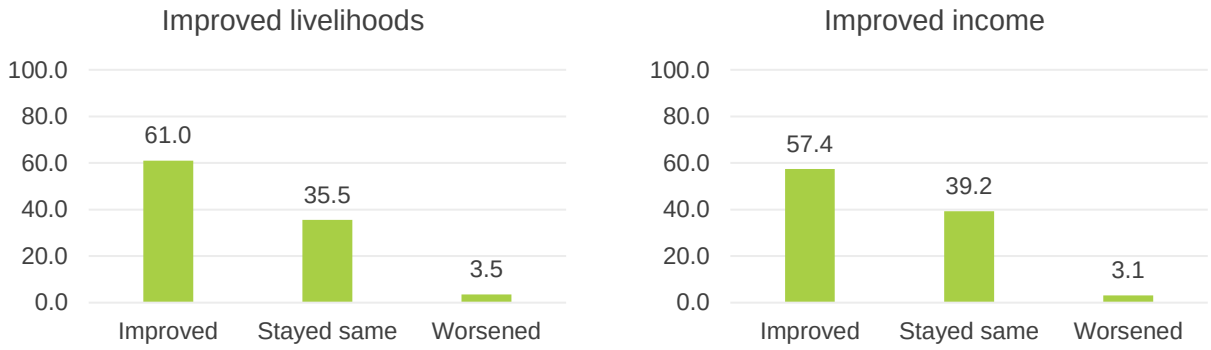
Figure 6: Poverty Ratings



The majority of households were rated in categories reflecting an ability to invest resources in farming or elsewhere, especially those rated as 'resourceful poor' or 'food rich'. Having said this, when 'translated' into the ability to invest, self-ratings of households reflect constraints in this regard. While only 12.5% were rated as 'unable to meet basic needs', the majority of the rest (59.3%) were rated as lacking sufficient resources for additional investment. A majority of those rated as 'poor' were also noted to not having investable resources.

Respondents were asked whether, since SLLC took place, livelihoods and income had improved. Findings for livelihoods are indicated in the left column in the following figure, and findings for income status are indicated in the right column:

Figure 7: Perceived Changes in Livelihoods and Income Status Since SLLC



For livelihoods, almost two-thirds of the respondents argued that their livelihoods had improved since SLLC took place. Male-headed households were more likely to argue that their livelihoods had improved since SLLC than female-headed households (unweighted chi-square significant at the .1 level; 13.707, p=.003).

While not as strong, findings are similar for income, with 57.4% arguing that their income status had improved since SLLC was completed. Here again, male-headed households were more to argue that their income status had improved since SLLC was completed (unweighted chi-square significant at the .1 level; 10.085, p=.018).

Awareness of and Engagement in the SLLC Process

Introduction

This section discusses findings relating to Hypothesis 1, Hypothesis 2 and Hypothesis 3 under the first Theory of Change step as outlined below:

Theory of Change	Hypotheses
1. Step: Rightful Landholders Receive SLLC and Register Land Transactions in RLAS	Hypothesis 1: The way that the SLLC process was administered, which included a high degree of local participation, created more awareness, knowledge and trust in the rural land administration system (RLAS) Hypothesis 2: As a result of Hypothesis 1, landholders value their SLLC, as shown by higher collection rates, keeping the SLLC up-to-date, and increased perceptions of usefulness, including for women and vulnerable groups Hypothesis 3: The ownership rights of female-headed households, females in male-headed households, and other vulnerable groups were strengthened through the SLLC process, and are now perceived as rightful landholders by other community members more broadly

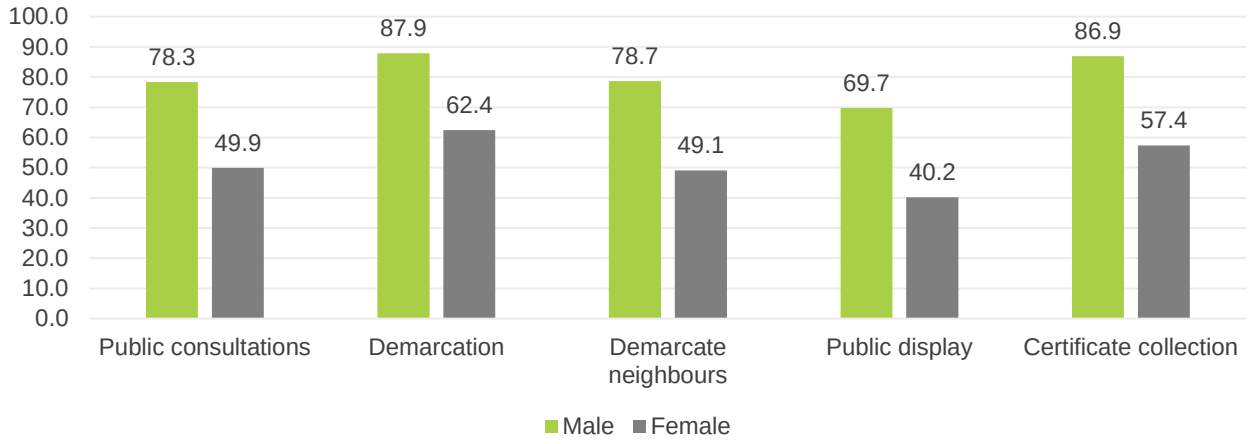
Involvement in the SLLC Process

In Module 6 of the 2019 SLLC Outcome survey questionnaire, respondents were asked about their engagement in the SLLC process. There are several points in the process where household members can be engaged. To assess both engagement in the process and gender dynamics, respondents were asked whether and why they were involved, or why they were not involved. Further questions considered the clarity of the process, and gaps in this regard. Figure 8 below shows involvement in various stages of the process by male and female respondents.

While involvement in the different stages of the process were generally high, male involvement was substantively higher at every stage of the SLLC process, with female involvement especially low during public display, and even during public consultations and demarcation of neighbouring properties[4].

[4] Public consultations: unweighted chi-square significant at the .1 level; 213.938, p=.000
Demarcation: unweighted chi-square significant at the .1 level; 178.616, p=.000
Demarcation neighbouring properties: unweighted chi-square significant at the .1 level; 196.570, p=.000
Public display: unweighted chi-square significant at the .1 level; 221.463, p=.000
Certificate collection: unweighted chi-square significant at the .1 level; 271.322, p=.000

Figure 8: Involvement in the SLLC Process (by stages in the process)



When asked for reasons for involvement or non-involvement in the SLLC process, household headship was the most important reason for attendance at the different stages of the SLLC process, holding for each stage. This explains gaps in male and female participation. When controlling for household headship, female participation because "I am the head of the household" was as high for female-headed households as for male-headed households.

These findings are confirmed when looking at the reason for *non*-involvement, where wives appear to have deferred to their husbands to engage. When spouses were asked why they were not involved, almost all responded that it was not their role, that it was the role of a male in the household, or it was specifically the role of the head of the household.

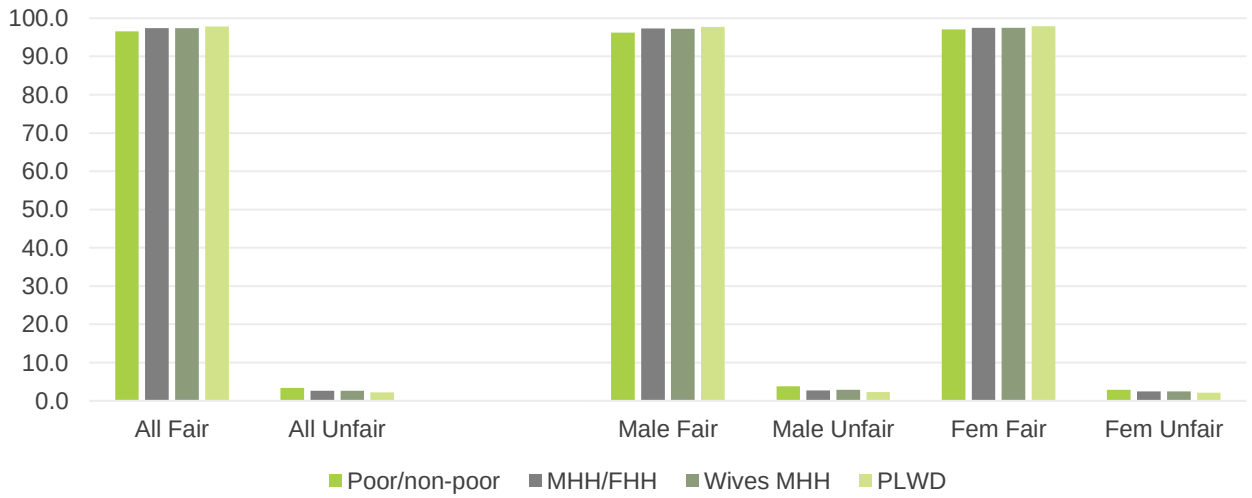
Fairness of the Process

Respondents were asked about the perceived fairness or unfairness of the SLLC process. Findings are summarised in the following figure, grouped into 'fair' and 'unfair (the former covering 'very fair' and 'somewhat fair', and the latter covering 'somewhat unfair' and 'very unfair'). Questions of whether the SLLC process was fair for certain sub-groups covered the following groups in particular:

Poor and non-poor households (Poor/non-poor)
Male- and female-headed households (MHH/FHH)
Wives in male-headed households (Wives MHH)
People living with disabilities (PLWD)

Findings are summarised in the following figure, grouping 'very fair' and 'some fair', as well as 'somewhat unfair' and 'very unfair' for the above sub-groups and by gender of respondent:

Figure 9: Perceived Fairness of the SLLC Process



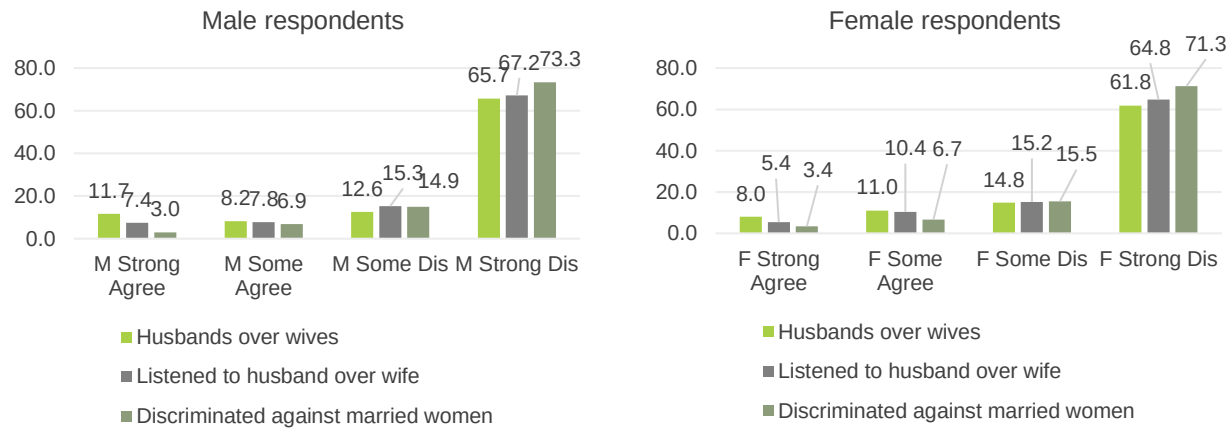
Virtually all respondents felt that fairness permeated the SLLC process, holding for both males and females and male-headed and female-headed household. All but two of the unweighted chi-square tests show no difference in responses from male- and female-headed households, but these two are interesting. One showed that females in male-headed households were slightly more likely than males in male-headed households to believe that the process was fair to them as spouses in male-headed households (unweighted chi-square significant at the .1 level; 5.245, p=.022). The other was across male- and female-headed households, where respondents from female-headed households were less likely to agree that the process was fair to them that male-headed households (unweighted chi-square significant at the .1 level; 10.380, p=.001). This difference was largely due to the opinions of female respondents in female-headed households.

Three attitudinal scale statements followed this discussion:

- The second level land certification process favoured the inputs of husbands over wives
- If there was a difference of opinion between a husband and wife, they listened to the husband
- The second level land certification process discriminated against married women and favoured their husbands

Findings are summarised in the following figure:

Figure 10: Attitudes About Fairness



There was agreement, among both males and females, that the SLLC process was fair to husbands and wives. And while male respondents were more likely to 'strongly agree' that there was favouritism towards husbands, these differences disappeared when 'agree' and 'disagree' were each aggregated[5].

Participation and Trust Index and Multivariate Regressions

To analyse the correlation between participation in the SLLC process and trust in more detail, two indices were created that summarise a set of questions. These indices follow a straightforward logic, where a single score for each respondent is created. For the participation index, the score is a simple sum across the number of SLLC processes the respondent has participated in, i.e. (1) initial public consultations, (2) SLLC demarcation process of the own household's parcels, (3) demarcation of neighbour's parcels, (4) public display process or (5) certification collection events. The trust index scores categorical responses to questions relating to trust between +2 and -2 points (i.e. +2: strongly agree, +1: agree, -1 somewhat disagree, -2 strongly disagree).

The two indices were then used to run a multivariate regression model to better understand how participation in the SLLC process and trust correlate. The Trust Index was used as dependent variable, while the Participation Index was used as independent variable alongside a selection of other variables such as gender of HH head, region, and poverty levels. Table 5 below summarises the results for both unweighted and weighted data:

[5] Husbands Over Wives: unweighted chi-square significant at the .1 level; .307, p=.579
Listened to Husband Over Wife: unweighted chi-square significant at the .1 level; 2.575, p=.109
Discriminated Against Married Women: unweighted chi-square significant at the .1 level; .210, p=.647

Table 5: Regression results from Trust Index regression on several independent variables

Dependent Variable: Trust Index	Unweighted			Weighted		
	Model 1			Model 1		
Covariates	Co-efficient	P-Value	Sig	Co-efficient	P-Value	Sig
Participation Index	0.17	0.00	*	0.17	0.00	*
Gender						
Female HH Head						
Male Hh Head	-0.44	0.00	*	-0.52	0.00	*
Other Female	-1.32	0.00	*	-1.36	0.00	*
Other Male	0.03	0.92		-0.09	0.76	
Spouse	0.11	0.50		0.10	0.56	
Region						
Amhara						
Oromia	-1.65	0.00	*	-1.68	0.00	*
SNNP	-0.28	0.06	*	-0.44	0.00	*
Tigray	-2.33	0.00	*	-2.74	0.00	*
Poverty						
The Food/Money Rich						
The Resourceful Poor	-0.43	0.00	*	-0.41	0.01	*
Very Poor	-1.10	0.00	*	-1.09	0.00	*
Constant	5.61	0.00	*	5.67	0.00	*
Adjusted R-Squared	13%			13%		
Number of Observations	2879			2879		

Note:
[1] * Significant level marked at 10%, 5% and 1%.

The regression model 1 and 2 above show a statistically significant positive correlation between participating in the SLLC process and increased trust in the land administration system (at the 1% level of statistical significance). This holds for both weighted and unweighted data alike and highlights the positive impact that the SLLC process has on landholders' perceptions relating to land administration. This, in turn, has a positive impact on perceived tenure security, which will be discussed in more detail in Section 5.

The regression also highlights differences between different sub-groups. Male-headed households, for example, have on average much less trust in the land administration system when compared to female-headed households. This could be interpreted as an over-proportionate positive impact of the SLLC process of female-headed households, for whom trust in the land administration system was increased. We also find that poorer households and households in Tigray have, on average, less trust in land administration.

Parcel Certification

The mean number of parcels SLLC certified was very close to the total number of parcels, with a mean of 4.4 parcels in total of 4.3 parcels SLLC certified. Of the 12,825 parcels held by the 2,880 households in the survey, 12,319 had been second level certified, a rate of 96.1%. In two-thirds of all cases of non-collection, this affected only a single parcel.

Figure 11: Reasons for Collecting SLLC Certificates (multiple response)

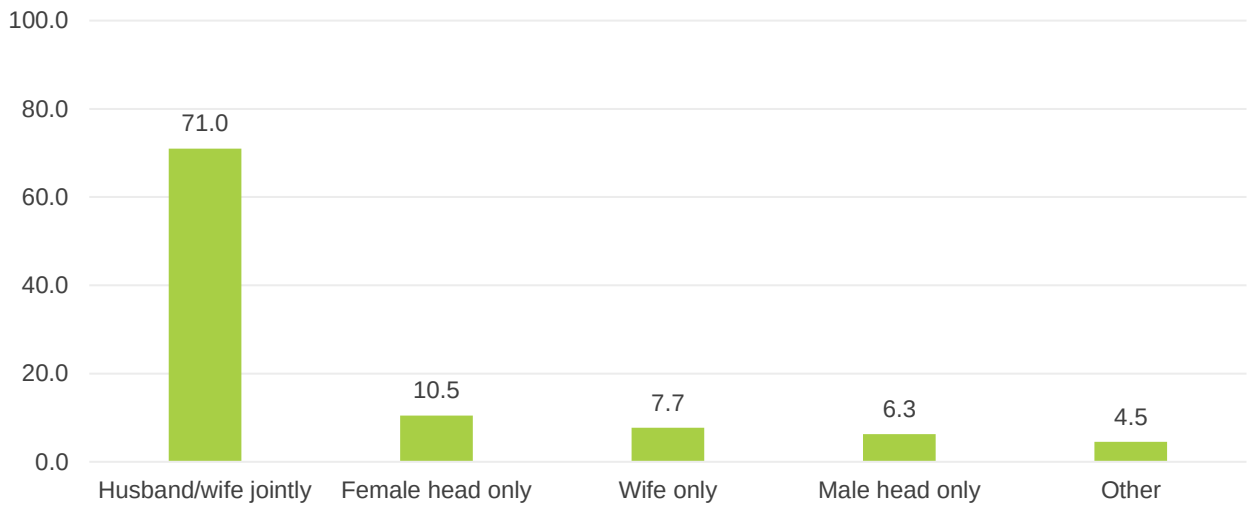
Three-quarters of the respondents noted that they were encouraged to collect their certificates by local leaders. The Land Rental Service Provider (LRSP) was mentioned by 3.9% of all cases. Public display as a point in the process was only noted by 3.9% of the respondents. Findings highlight the key role of local authorities in this respect in the SLLC process.

In the 3.9% of cases where a parcel was not second level certified, in one-third of the cases the household was vacant at the time of the SLLC process, while in one-sixth of the cases, the household had acquired a parcel after SLLC had been completed in the area. Disputes were mentioned in 13.6% of all cases as to why SLLC certification had not taken place but affecting 42 parcels out of almost 13,000. In only 4 cases out of 2880 interviews, a respondent noted that they were afraid to collect the certificate due to presumed costs of doing so.

SLLC Certificate Holdership

Respondents were asked to indicate who appeared on the SLLC certificate[6]. Findings for up to the three most important parcels are indicated in the following figure:

Figure 12: Holdership of SLLC Certificates



Overall 71% of all parcels were held joint by husband and wife, while 73.8% of households in the sample were married couples. This implies that for almost all households with married couples, the process of including the wife on the certificate was implemented effectively. This is a testimony to the effective implementation of the SLLC process and presents a large improvement to how the FLLC was administered in terms of gender inclusion.

18.2% were held by females only and 6.3% by a male only. These numbers tally very well with percentages reported through LIFT's monitoring data and thereby verify the accuracy of the monitoring as well as the representativeness of the sample.

A series of follow-on questions were asked, including one on who advised them on who should appear on the certificate[7].

63% of respondents indicated that kebele authorities advised them who should appear on the certificate and 37.8% were advised by SLLC field teams. In one-quarter of all cases, households indicated that no one outside the household itself influenced their decision. In 80% of all cases, the respondent noted that the names as they appeared on the certificate were based on advice received, or final decisions made by household members.

Furthermore, when presented with the statement "Husbands were often pressured to put their wives on their certificates, this was not what most of them wanted", a high 39.6% agreed with the statement. This can be interpreted as an effective implementation of female rights, where even in cases where husbands rather did not want to include the wife on the certificate, the SLLC teams and Kebele authorities rightly pushed for this to happen.

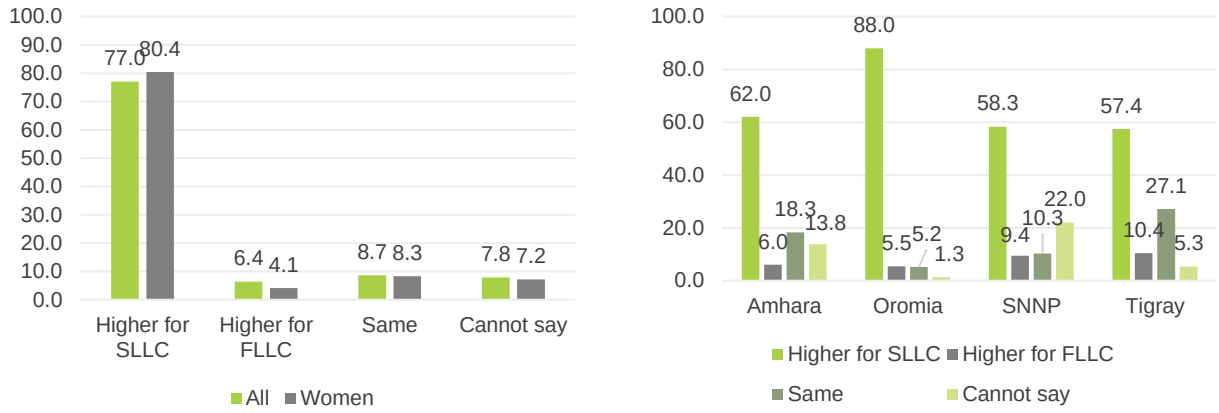
[6] For those with four or more parcels, they were asked to indicate their priority three and answered these questions on those three.
[7] This multiple response covers the first or, in the case of multiple parcel households, specified 'most important' parcel.

First Level Land Certification Compared to Second Level Land Certification

Respondents were asked during the SLLC Outcome Survey whether the FLLC or SLLC processes were more consultative, were more effective at awareness raising, and were more focused on engaging members of the public. Findings are summarised in two charts in Figure 13 below. The chart on the left shows responses for respondents on average and disaggregated by female respondents. Over three-quarters of respondents argued that the process of engagement was more substantive, and more informative, for SLLC than FLLC. Findings across male-headed and female-headed households were similar, although with a higher percentage of females agreeing that the SLLC process was more inclusive with 77% of males and 80.4% of females arguing that the situation was better during SLLC.

The chart to the right shows responses disaggregated by region. There was considerable variation across regional states, and differences between FLLC and SLLC were most distinct for Oromia and less distinct for Amhara and particularly Tigray; for SNNP, high numbers indicated 'do not know'.

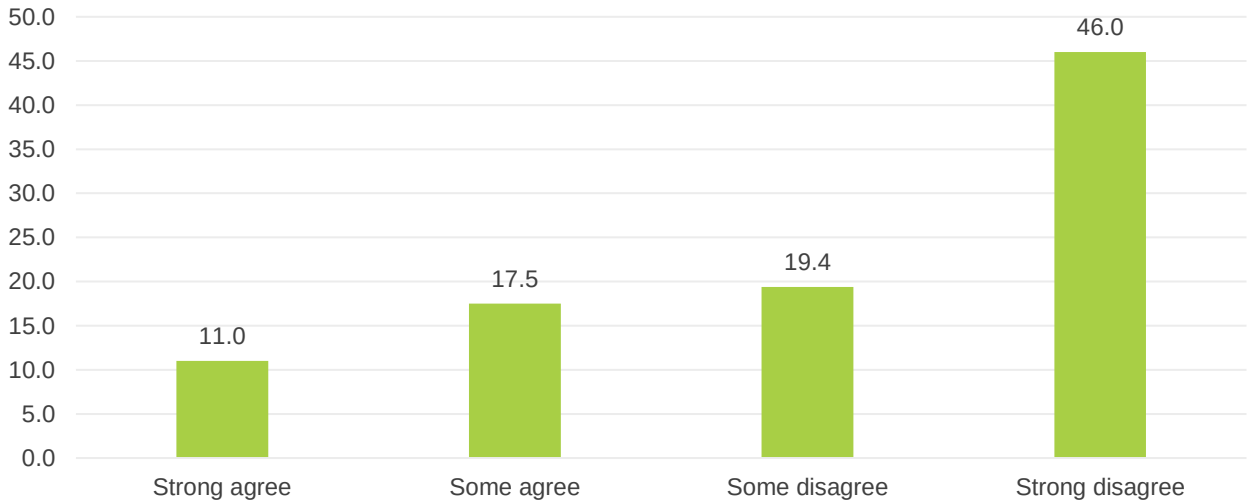
Figure 13: Comparative Engagement in FLLC and SLLC and Regional State Comparisons



Attitudinal Scale Comparison

These findings outlined above are reinforced by an attitudinal scale statement considered in the questionnaire. The following statement was presented to the respondents: "the real big change was when our land was the first level certified years ago, the one with the booklet, second level certification really didn't matter". Findings are presented in the following figure:

Figure 14: FLLC versus SLLC



Two-thirds of the respondents disagreed with the statement, with three-quarters of these 'strongly disagreeing'. Male respondents and those living in Oromia were less likely to disagree with the statement, with over one-third of Oromia respondents strongly agreeing or somewhat agreeing with the statement that FLLC was the major event. Respondents in Amhara regional state were most likely to disagree with the statement, almost all

of these 'strongly disagreeing' (unweighted chi-square significant at the .1 level; 337.763, p=.000). There was no difference across household headship (unweighted chi-square insignificant at the .1 level; 2.944, p=.567).

It can be concluded that respondents largely agree that the SLLC process was more substantive and informative than the FLLC process, holding more strongly for females.

Key Finding 1: Participation in the SLLC process was high and created trust in the rural land administration system (RLAS). Participation across the different SLLC process was high across landholders. While participation was higher for males, levels of trust are high for female-headed households when compared to male-headed households. A multivariate regression model confirms that participation in the SLLC process varies positively with perceptions of trust in RLAS (high statistical significance). (links to Hypothesis 1 and 2)

Key Finding 2: SLLC process was perceived as fair, both by male and female respondents, and by male and female-headed households. This includes equal perceptions that both males and females were equally involved in the process by LIFT field teams, perceptions of female respondents confirming that they were not discriminated against, and perceptions regarding the treatment of peoples with disabilities and poor and non-poor households. (links to Hypothesis 2 and 3)

Key Finding 3: Certification rates are high and confirm findings from previous surveys. In the LIFT Programme Area reached by the survey, 93.4% of all landholding households were reached with SLLC certification. Measured as a percentage of parcels SLLC certified, of the total of 12,825 parcels held by all listed households, 96.1% were SLLC certified. (links to Hypothesis 2)

Key Finding 4: Almost all parcels in households with married couples included the wife on the certificate. Overall 71% of all parcels were held jointly by husband and wife, while 73.8% of households in the sample were married couples. This implies that for almost all households with married couples, the process of including the wife on the certificate was implemented effectively. This is a testimony to the effective implementation of the SLLC process and presents a large improvement to how the FLLC was administered in terms of gender inclusion. (links to Hypothesis 3)

Key Finding 5: Engagement in the SLLC process was more substantive and more sustained than engagement in the FLLC process, especially for females.

SLLC and Tenure Security

Introduction

This section discusses findings relating to Hypothesis 4 and Hypothesis 6 under the second Theory of Change step as outlined below:

Theory of Change	Hypotheses
2. Landholders Perceive Increased Security of Tenure	Hypothesis 4: SLLC leads to a change in perceptions of risks relating to land, such as loss of land, border disputes, or lack of access to land, which in turn leads to increased perceptions of tenure security Hypothesis 5: As a result of the SLLC process landholders realise new opportunities relating to their land rights, including their user rights, mortgaging rights, and land transfer rights Hypothesis 6: HH, FMHH, youth, and other vulnerable groups feel empowered through the SLLC process, leading to an increased perception of tenure security. For FMHHs in particular this leads to more involvement in decision making relating to land within the household

Perceptions of Tenure Security after SLLC

Module 9 in the questionnaire covered respondent's perceptions of various types of risks, and how SLLC might have affected this. For each, the first question asked them to rate the current level of risk, and then ask whether this risk had chanced due to SLLC:

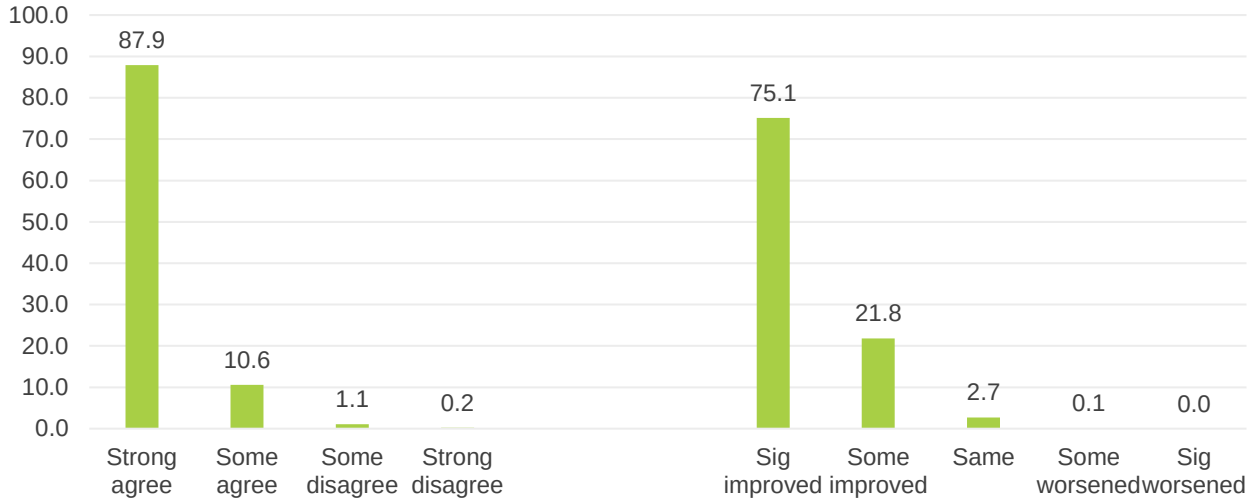
How serious do you perceive the risk of _____?
Has the level of risk changed due to second level land certification?

There were fourteen question sets in this regard. For ease of presentation, the scales have been collapsed as follows:

'high risk' and 'moderate risk' have been grouped together into high/moderate risk
'low risk' and 'no risk' have been grouped together into low/no risk
'significantly improved' and 'somewhat improved' have been grouped together into 'improved'

'neither improved or worsened' remains as is
'somewhat worsened' and 'significantly worsened' have been grouped together into 'worsened'
'do not know' has been excluded

Figure 15: Perceived Security of Tenure and Perceived Effects of SLLC on Tenure Security



This was first preceded by an overall assessment of security. Respondents were presented with the statement "overall, we feel secure on our landholders". This was followed by the question "Has the level of risk changed due to second level land certification? That is, has the situation improved because of SLLC or not?", with respondents asked to indicate whether the situation had improved or worsened. Findings are indicated in Figure 15.

When reviewing responses to question 1 above across different risk types, tenure security was rated very highly, and over 95% of the respondents argued that SLLC had improved the situation, with the majority of them arguing that it had 'significantly improved' the situation. Tenure security was perceived to be lowest in SNNP, but even their ratings were positive. Further, tenure security impacts of SLLC were rated lowest in SNNP and highest in Amhara, but even here for SNNP the rating remained positive. Findings are summarised in Figure 16 below (aggregating responses "low" and "none"). Findings regarding whether the level of risk had changed as a result of SLLC are indicated in Figure 17.

Figure 16: Risk Assessment of Land Loss (% indicating 'low/none')

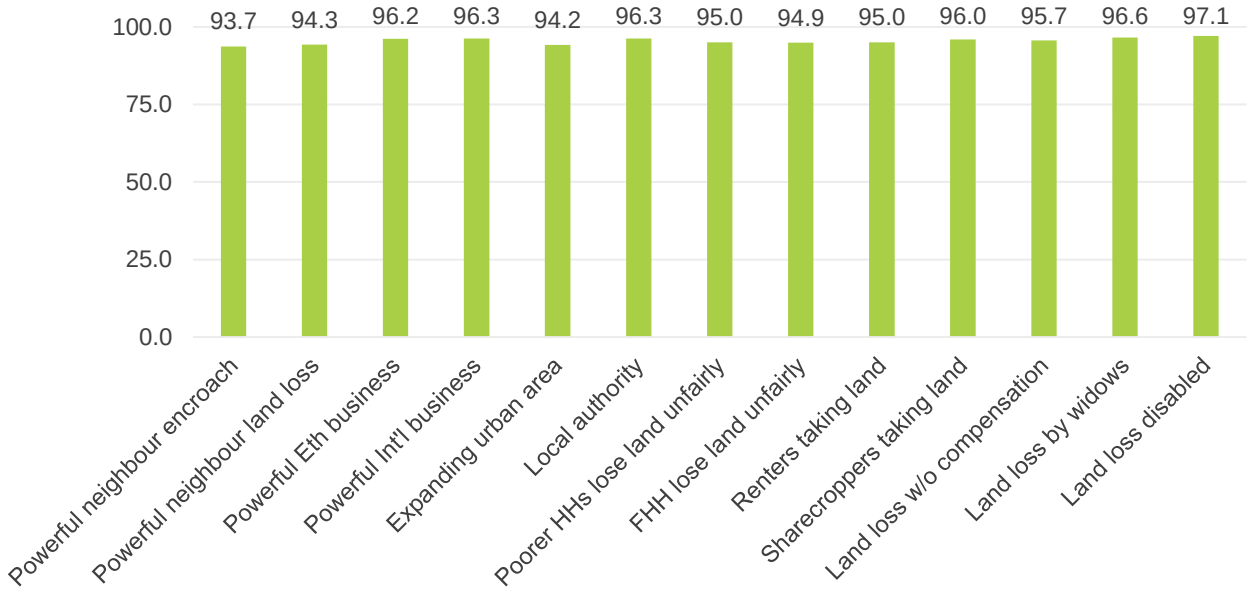
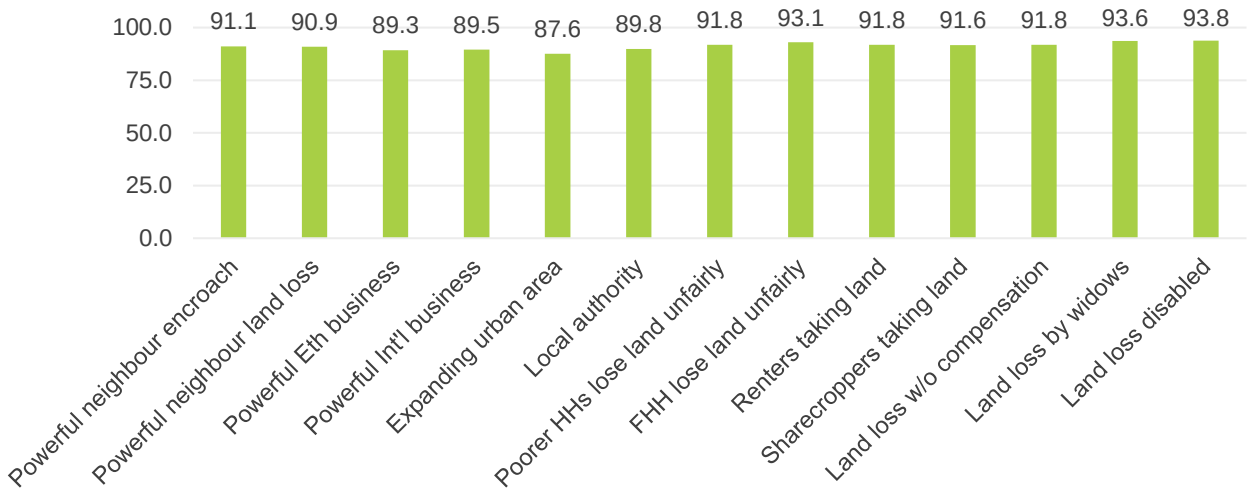


Figure 17: Effects of SLLC on Risk Assessment (% indicating that SLLC 'reduced risks')



Two findings are clear from these two figures: 1) concerns over land loss are low; and 2) respondents felt that SLLC was key in this regard. There is some variation across regional state, with risk perceptions higher in SNNP and, to a lesser extent, Amhara regional states. Male-headed households perceived higher levels of some risks compared to female-headed households (private Ethiopian business, private international business, expanding urban area, local authority, poorer households, sharecroppers taking land and general loss of land without compensation), while for the remainder there was no difference. The one exception was that female-headed households perceived a slightly higher risk of encroachment by a powerful neighbour (unweighted chi-square significant at the .1 level; 3.661, p=.056).

This section was followed by a short sub-section on attitudinal scales, each of which is similarly followed by a question on what SLLC did to this situation:

- Wives are now treated as 'rightful landholders'
- Female household heads are not treated as 'rightful landholders'
- Other household members don't appear on certificates aside from husband and wife, therefore their rights are uncertain
- Land disputes are lower due to knowing boundaries

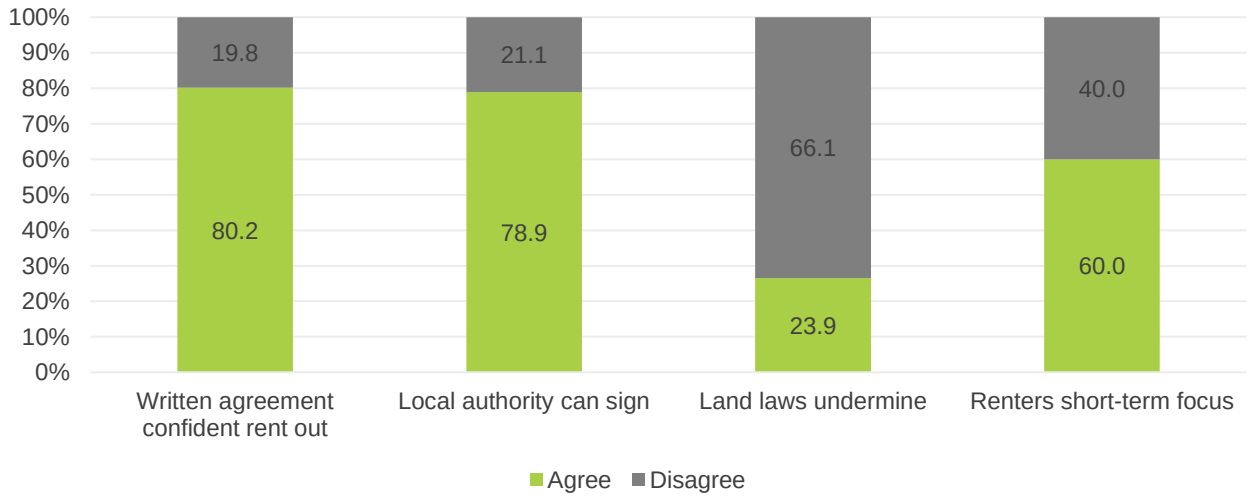
Findings are consistent with the previous ones. Tenure security is high, and SLLC is noted as having played an important role in this regard. For male versus female respondents, there was little difference regarding the question 'wives are now treated as rightful landholders', where males were more likely to agree (unweighted chi-square significant at the .1 level; 4.327, p=.038), and higher levels of concerns by women rather than men with regard to 'other household members do not appear' (unweighted chi-square significant at the .1 level; 2.903, p=.088).

Other statements also considered aspects of tenure security:

- If a written agreement was signed by a land authority showing that this was my household's parcel, it would be more confident to rent out that land if I needed to, compared to not having a written agreement
- A written agreement signed by a local leader is good enough to ensure that we can rent out land and not worry that the tenant would try to claim that it was theirs
- Even with land tenure improvements, land laws that mean we can lose our lands even just for fallowing for a few years, mean investing on land remains a problem
- The problem with renting out land outside of the family is that tenants only focus on short-term gains, and this isn't best for the land

The following figure shows the percentage of respondents that either 'strongly agreed' or 'somewhat agreed' with the statements:

Figure 17: Attitudinal Scale Statement on Security



Respondents agreed with both a written agreement signed by a land authority or a written agreement signed by a local leader, such as a village elder. In the latter case, they argued that this was 'good enough' to prevent losing their land to a renter, with the implication that a formal rental contract registered with land authorities is not necessary. Land laws were largely not a concern, save for Amhara Regional State, where 30.1% raised this as a concern, and to a lesser extent Tigray (where 24% raised this as a concern).

This confirms a strong demand for formalisation of land rental agreements, and that landholders agree that local authorities can indeed provide the additional tenure security needed through a written and signed agreement.

Key Finding 6: Perceived land tenure security is high with most landholders linking this to SLLC. Risk perceptions of land loss through various means (13 were assessed) was very low, with an average of 95% indicating that risk was 'low' or 'none'. When asked whether SLLC had reduced risk perceptions, over 85% agreed that SLLC has 'reduced risks' across all 13 measures. Female-headed households had lower levels of perceived risk with the exception of encroachment on their parcels by a powerful neighbour. 'Land grabbing' was noted to have been often sorted out through the SLLC process.

Key Finding 7: Female-headed households and wives in male-headed households feel empowered as "rightful landholders". Both female household heads and wives in male-headed households agree that they are now treated as "rightful landholders" as indicated in attitudinal scale questions (more than 95% "strongly agree").

SLLC and Land Disputes

Introduction

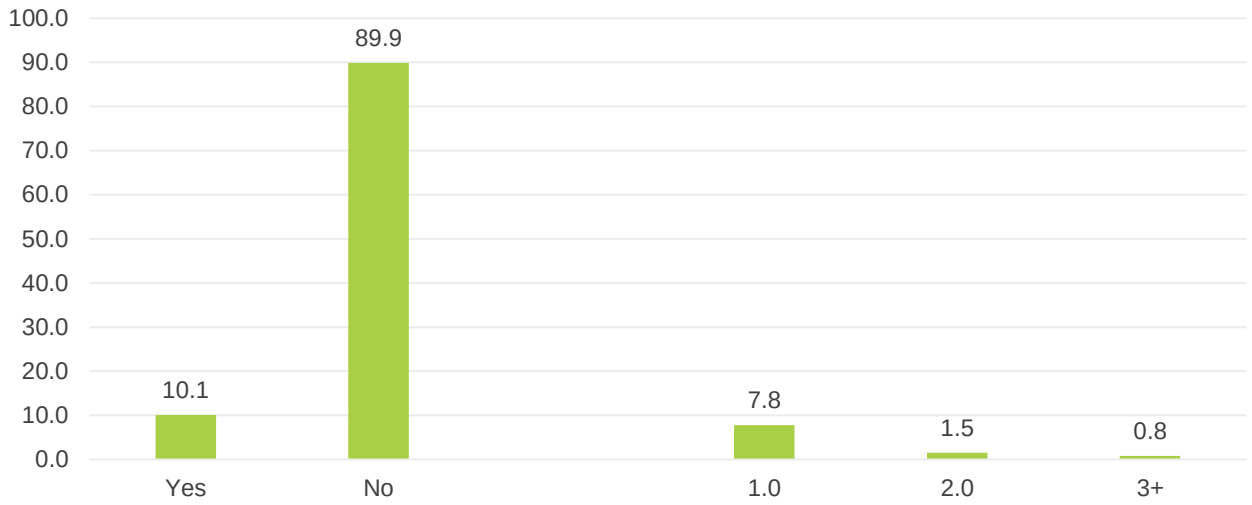
This section discusses findings relating to Hypothesis 4 under the second Theory of Change step as outlined below:

Theory of Change	Hypotheses
2. Landholders Perceive Increased Security of Tenure	Hypothesis 4: SLLC leads to a change in perceptions of risks relating to land, such as loss of land, border disputes, or lack of access to land, which in turn leads to increased perceptions of tenure security Hypothesis 5: As a result of the SLLC process landholders realise new opportunities relating to their land rights, including their user rights, mortgaging rights, and land transfer rights Hypothesis 6: HH, FMHH, youth, and other vulnerable groups feel empowered through the SLLC process, leading to an increased perception of tenure security. For FMHHs in particular this leads to more involvement in decision making relating to land within the household

Disputes Before and During SLLC Process

For SLLC-certified parcels, respondents were asked whether a dispute had existed prior to the SLLC process. Findings are indicated in the following figure, showing the percentage of households that had a dispute prior to SLLC, and thereafter the number of disputes for each household that said 'yes':

Figure 18: Disputes existing prior to SLLC certification



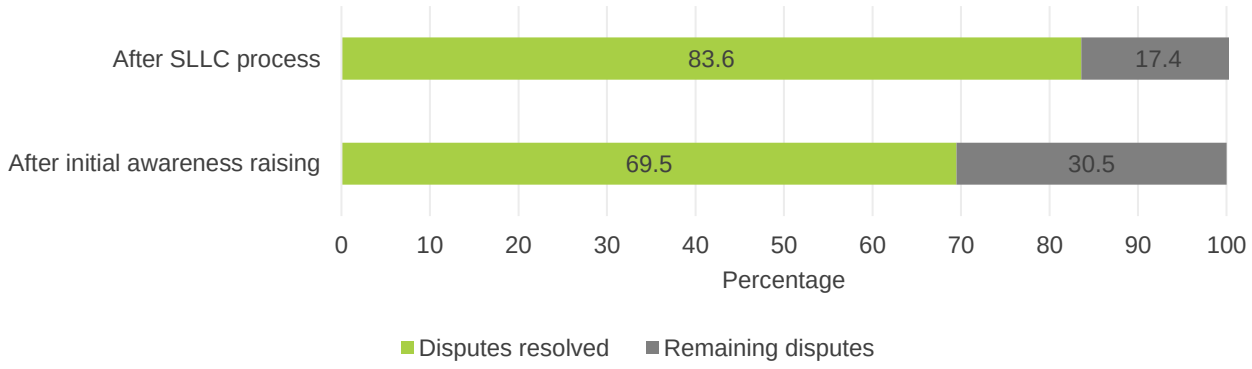
One-in-ten households noted a dispute prior to the start of SLLC, affecting a total of 397 parcels across 296 households (out of 2,880). There was no difference between male- and female-headed households (unweighted chi-square test insignificant at the .1 level; 7.508, p=.378).

It should be noted that this was the same percentage of households with disputes in 2015, which was also 10%, providing evidence for the comparability of the two samples.

SLLC and Disputes

In cases where a dispute existed prior to SLLC certification taking place, (10.1% of all households and 397 parcels) respondents were asked whether any disputes were resolved following awareness of the pending SLLC and the actual SLLC process. Findings are indicated in the following figure:

Figure 19: Dispute Resolved After Initial Notification but Before the SLLC Process Started

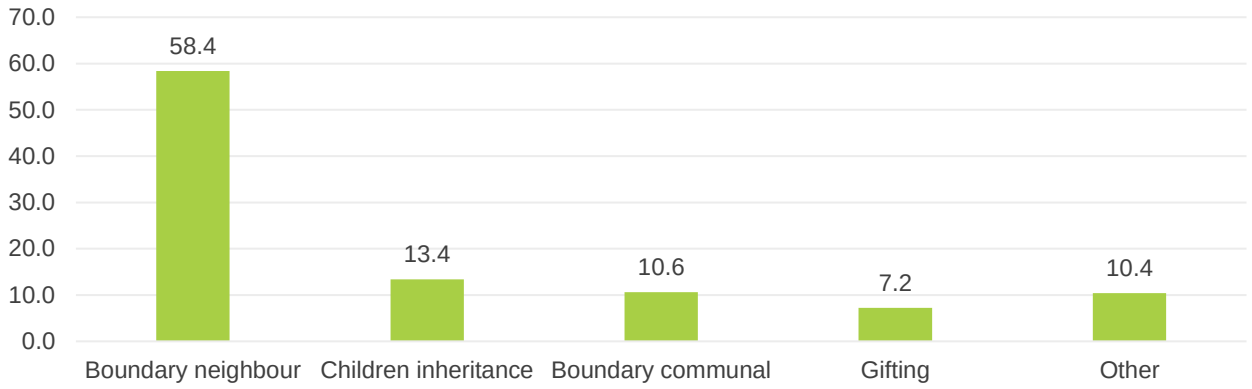


Over two-thirds of the disputes noted as existing prior to the SLLC process were resolved before the SLLC process began but after the initial notification for the demarcation process and awareness raising.

For those parcels where the dispute was resolved during the SLLC process, respondents were asked who resolved the dispute. 46.6% of disputes were resolved within the family or with the neighbour. 19.7% were resolved with the help of the KLAC and 18.6% were resolved with the help of village elders. In 8.8% of disputes, the Woreda Land office and court got involved. The types of disputes resolved (measured by the most recent dispute) are indicated in the Figure 20.

Out of these 69.5% disputes resolved after initial notification of the SLLC process, by far the most common disputes resolved were boundary disputes, mostly with neighbours but also with communal areas.

Figure 20: Types of Disputes Resolved Prior to SLLC



Of the disputes that were *not* resolved prior to the SLLC process starting (105), 34.3% (36) were resolved during the SLLC process and 65.7% (69) were not. This meant that, of the total of 397 disputes, 83.6% were resolved during the SLLC process and only 69 (17.4%) remained unresolved at the end of SLLC. Findings are summarised in Figure 19 above.

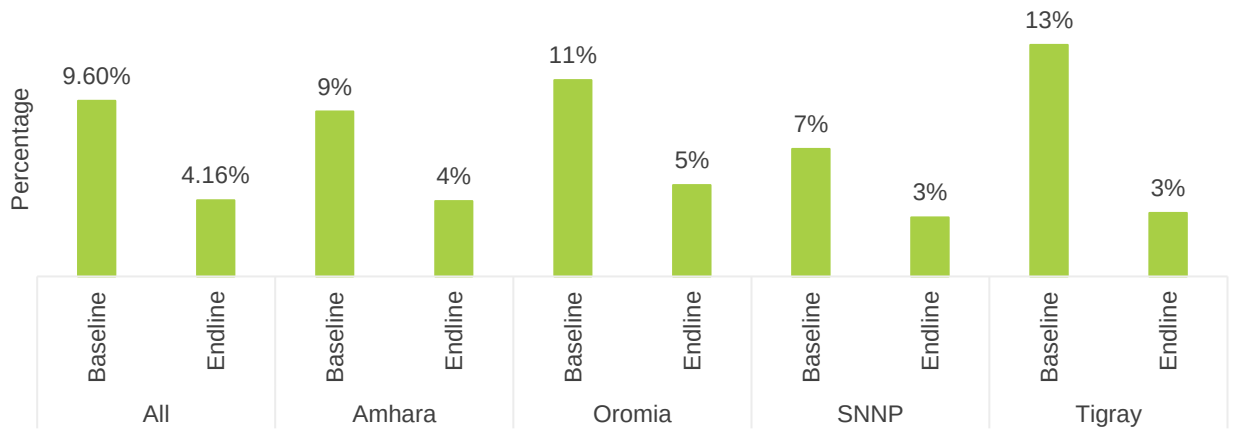
Having said this, new disputes also arose during SLLC, affecting 133 parcels. Of interest, the nature of these disputes is similar to the ones that existed before SLLC, highest for boundary disputes (61.2% of all disputes; 48.5% neighbours, 12.7% communal), reflecting issues arising with the identification of boundaries during SLLC in half of the cases, or simply new issues that arose coincidentally during SLLC. Overall, 48.2% of all disputes that arose during the SLLC process arose because of issues raised by the process. Half (51.4%) of these disputes had been resolved by the time of the interview.

Disputes After SLLC Process

Respondents who reported a dispute were also asked whether any disputes had arisen following the completion of SLLC, referring specifically to certified parcels only. Across the entire sample, on average 2.26 years had passed since SLLC was administered. A similar question was asked at Baseline, where respondents were asked how many disputes had arisen over the last 2 years. We therefore have, on average, comparable timeframes across which disputes can arise – with slightly more time having passed for the Endline question which could introduce a positive bias on the number of disputes at endline.

Findings are summarised in Figure 21 below. The number of disputes that arose since SLLC is significantly lower than the number of disputes that arose during the two-year period preceding the Baseline survey, with less than half the rate of disputes arising after SLLC, at 4.2% versus 9.6%.[8] As a result, it could be claimed that with the arrival of SLLC, fewer new disputes arise over a similar timeframe when compared to the time before SLLC.

Figure 21: Percentage of households with land disputes arising over the last two years



[8] Note that here we are using the percentage rate indicated during the actual baseline survey, which is 9.6%. In Figure 18, the question in the SLLC Outcome survey 2019 regarding number of disputes before SLLC was used. Interestingly, the two figures are very close to each other, which speaks for the consistency between the Baseline survey and the SLLC Outcome survey.

In 2019, 118 households were affected by disputes households and 153 parcels. Disputes over gifting were next most common, at 10%, followed by inheritance at 8.2%. Of these new disputes, half had been resolved (46.2%). Of those resolved, kebele or woreda land authorities were involved in only one-third of these cases (20% KLAC, 13.1% woreda land official), even though a number of disputes were boundary disputes. Of the 118 households, therefore, only 45 had engaged with land officials to resolve the dispute, with 20 dealing directly with neighbours, and 16 going through village elders; only one worked with a kebele land expert.

The pre-SLLC dispute figure in 2019 was the same as the figure found in the baseline in 2015: both can be rounded to 10%. This did *not* drop from 2015 without SLLC effects but did drop with SLLC arrival to 4.1% post SLLC. This held across regional state, with the effects most pronounced in Tigray (from 13% at baseline to 4% after SLLC). It can be concluded that the SLLC process had a significant effect on dispute resolution.

Perceived Trends in Disputes

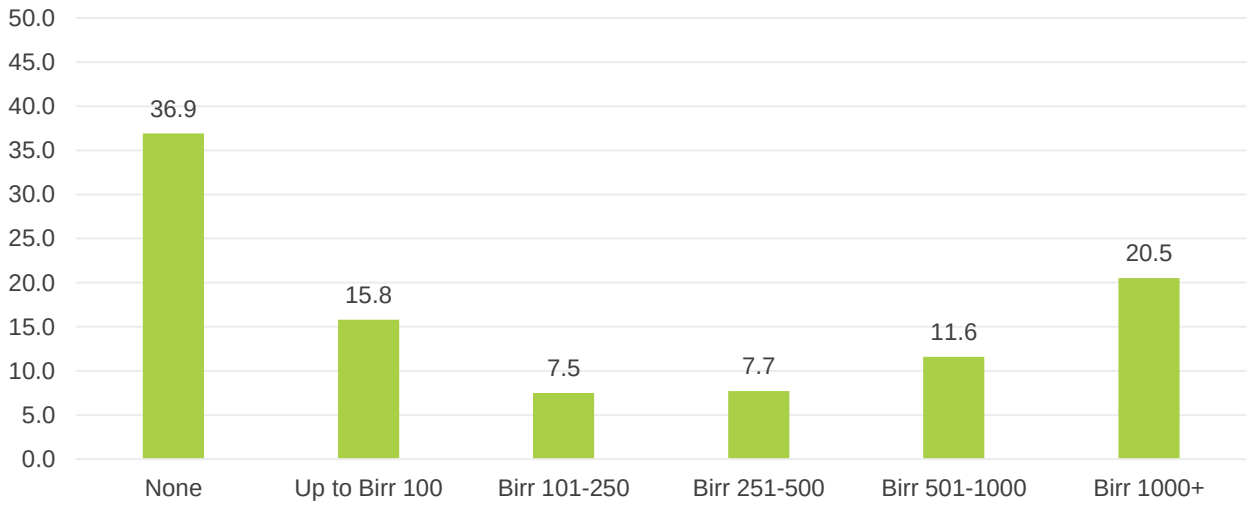
Respondents were asked to voice their opinion on trends in disputes. Findings are summarised in the following figure:

Figure 12: Perceptions on trends in the number of disputes

Consistent with the findings on trends in disputes discussed above, 80.1% of respondents perceived that the number of disputes was lower after SLLC than before.

This held as well for boundary disputes, with 82.8% noting that these were lower after SLLC than before SLLC. Similarly, the intensity of disputes was also reported to be lower after SLLC than before (82.6% reported 'lower after SLLC'), while 82.5% argued that it was now easier to resolve disputes than before SLLC.

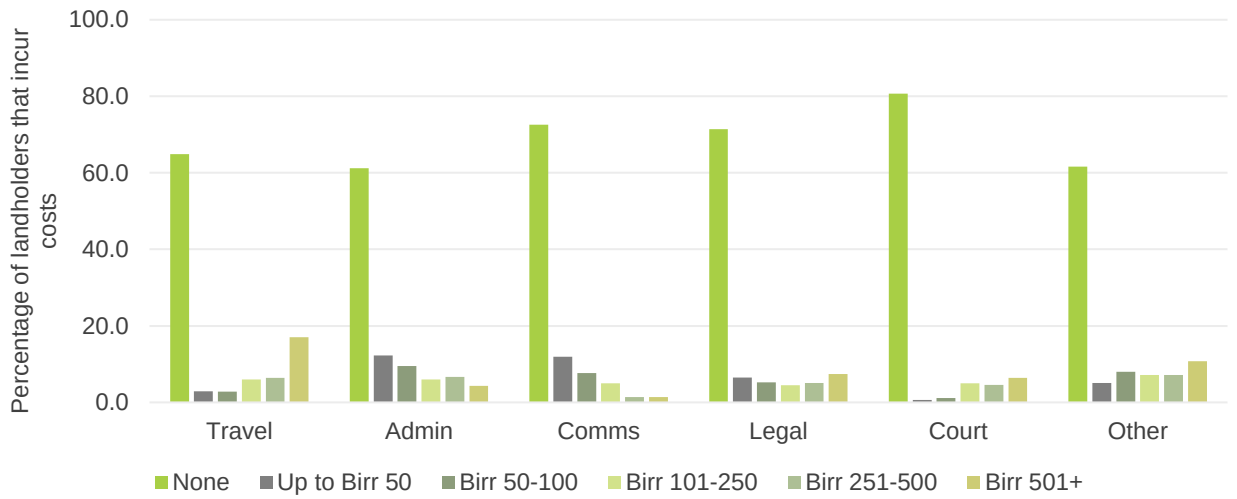
Figure 23: Aggregated costs to deal with most recent dispute



Those who had experienced at least one dispute were asked to consider the various costs involved in resolving, or trying to resolve, the dispute. These included travel costs, administrative costs, communications costs, legal costs, court costs, and other costs. Findings are summarised across all costs in the Figure 23.

Costs across type were consistent, with most incurring only some direct costs for any aspects of dealing with a dispute. Assigning median values to each category, and the value '0' for 'none', and the following emerges:

Figure 24: Costs to deal with most recent dispute



Findings indicate that two-thirds of respondents face some costs in responding to a dispute, with the majority spending Birr 250 or higher, and one in five spending more than 1,000 Birr. When disaggregating costs, travel costs are found to be the strongest cost driver, with 17% of landholders indicating they spent more than 500 Birr.

Key Finding 8: The SLLC process has resolved existing disputes. The survey found that the SLLC process resolved 83.6% of all existing disputes. Two-thirds of these disputes were resolved after initial notification of SLLC and resolved before the formal SLLC process began in a kebele. Many of the remainder were resolved during the SLLC process itself, often with the second party (within the family, with a neighbour), but also in discussions with the Kebele Land Administration Committee (KLAC) and/or village elders. Boundary disputes were argued to have gone down with SLLC with clearly demarcated boundaries by 95.3% of the respondents, holding for both males and females.

Key Finding 9: Fewer disputes arose after the SLLC process was completed when compared to before. When comparing the number of disputes that arose two years before the Baseline survey and the number of disputes that arose around 2 years after the SLLC, it can be found that less than half the number of disputes arose after SLLC. This indicates that the SLLC did not only solve existing disputes, but also contributes to an environment where new disputes are less likely to arise.

Key Finding 10: Landholders perceive a general decline in disputes. Findings 8 and 9 are underlined by landholder's perceptions relating to disputes. A total of 80.1% of respondent argued that disputes had gone down after SLLC was completed, reflecting an awareness of actual trends by respondents. Over 80% also argued that the 'intensity' of disputes had reduced due to SLLC. Findings held for male- and female-headed households.

Key Finding 11: Most landholders incur costs to resolve disputes, some of which incur significant costs. 63.1% of landholders with a recent dispute indicated that they incurred expenses relating to the dispute, while 40% indicated they spent at least 250 Birr and 20% indicated that they spent more than 1,000 Birr. Travel expenses are the key cost driver, indicating multiple trips to attend meetings at different government authorities.

SLLC and Realising Land Transfer Rights

Introduction

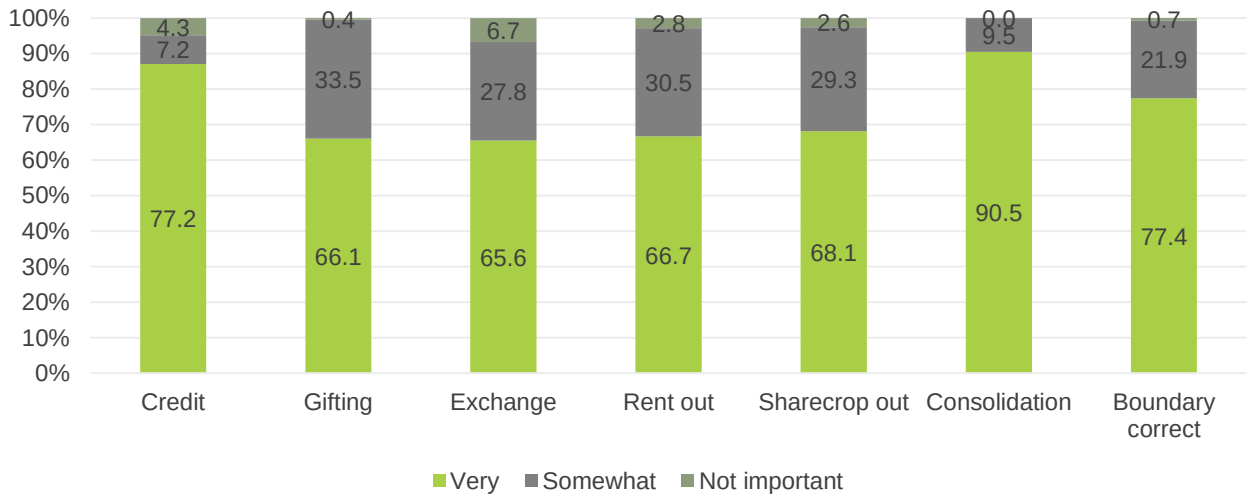
This section discusses findings relating to Hypothesis 7, Hypothesis 8 under the third Theory of Change step, and Hypothesis 10 under Theory of Change step 4 as outlined below:

Theory of Change	Hypotheses
3. The Rural Land Market Improves	Hypothesis 7: As a result of SLLC and increased tenure security, landholders rent-out and/or rent-in more land more often and make rental contracts with people outside of their extended family Hypothesis 8: Landholders change their behaviour as a result of realising their transfer rights and transfer land through rental, gifting, exchange, or consolidation more often
4. Landholders Change Behaviour and Invest More on Land	Hypothesis 10: Landholders change their behaviour as a result of realising their land use rights and take-out credit to invest in their land more often (mainly relating to on-farm short-term investments in inputs such as fertilizer, seeds, pesticides, machinery)

Land Rental Transactions and Other Transactions

Module 4 of the questionnaire included several questions directed to those who had undertaken at least one land transaction on a parcel that had been SLLC certified. If they said yes, respondents were asked whether they had heard about the transaction registration process during or after the SLLC process itself took place. Respondents were asked whether a transaction occurred based at least in part on SLLC having taken place (excluding certificate replacement and certificate correction). The following figure shows the percentage of respondents who conducted the transaction that argued that SLLC was a 'very important factor' or 'somewhat important factor' in their decision to undertake a transaction:

Figure 25: Importance of SLLC in Undertaking a Transaction



SLLC was especially important in terms of consolidation and credit, the former presumably due to the presence of well demarcated parcels and knowledge of who holds what properties, while for credit it is linked to using the certificate as collateral.

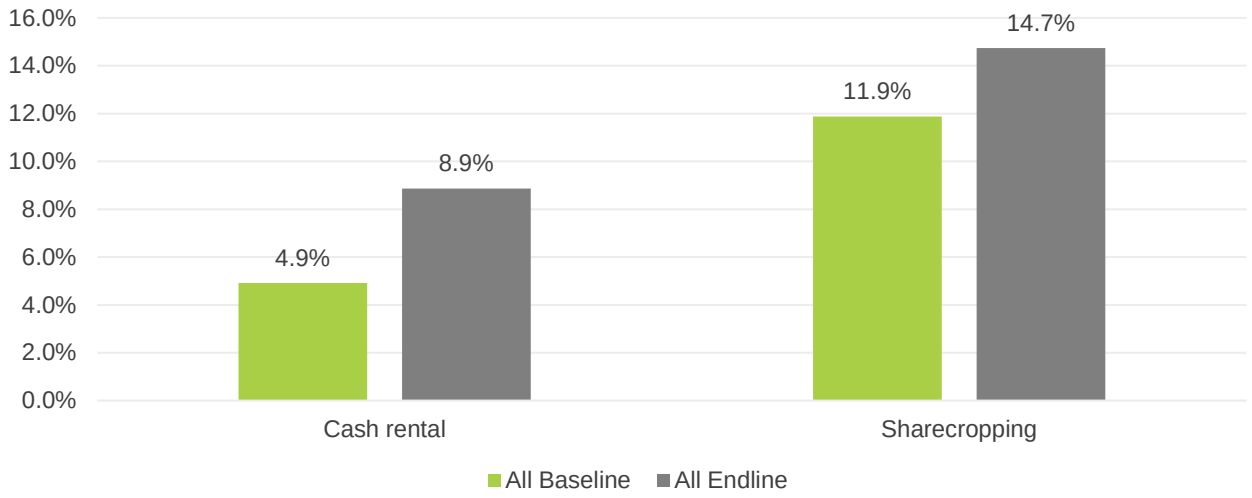
For the remainder, it is still very high, ranging from 99.6% for gifting and 99.3% for boundary correction to a still very high 93.3% for exchange.

Trends in Land Rental Contracts

When comparing the 2015 Baseline data with the 2019 survey, it can be found that overall the frequency of land rental has increased over time for both cash rental and sharecropping.

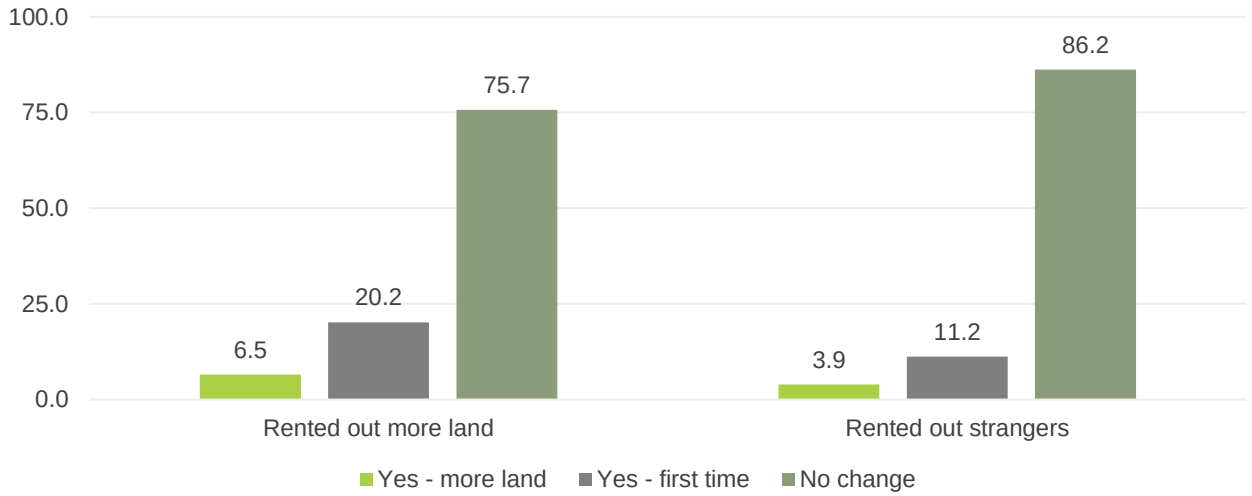
While in 2015 only 4.9% and 11.9% of the farmers had engaged in renting-out their land, this has increased to 8.9% and 14.7% in 2019. See Figure 42 below. The contribution of SLLC was further probed through questions included in the 2019 survey, as discussed below.

Figure 26: Percentage of farmers that engage in sharecropping or cash rental at the 2015 Baseline and in 2019



Firstly, the 2019 survey included questions that asked to compare the current situation to the period before SLLC. Here it was asked whether the respondent had rented out for the first time or rent-out more land to non-neighbours, non-friends, or people from outside this community'. 11.1% noted that they had rented out more land since SLLC, and 3.9% indicated that they had rented out for the first time since SLLC. Two questions covered land rental practices, the first in terms of renting out land to usual renters, tending to be family and known non-family households, and the second on non-relatives and non-neighbours as shown in Figure 27 below.

Figure 27: Land Rental Practices Since SLLC from 2019 SLLC Outcome Survey



Out of those who had rented-out their land, three out of four had not changed their rental behaviour since SLLC took place. Of the remainder, 6.5% had expanded the land area that was rented-out. 20.2% however rented-out land for the first time, which is a large proportion of the landlord population and indicates and expansion of the land rental market (see left-hand chart in Figure 27 below). This trend is more pronounced for female-headed households, who rented-out land for the first time more frequently than male-headed households (22% compared to 18.9% for male-headed households).

For those who indicated that they had rented out more land or rented out land for the first time, half (54.4%) argued that SLLC had played a role in this decision, indicating the contribution of SLLC to the decision to rent-out more. Of these, 59.3% argued that SLLC was 'somewhat important' and 38.1% argued SLLC was 'very important' in this decision.

Furthermore, there are indications that the rental market is increasingly involving tenants that are not family members or immediate neighbours and community members. Figure 27 shows that 11.2% of landlords have rented out to "non-relatives" and "non-neighbours" for the first time since SLLC. This indicates a trend that

would be expected with increased tenure security and improved land markets: landholders take the risk of renting-out land to tenants they do not know well since they trust in a system that will enforce their rights in cases of dispute and contract violation.

In terms of renting out to non-relatives and non-neighbours, half (54.2%) argued that this was due entirely or in part to SLLC, with virtually all of these arguing that it was a 'very important' determinant (48.6%) or a 'somewhat important' determinant (49.6%). For those who indicated that they planned on increasing renting out to non-relatives and non-neighbours (37.7%), three-quarters of these intended to 'somewhat increase' renting out to non-relatives and non-neighbours.

Further, concerns of the land being taken by renters was mentioned by over half of the respondents (58.6%), one-third did not feel that renters took proper care of the land (36.8%), and 20% were worried that tenants would still claim that the land was theirs, even with SLLC. Female-headed households tended to be more concerned about land being taken away by renters than male-headed households, while the latter were more concerned about damage to the land. All of this highlights the need to complement the SLLC with additional facilitation, as should be provided through LRSPs to the population on a larger-scale in the long-run.

Credit Transactions Since SLLC

When comparing the 2015 Baseline data with the 2019 survey, several interesting trends in access to credit can be found as shown in Figure 28 below. Firstly, overall access to credit has increased by 20% from 34% of landholders accessing credit at Baseline to 41% in 2019. Secondly, landholders seem to be accessing informal credit much less frequently and seem to have replaced this by using formal credit through MFIs more frequently, including group loans and the new SLLC-linked loan. Finally, overall 3.5% of landholders have indicated that they are now using the SLLC-linked loan. Spread over the population of the LIFT area, this seems to imply a much higher number of loans that has been implied by LIFT monitoring and needs to be further investigated.

Figure 28: Access to credit at 2015 Baseline and 2019 SLLC Outcome survey by different types of credit

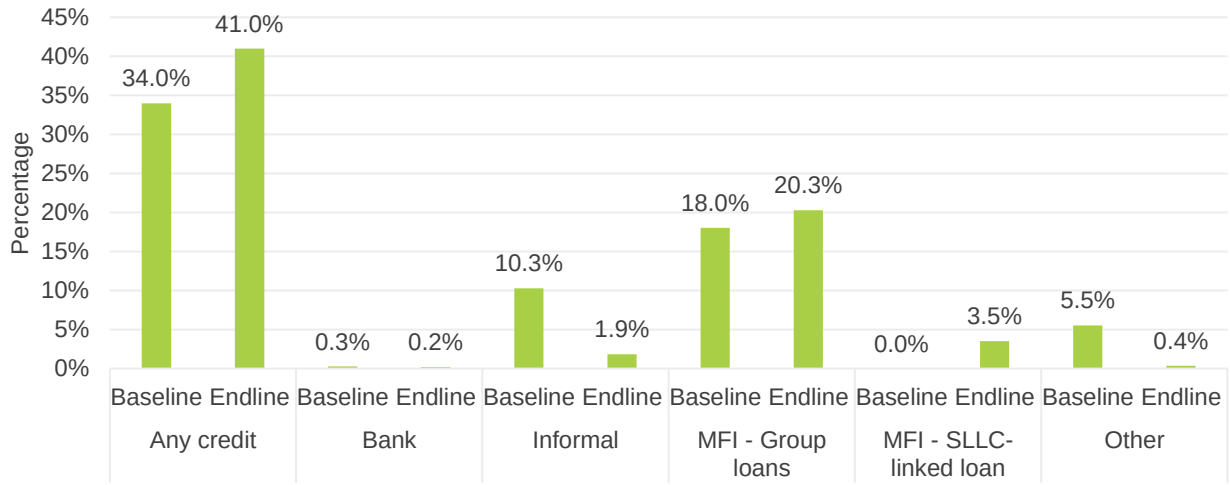
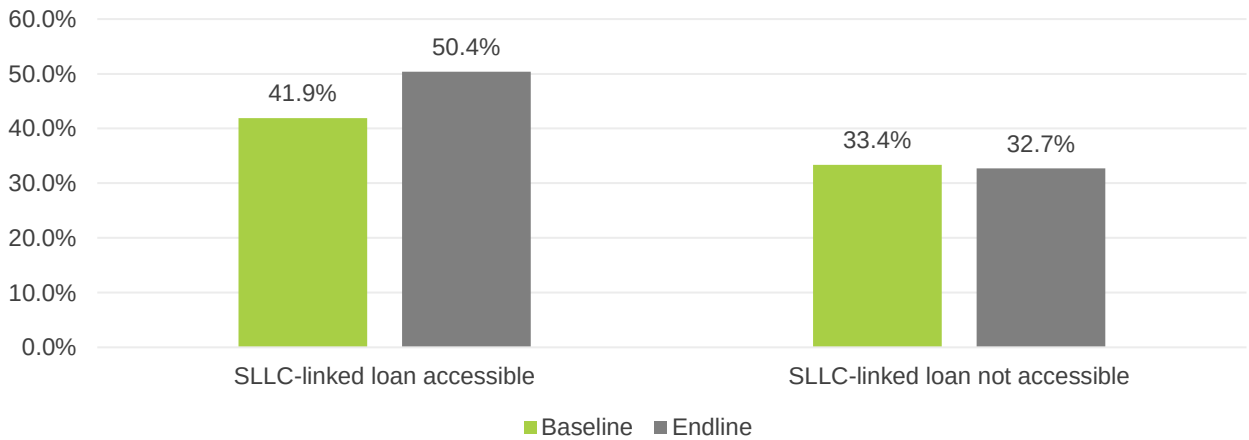


Figure 29: Access to credit in locations where the SLLC-linked loan is available and where it is not



When disaggregating landholders by whether they live in a location where the SLLC-linked loan is available, it can further be found that access to credit in general has increased significantly more in these locations since Baseline (see Figure 29). This trend confirms that there is a high demand for credit in the EEU locations, implying a high future potential for the SLLC-linked loan to further expand.

Figure 30: Access to credit for male-headed and female-headed households

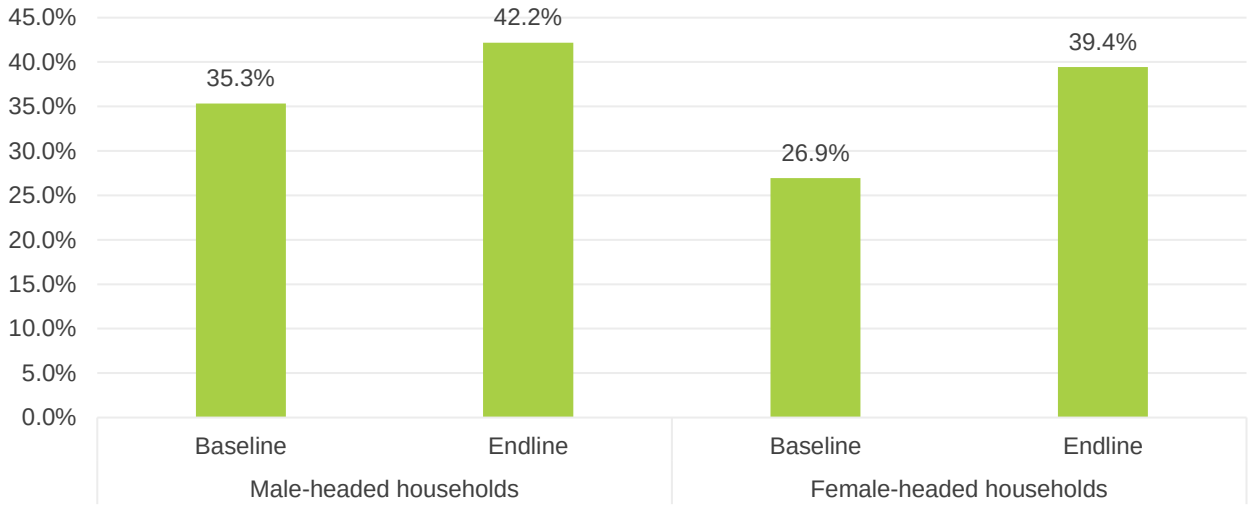


Figure 30 shows the percentage of female-headed and male-headed households that had access to any form of credit at Baseline and at Endline. It can be found that while the levels of financial access are higher for male-headed households both at Baseline and at Endline, the percentage increase is much higher for female-headed households. While access to credit has increased by 19.5% for male-headed households (from 35.3% to 42.2%), it has increased by 46.5% for female-headed households (26.9% to 39.4%).

Key Finding 12: The rental market is expanding, draws-in more first-time renters and female-headed households, and reaches out to tenants from outside of the community more often. The percentage of households engaging in cash rental and sharecropping have significantly increased since Baseline. Cash rental has nearly doubled with an increase of 81.6% since Baseline (4.9% at BL, 8.9% at EL), while sharecropping has increased by 23.5%. Especially the expansion of cash rental is significant as it implies a more risky and formal type of rental agreement. First time renting grew significantly following SLLC, at 20.2% out of all rental agreements, while 6.5% of those had rented out more land. One-quarter of those who were renting out land argued that they were renting out for longer periods following SLLC. Three-quarters of landlords felt that they would further expand renting in the next two years. A lower, but still higher than expected, number of households rented out to tenants from outside their communities for the first time (11.2%). SLLC was an important factor in this decision for over half of all households. Furthermore, female-headed households were more likely to have rented out land for the first time following SLLC than male-headed households, showing that increased tenure security expands to female heads.

Key Finding 13: Access to finance has overall increased, especially for female-headed households and in locations where EEU is available. The percentage of households that have taken-out credit has increased by 20.5% since Baseline (from 34% to 41% of all landholders). The increase in access to credit is especially pronounced for female-headed households and households living in locations where the SLLC-linked loan is available. A total of 12.5% of households indicated that they were more likely to have taken out a loan since SLLC took place.

Investment Behavioural Change Since SLLC

Introduction

This section discusses findings relating to Hypothesis 9 and Hypothesis 11 under the fourth Theory of Change step as outlined below:

Theory of Change	Hypotheses
4. Landholders Change Behaviour and Invest More on Land	Hypothesis 9: Landholders change their behaviour as a result of realising their land use rights and invest more in their land, especially in longer-term investments (both on- and off-farm) Hypothesis 10: Landholders change their behaviour as a result of realising their land use rights and take-out credit to invest in their land more often (mainly relating to on-farm short-term investments in inputs such as fertilizer, seeds, pesticides, machinery) Hypothesis 11: Behaviour change, and behaviour intentions are observed more frequently in woredas where the SLLC process was conducted a longer time ago, since it takes time for landholders to realise an opportunity and act upon it

This section presents findings on on-parcel investments since SLLC was completed. This includes investments in assets and labour allocation to parcels, and changes in farming patterns and procedures.

Investments are divided into two groupings: 1) short-term investments that are intended to improve productivity in the short-run; and 2) long-term investments that are intended to yield improved productivity in the long-run. Investment types were grouped under the category “short-term”, where benefits of the investment can be felt already after one or two agricultural seasons. Investments that take longer than one or two seasons for returns to pay-off or where the investment is supposed to produce returns for more than one or two seasons are grouped in the category “long-term”. See Table 6 below for how the different investment types were categorised.

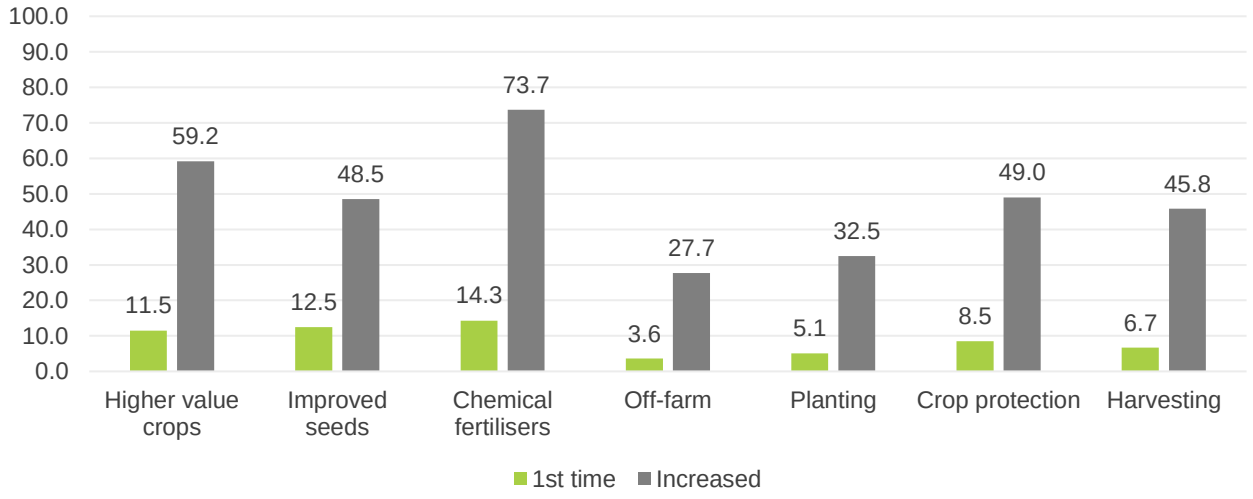
Table 6: Categorisation of short-term and long-term investments

Short-term investments	Long-term investments
Investment in higher value crops	Investment in irrigation infrastructure
Investment in improved seeds	Investment in activated organic fertilisers
Investments in chemical fertilisers	Investment in terracing, clearing stones/stumps/other, planting grass for bunding, installing or repairing a dam, drainage ditch, trench, or investment in water harvesting mechanisms
Engagement in more off-farm enterprises	Investment in trees
Investing more assets or labour for planting	Investment in ploughing equipment, including oxen
Investing more assets or labour for weeding or fencing to protect crops during the growing season	Investment in crop storage infrastructure
Investing more assets or labour for harvesting	Investment in a donkey cart, mules, or donkeys
	Investment in dairy cows or other cattle
	Investment in goats, sheep, pigs, chickens

Short-Term and Long-Term Investments and SLLC Contribution

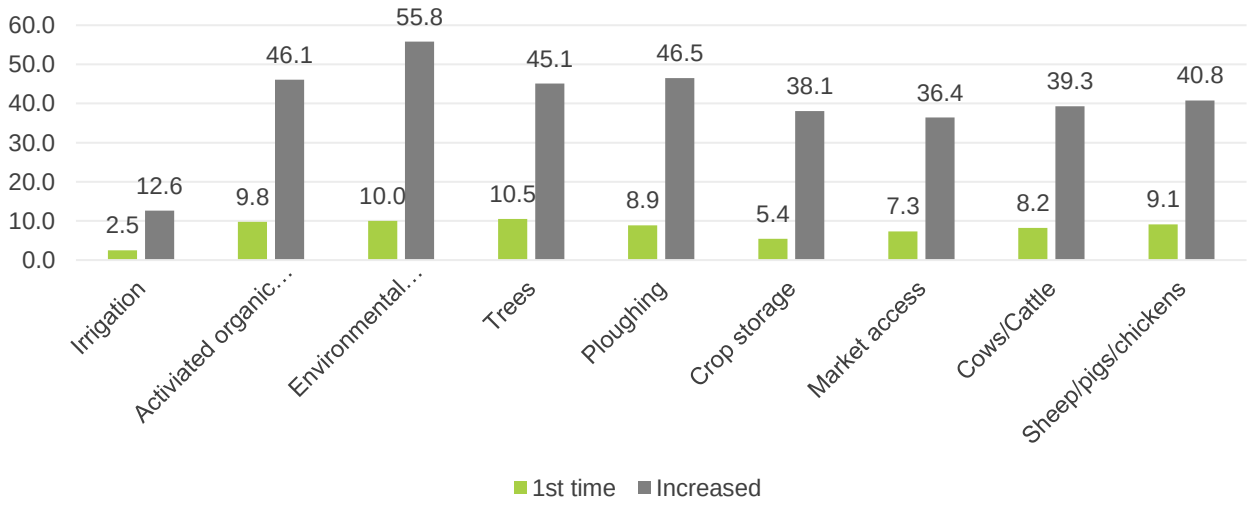
Most landholders indicate that they have increased their investment in different short-term investment types since SLLC was introduced. This holds especially for higher value crops, improved seeds, chemical fertilisers and crop-protection. Farmers have further tried some short-term investments for the first time more frequently than others, with higher value crops, improved seeds and chemical fertilisers ranking highest. Figure 31 below summarises the percentage of farmers that have invested in a certain short-term investment type for the first time as well as the percentage of farmers that have increased investment.

Figure 31: Percentage of landholders that have increased short-term investment since SLLC



Chemical fertilisers are the most frequent investment in which landholders have increased investment in since SLLC, with 73.7% of landholders indicating that they have increased investment, and 14.3% indicating they have invested in chemical fertilisers for the first time. Higher value crops and improved seeds are second and third most common. As expected, off-farm investments are the least common investment type.

Figure 32: Percentage of landholders that have increased long-term investments since SLLC



Almost half of all landholders claim to have increased their investment in activated organic fertilisers, trees, and environmental improvements of the land, including terracing, removing stones, repairing a dam etc. Overall every tenth landholder has claimed that they have invested in long-term investments for the first time. Only comparatively few landholders however claim that they have increased investment in irrigation or applied irrigation for the first time.

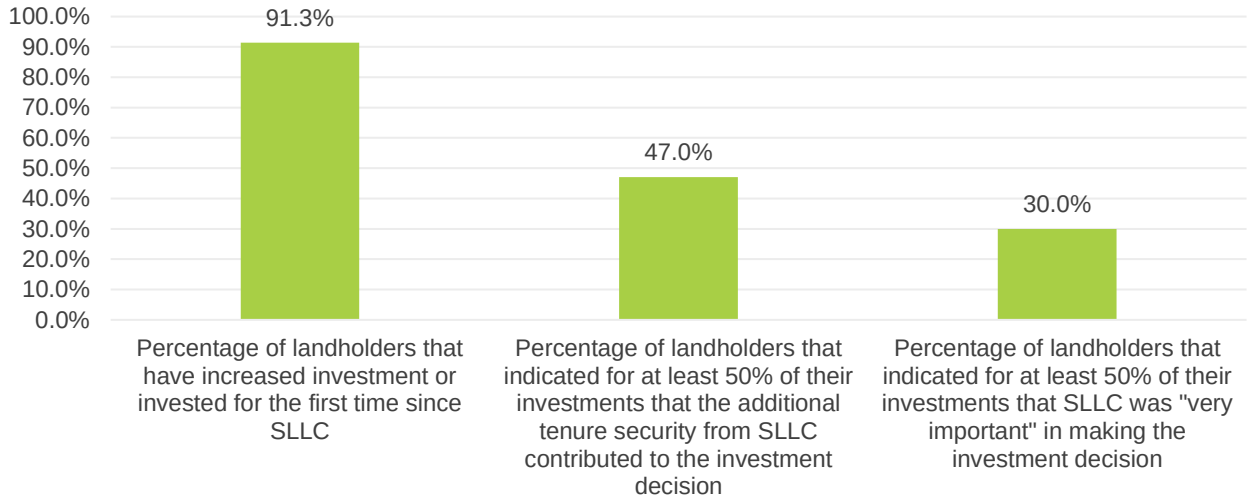
Contribution of SLLC to Investment Decisions

To better understand in how far the SLLC process has contributed to decisions to increase certain investments or invest in an investment type for the first time, two follow-up questions were asked (1. “Did the change in tenure status due to SLLC have anything to do with this? (Y/N)” and 2. “How important was SLLC in your decision to make this change? Very important, somewhat important, not very important, not important at all”). These two questions were asked for each investment type for which the landholder indicated that investment was increased or that it was invested for the first time. For example, if a landholder increased investment in trees, chemical fertilisers and cattle, the questionnaire would probe for each investment whether SLLC had influenced the decision and how important SLLC was in making the decision. This allows to provide an estimate for the following indicator:

Percentage of Landholders that have Increased Investment as a Result of SLLC

It can be found that 91.3%[9] of all landholders have increased investment in at least one investment type[10] since SLLC was introduced. When asked whether the change in tenure security due to SLLC affected the decision to increase investments, 47% of landholders confirmed that this would be the case for at least 50% of their investments.[11] Furthermore, 30% of all landholders indicated that SLLC was very important in making the investment decision for at least 50% of investments made.[12] See Figure 33 below.

Figure 33: SLLC contribution to increased investment



It can therefore be concluded that for 47% of landholders, SLLC contributed partially to most of the household's investment decisions. For 30% of landholders, SLLC contributed significantly to most of the household's investment decisions.

The percentage of landholders that have increased investment as a result of SLLC can therefore be estimated as 47%.[13]

Investment Score Index and Multivariate Regressions

To analyse data on short and long-term investments in more detail and link correlations of investment trends with other variables, such as whether the respondent is living in a location where EEU is available, or in a Woreda where SLLC was distributed a longer time ago, an *Investment Score Index* was created. The index follows a straightforward logic, where a single score for each respondent is created. The score is a simple sum across investments that were increased or placed for the first time for the respondent – where each investment that was placed by the respondent counts as 1 point, and investments that were not increased or placed count 0 points. For example, if the respondent has increased investment in chemical fertilisers and invested for the first time in irrigation, but did not increase investment in other investment types, this respondent will receive an Investment Score of 2 (sum of: 1=chemical fertilisers, 1=irrigation, 0=others). All 16-different short-term and long-term investment types were considered as described at the beginning of this section. This implies that the maximum score a landholder can receive for increasing investments equals 16, in a case where the landholder increased investment or invested for the first time in all different kinds of short term and long-term investments. The Investment Score Index can be disaggregated by short-term (score out of 7) and long-term investments (score out of 9).

To supplement the Investment Score Index and establish a contribution effect of SLLC to investment behaviour, a second index was created to measure for how many investment types a household indicated that the decision to increase investment or invest for the first time in a specific input was influenced by the arrival

[9] Note that all landholders here that increased investment or invested for the first time in at least 1 investment type. The statistic therefore combines landholders that indicated that investment was increased in one investment type, for example cattle rearing, and landholders that indicated to have increased investment in several investment types such as cattle rearing, irrigation infrastructure, and improved seeds.
[10] An investment type could, for example, be planting trees or chemical fertilisers. Any short term or long-term investment would qualify.
[11] Here it should be noted that since most landholders increased investment in several investment types, the analysis includes a condition that at least for 50% of these investments, SLLC contributed to the decision to increase investment or invest for the first time. This is to strengthen the argument that SLLC was important for investment decisions across the board for that landholder.
[12] Here it should be noted that since most landholders increased investment in several investment types, the analysis includes a condition that at least for 50% of these investments, SLLC was "very important". This is to strengthen the argument that SLLC was important for investment decisions across the board for that landholder.
[13] Note that investment type-level analysis is available.

of SLLC (Investment due to SLLC index). Much like described above for the Investment Score Index, the score for this index was calculated as a simple sum of the number of investments where households indicated that SLLC played a role in placing the investment and is scored out of a maximum of 16 points.

Investment Indices Findings

Table 7 below shows the average scores for all four indices and how the average scores compare when disaggregated by gender of respondent, EEU locations and yield increases. It can be found that all investment scores are higher for male respondents and for respondents that live in locations where EEU innovations are accessible. As for locations where EEU innovations are accessible, especially the short-term investment score and the Investment due to SLLC scores are much higher. This implies that not only do landholders place more short-term investments in EEU locations, but they also do so more often as a result of SLLC. This highlights the Theory of Change link between EEU, SLLC and increased investment.

Table 7: Investment scores by gender, EEU locations, and households with yield increase

Category	Overall	Gender of respondent		EEU innovations accessible?		Household's Yield has improved	
	All	Male	Female	Y	N	Yes	No
Investment Score	7.05	7.35	6.70	7.46	6.47	8.46	5.29
Short Term Investment Score	3.35	3.45	3.23	3.59	3.01	4.03	2.50
Long Term Investment Score	3.70	3.89	3.47	3.87	3.46	4.43	2.79
Investment Due to SLLC	3.96	4.27	3.58	4.65	2.96	5.30	2.28

A strong positive link between higher investment scores and increased yield can be identified as well, with landholders that experienced an increase in yield having much higher investment scores. The effect is pronounced strongest for the Investment Due to SLLC Index, suggesting that the likelihood of improved yields increases when landholders place an investment as a result of SLLC. In other words, this indicates a trend where investment decisions that were influenced by the arrival of SLLC seem to be more productive as compared to other investments. This positive correlation can also be confirmed through an additional probit regression.

Figure 34: Investment Indices by SLLC completion year

Furthermore, the investment score indices were disaggregated by the year that SLLC was administered in a certain location, which allows to analyse whether the likelihood of increasing investment is more pronounced in locations where SLLC was administered a longer time ago. Figure 34 shows the results. An almost linear trend can be identified between the years 2015 and 2019, where investment increases are much more likely in locations where SLLC was administered a longer time ago. This trend is even more pronounced when looking at the distribution of scores for the Investment due to SLLC Index. This provides evidence for the assumption that landholders only start realising the benefits of SLLC in terms of placing investment after more time has elapsed. Landholders who received SLLC in early 2019 indicated only for on average 2.35 investments that these were placed due to SLLC, while landholders who received SLLC in 2015 state the same for 4.59 investments (which is nearly twice as many).

Multivariate Regression Model Findings

To further test whether the observed trends are statistically significant, several regression models were run on the three Investment Indices, using different combinations of covariates. Results for the best model are shown in Table 8 on the next page. Three different models were run on the unweighted data, using the overall investment index, the short-term investment index, and the long-term investment index as independent variables respectively. As covariates, time since SLLC completion, respondent gender and gender of household head, region, age of respondent, poverty status, proximity to Woreda centre and main roads were included. Furthermore, the Investment due to SLLC index and the Participation Index were included as covariates. The following statistically significant correlations can be observed:

SLLC completion year: Investments are more likely to increase in locations where SLLC was completed a longer time ago, especially long-term investments.
Regional effects: Regional differences are pronounced and highly significant, with Tigray showing the highest likelihood of increasing investment since SLLC.
Age effects: Younger landholders are more likely to invest than older landholders, with the age groups 31-45 and below 30 showing significant differences to older landholders.
Poverty effects and remoteness effects: Poorer landholders are much less likely to increase investments. The same counts for landholders that live in more remote locations.
SLLC contribution to investment: Investments are more likely to have been increased for landholders that indicated that the investment decision was influenced by the SLLC. This positive correlation between SLLC and increased investment confirms one of the key theory of change links of the programme.
Participation in the SLLC process correlates with increased investment: Further, the "Participation Score"[14] discussed in Section 4 has been included as covariate to test whether participation in the SLLC process correlates with higher investments. This confirm one of the key Theory of Change assumption of the programme, that SLLC impacts especially on longer term investments.

Table 8 below shows the regression results for the three preferred models and key findings of this section are summarised on the following page.

Table 8: Multivariate regression results using three Investment Score Indices[15]

Regression Results **Unweighted**

Dependent Variable	Total Investment Score			Short Term Investment Score			Long Term Investment Score		
	Co-effc.	P-Val	Sig	Co-effc.	P-Val	Sig	Co-effc.	P-Val	Sig
SLLC completion									
"New" Woredas									
"Old" Woredas	**0.37**	**0.03**	*	**0.12**	**0.18**		**0.25**	**0.01**	*
Gender									
Female HH Head									
Male HH Head	0.10	0.52		0.01	0.88		0.09	0.36	
Other Female	1.31	0.00	*	0.78	0.00	*	0.52	0.06	*
Other Male	1.30	0.00	*	0.46	0.01	*	0.83	0.00	*
Spouse	0.28	0.16		0.14	0.18		0.14	0.24	
Region									
Amhara									
Oromia	1.40	0.00	*	0.76	0.00	*	0.64	0.00	*
SNNP	0.71	0.00	*	0.34	0.00	*	0.37	0.00	*
Tigray	1.76	0.00	*	1.01	0.00	*	0.74	0.00	*
Age Group									
Above 60									
Age 31 To 45	**0.63**	**0.00**	*	**0.19**	**0.04**	*	**0.44**	**0.00**	*
Age 46 To 60	0.22	0.21		0.00	0.98		0.22	0.04	*

[14] The Participation score is a simple sum of the number of different steps of the SLLC processes the respondent was involved in, meaning (1) the initial awareness raising, (2) demarcation process, (3) demarcation of a neighbour's plot, (4) public display, (5) SLLC distribution event. The higher the score, the more SLLC events the respondent has participated in and therefore has been exposed to more awareness around the benefits of SLLC..
[15] [1] * Significant level marked at 10%, 5% and 1%.[2] Old Woreda= SLLC completion year 2015, 2016, and 2017; New Woreda=SLLC completion year 2018, and 2019. [3] "Due to SLLC=1" if **"Very Important"** in these investment questions (q701ai, q702ai, q703ai, q704ai, q705ai, q706ai, q707ai, q714ai, q801ai, q802ai, q803ai, q804ai, q805ai, q806ai, q807ai and q808ai) and "Due to SLLC=0" if any other options in the above-mentioned investment questions.

Dependent Variable	Total Investment Score			Short Term Investment Score			Long Term Investment Score		
	Co-effc.	P-Val	Sig	Co-effc.	P-Val	Sig	Co-effc.	P-Val	Sig
Below 30	0.46	0.06	*	0.14	0.27		0.32	0.04	*
Poverty level									
The Food/Money Rich									
The Resourceful Poor	-1.09	0.00	*	-0.68	0.00	*	-0.41	0.00	*
Very Poor	-2.26	0.00	*	-1.23	0.00	*	-1.03	0.00	*
Proximity to Woreda									
More than 30 km from woreda capital									
Within 10 Km of Woreda Capital	0.76	0.00	*	0.65	0.00	*	0.11	0.37	
Within 20 Km of Woreda Capital	0.10	0.63		0.21	0.06	*	-0.10	0.45	
Within 30 Km of Woreda Capital	0.72	0.01	*	0.37	0.00	*	0.35	0.03	*
Proximity to Road									
Proximate to primary/asphalt road									
Remote, Secondary Roads or Tertiary Roads Only	**-1.03**	**0.00**	*	**-0.43**	**0.00**	*	**-0.60**	**0.00**	*
Investment Due to SLLC Index	**0.54**	**0.00**	*	**0.24**	**0.00**	*	**0.30**	**0.00**	*
Participation Index	**0.23**	**0.00**	*	**0.10**	**0.00**	*	**0.13**	**0.00**	*
Constant	**4.06**	**0.00**	*	**1.89**	**0.00**	*	**2.17**	**0.00**	*
Adjusted R-Squared	**42%**			**39%**			**35%**		

Key Finding 14: SLLC contributes to landholders' decision to increase investments, including short-term and long-term investments. 91.3% of landholders increased investment in at least one investment type since SLLC. 47% of all landholders argued that the additional tenure security resulting from SLLC partially contributed to making the investment decisions. 30% of landholders argued that SLLC was "very important" in making additional investment decisions. The contribution of SLLC to increased investment was confirmed through a multivariate regression model, which found a statistically significant correlation between the two factors.

Key Finding 15: Investment effects develop over time and are higher and more often linked to SLLC in locations where SLLC was administered a longer time ago. Investments are more likely to have increased in areas where SLLC has been administered a longer time ago, indicating that it takes time for investment effects to build-up. Investments for those reached in 2015 with SLLC were substantially higher than for those reached after 2018, based on the expected 'treatment' effect of SLLC. This holds especially for the number of landholders that claim that SLLC contributed to their decision to place an investment. This correlation is statistically significant, as confirmed through a multivariate regression model.

Key Finding 16: Landholders that have participated more in the SLLC process are more likely to have increased investment, especially long-term investments. This is shown through a multivariate regression analysis making use of the Investment Score Indices and the Participation Index (discussed in Section 4). Results show a correlation between a more intensive participation in the SLLC process, and the likelihood of increasing investment. The effect is more strongly pronounced for long-term investments, which underlines one of LIFT's key Theory of Change assumptions: the SLLC process increases security of tenure leading landholders to take more risks and placing long-term investments to improve the productivity of their land.

Key Finding 17: Increased investments correlate positively with increased yield, especially for investments that were placed as a result of SLLC. A strong positive correlation between higher investment scores and increased yield can be identified, with landholders that experienced an increase in yield having much higher investment scores. The effect is pronounced strongest for the "Investment Due to SLLC Index", suggesting that the likelihood of improved yields increases when landholders place an

Impact on Productivity

Introduction

This section discusses findings relating to Hypothesis 13 under the fifth Theory of Change step as outlined below:

Theory of Change	Hypotheses
5. Land is Used More Productively and Landholder's Incomes Increase as a Result	Hypothesis 13: As a result of landholders changing their behaviour and realising their land rights, land is used more productively – including by women and vulnerable groups

Contribution of SLLC Investments to Land Productivity

As part of the investment module 7 of the questionnaire, a section on *Most Significant Impact* of SLLC investments on crop yields was administered. Respondents were asked to identify which crop benefitted most from the investments that were placed after SLLC was administered. Once the crop with the most significant improvements was identified, questions regarding yield increase followed including whether the yield had increased since SLLC and by how much. Finally, a contribution question probes whether the yield increase can be attributed to any investments placed as a result of SLLC (in part, entirely, or not at all).

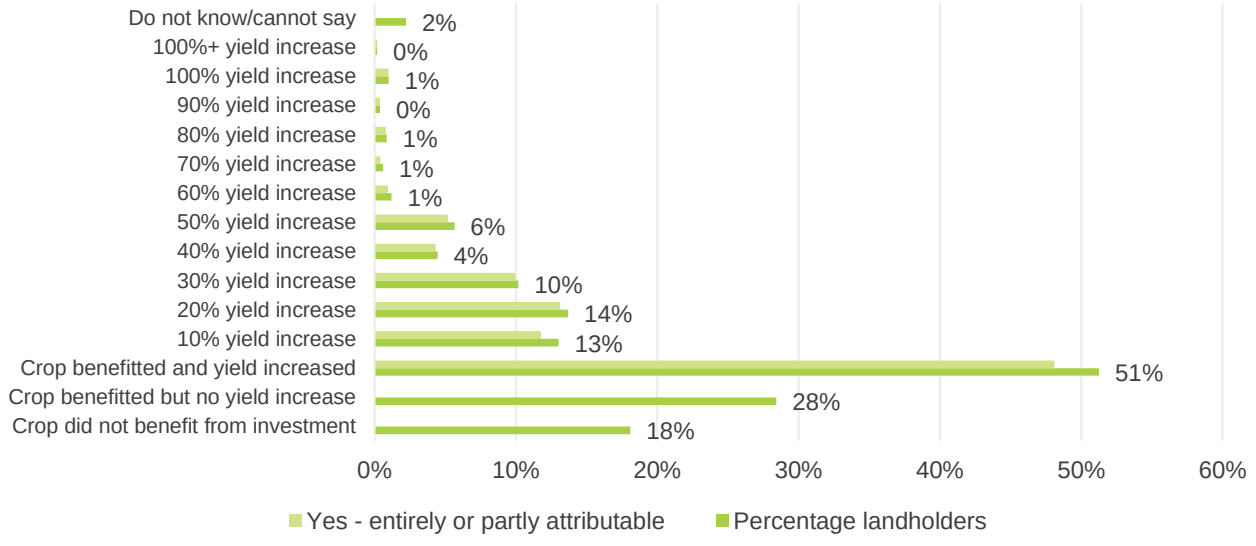
A total of 81.9% of respondents argued that there was a crop that had been positively impacted, and of this, almost all fell into the category of cereal crops. Only half, however (45.2%), had devoted more land to production, suggesting intensification of production rather than expansion. Findings are summarised in the following table:

Table 9: Crop Most Positively Impacted by Post-SLLC Investments

Response	%
Cereal Crops (e.g., barley, maize, millet, oats, rice, sorghum, teff, wheat)	69.2
Pulses (e.g., chickpeas, haricot beans, fava beans, lentils, field peas, grass peas, gibto, soya beans, fenulgreek)	5.4
Permanent Cash Crops and Fruits (e.g., bananas, grapes, lemons, oranges, papayas, pineapples, guava, peaches)	3.2
Root Crops (beetroot, enset, carrots, garlic, onions, potatoes, sweet potatoes, taro/godere)	2.3
Vegetables (e.g., peppers, cabbage, cauliflower, lettuce, pumpkin, tomatoes, swiss chard, green beans)	1.0
Oilseeds (e.g., linseed, groundnuts, niger seed, rape seed, sesame, sunflower)	0.3
None	18.1

Further, respondents were asked to estimate the yield increase in the crop that experienced the highest yield increases since SLLC, and consequently whether this very yield increase was related to an investment that was placed as a result of SLLC. Results are shown in Figure 35 below.

Figure 35: Percentage yield increase across landholders and SLLC contribution



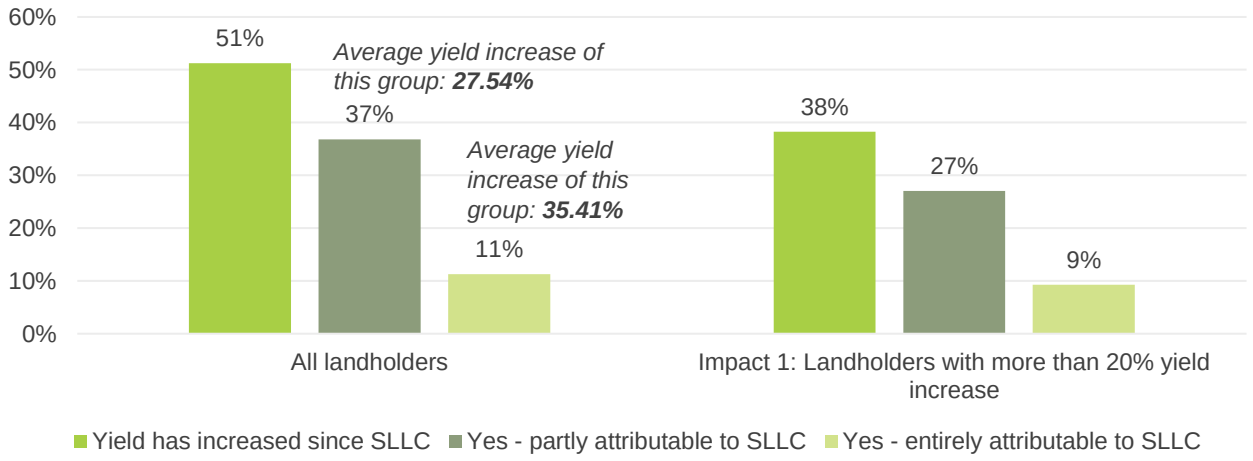
It can be found that overall 51% of all landholders experienced a yield increase. Furthermore, when asked whether the yield increase can be linked specifically back to investment decisions that were as a result of

SLLC, overall 48% of landholders claim that SLLC contributed either partly or entirely to the yield increase. These findings can be disaggregated by the specific yield increase. This allows to give an indication regarding the programme's ***Impact Indicator 1: Percentage of farmers with SLLC that benefit from a 20% income increase.***[16] Figure 36 below summarises the number of landholders for which the yield has increased since SLLC and how many landholders attribute this to SLLC. To estimate Impact Indicator 1, the columns to the right of Figure 36 indicate only the percentage of landholders for whom the yield has increased by 20% or more and how many of these claim that SLLC contributed to this increase.

Overall 27% of landholders claim a yield increase of 20% or more and attribute this partly to the changes that occurred as a result receiving the SLLC and the SLLC process. Note that 9% of landholders have a yield increase of 20% or more and attribute this entirely to SLLC. This can be interpreted as indicative evidence that SLLC not only incentivises investments, but that these investments also translate into productivity increases. The evidence is in-line with the LIFT Theory of Change, and in the absence of other, more rigorous evidence on productivity and income increases the findings of this survey can function as a first indication that a positive link between SLLC, investments and productivity increases exist.

Furthermore, a positive correlation between yield increases and attitudinal statements regarding improved livelihoods and income increases of the households can be established.

Figure 36: Percentage yield increase and SLLC contribution for Impact Indicator 1



Lastly, it can be found that the yield increase for the group of landholders that attribute the yield increase entirely to investments made as a result of SLLC is larger than the average yield increase of landholders that attribute the yield increase only partly to investments made as a result of SLLC (35.4% vs 27.5%).

Key Finding 18: SLLC investments contribute to increases in productivity of the land. 51% of landholders indicate that their yield has increased since SLLC was administered. When asked whether the investments placed as a result of SLLC contributed to the yield increase, 37% of landholder indicated that this was partially the case, while 11% of landholders indicated that the yield increase was entirely due to the additional investment placed as a result of SLLC. This indicates that there is a positive relationship between investments placed as a result of the additional tenure security provided through SLLC and increases in the productivity of the land.

Key Finding 19: Indicative evidence for Impact Indicator 1 can be provided (Percentage of farmers with SLLC that benefit from a 20% income increase). It can be found that 27% of landholders partially attribute a yield increase of 20% or more to SLLC, 9% attribute this entirely to SLLC. This can be interpreted as an indication of SLLC translating into productivity increases, which in-turn can translate into income increases. Also note that a positive correlation between yield increases and attitudinal statements regarding income increases were found.

[16] Here one has to make a generous assumption regarding household income and use the most significant yield increase of the household as a proxy for increased household income.