



Food and Agriculture Organization
of the United Nations

Enhancing the inclusiveness of Agrocommodity Procurement Zones in Ethiopia

BASELINE TERRITORIAL POVERTY PROFILE AND ANALYSIS

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Abbreviations and acronyms

ACC	Agricultural Commercialization Clusters Initiative
ACPZ	Agrocommodity Procurement Zones
AOSS	Agricultural One Stop Shop
CALF	cropped arable land fraction
CIG	common interest group
CSO	civil society organization
DA	development agents
EA	enumeration area
ESS	Ethiopia Socioeconomic Survey
FAO	Food and Agriculture Organization of the United Nations
FCS	food consumption score
FIES	Food Insecurity Experience Scale
FNS	food and nutrition security
IAIP	integrated agro-industrial parks
ILO	International Labour Organization
IPDC	Industrial Parks Development Corporation of Ethiopia
NFE	non-farm enterprises
NGO	Non-Governmental Organization
PPI	Poverty Probability Index
PSNP	Productive Safety Nets Programme
RTC	Rural Transformation Centre
SACCO	savings and credit cooperative
SDG	Sustainable Development Goals
SMEs	small and medium enterprises
SNNPR	Southern Nations, Nationalities and People's Region
TCP	Technical Cooperation Programme
TLU	tropical livestock unit
UNIDO	United Nations Industrial Development Organization
VSLA	Village Savings and Loan Association
WFP	World Food Programme

1 Introduction

1.1 Background

As part of its efforts to accelerate agricultural transformation, the Government of Ethiopia is developing across the country a series of integrated agro-industrial parks (IAIP). These aim to catalyse investment in the agricultural sector, improve the country's capacity to meet domestic demand, and to position Ethiopia in global markets as an exporter of value-added agricultural products. The IAIPs are envisioned to attract both domestic and international investors to procure local agricultural output and carry out value-chain activities such as processing, packaging and storage within the infrastructure developed by the government. These activities will be supported by several actors, including the United Nations Industrial Development Organization (UNIDO) and the Industrial Parks Development Corporation of Ethiopia (IPDC).

The level of investment that these parks encompass hold enormous potential for boosting territorial development, and for reducing poverty through agricultural production and employment generation. On the one hand, the parks harbour potential for supporting agricultural livelihoods by increasing demand from local procurement of raw agricultural output, which are aimed to cover an area of 100 km radius around the parks, referred as Agrocommodity Procurement Zones (ACPZ). On the other hand, the parks also hold substantial potential for employment creation and related economic outcomes, given the various inputs in terms of labour, products, and services that these will be required (FAO, 2019). Based on the experience of the pilot IAIP and ACPZ inaugurated in 2021, the model is planned to be taken at scale, eventually to 17 parks across different regions of Ethiopia.

As part of the Hand-in-Hand Initiative, whose goal is to help reach Sustainable Development Goals (SDGs) 1 and 2, the Food and Agriculture Organization of the United Nations (FAO) has partnered with the Government of Ethiopia to ensure that agricultural investments, and the agro-industrial parks, are both inclusive of local populations and the poor, as well as environmentally sustainable. Inclusivity, particularly of vulnerable populations, is not a given in the development process, and therefore, further efforts are required to ensure that they benefit from investments and their livelihoods are set up in a pathway of moving out of poverty.

More concretely, within the activities of the Technical Cooperation Programme (TCP) 3802, FAO is committed to undertaking a poverty, exclusion and food and nutrition security assessment of Bulbula and Yirgalem ACPZ, representing two of the four pilot areas.¹ The aim is guiding their inclusive and sustainable implementation, bringing attention to economic inclusion and social sustainability through the provision of recommendations. These will target of vulnerable groups by investments slated for the IAIP and ACPZ buffer zones. The quantitative analysis presented in this report, based on the data from a baseline poverty, food security and livelihoods survey of the Bulbula and Yirgalem ACPZ areas, is one of three analytical outputs that will inform these recommendations. The other two inputs include a national poverty profile report based on secondary data, and a territorial diagnosis, the latter implemented in areas overlapping with the baseline survey.

The compendium of three analytical studies seeks to illustrate the extent of deprivation in the ACPZ areas, highlighting the barriers and opportunities to inclusion in the context of the agro-industrial investments selected for those areas. A series of topics and questions guide the respective analyses, to both establish the status of inclusion in the ACPZ areas and illustrate the opportunities to inclusion in the context of agropark investments.

Status-quo topics:

1. **Inclusion of agricultural investments for who?** Under this topic, the levels of asset holdings, skills and livelihood strategies of different population groups are characterized, considering the poorest, the most vulnerable, but also those that are non-poor and less vulnerable.
2. **What are the barriers to inclusion in agricultural investments and in agricultural growth and transformation?** This question will seek to identify the barriers, how they are manifested and their relevance in terms of agropark investments and value chain development.

¹ The four pilot IAIP and ACPZ include Baeker (Tigray), Bulbula (Oromia), Bure (Benishangul Gumuz), and Yirgalem (Sidama; Southern Nations, Nationalities and People's Region, [SNNPR]).

3. **What are the existing organizations and business support services in the ACPZ territories and their level of inclusion?** The organizations available to support the ACPZ can provide insights to the avenues – or lack thereof – towards inclusive investments, especially if framed in terms of the extent of household level interaction with those institutions.

Opportunities for inclusive investments:

1. **What opportunities exist for the social and economic inclusion of the poorest and vulnerable households to participate or maximize their contribution to the ACPZ activities?** This question seeks to flag potential opportunities for engaging in priority commodity production and value-chain service provision or non-farm activities related to those commodities, and considering the availability of services and infrastructure that could enhance the value chain.
2. **What are the potential inclusion pathways and packages?** In relation to the previous question, it is valuable to identify the types of investments related to the priority commodities garnering potential to reach poor and vulnerable groups and how they may they be enhanced through complementary social packages, public-service provision, and considering the synergies between social-protection programmes, livelihoods development, and agribusiness development.
3. **What are the existing mechanisms and new facilities and actors that can support the implementation of an inclusion plan for the ACPZ?** This question seeks to address the institutional factors that are required for inclusive investments to succeed.

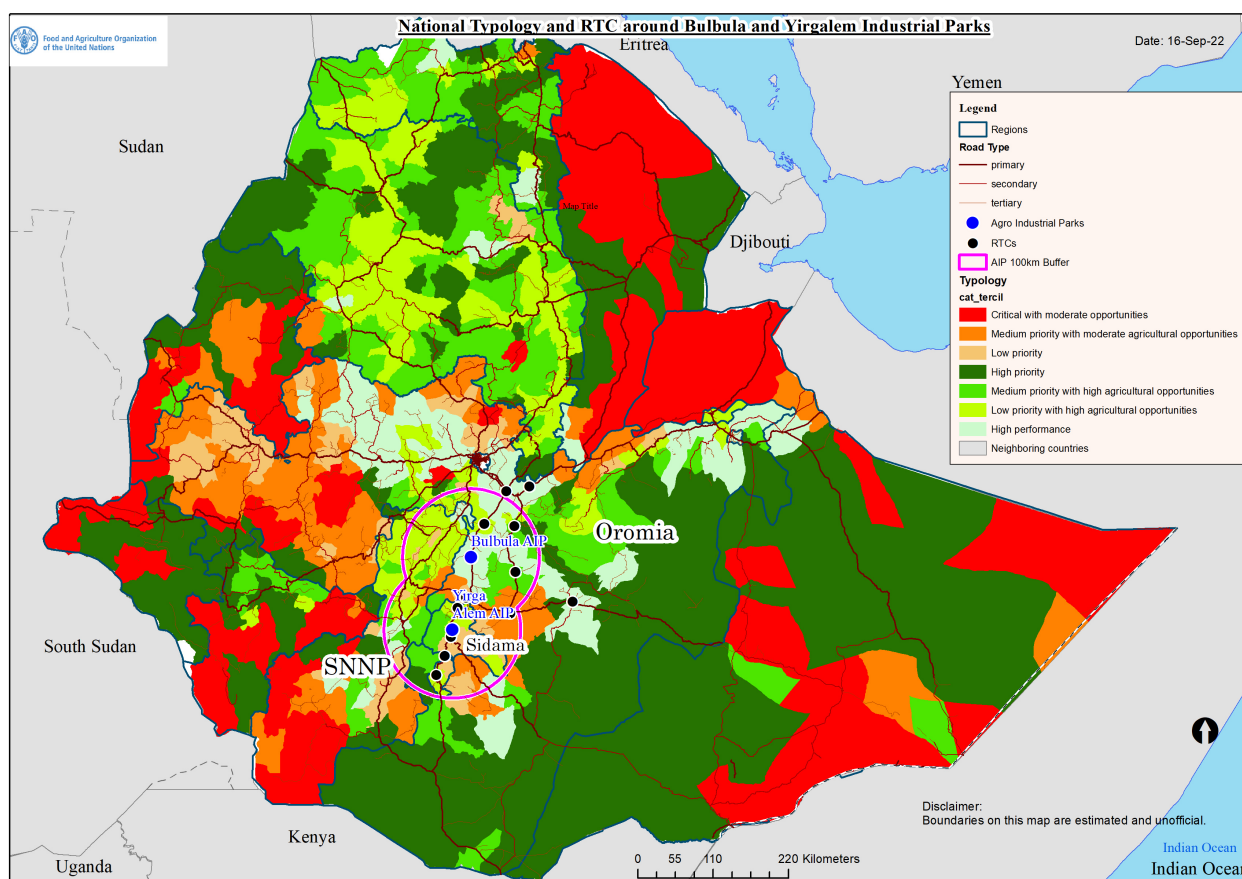
The baseline survey primarily addresses the first four topics regarding the status of inclusion and barriers to inclusion; findings are synthesized to discuss those questions. However, the outcomes of this report will serve to inform discussion and conclusions within the TCP regarding the fifth and sixth topic. Finally, as indicated by the title of this report, the data collected for these ACPZ areas will also serve as a baseline for future impact assessments of investments established, including those facilitated by the Hand-in-Hand Initiative.

The rest of this report is organized as follows. Section 2 describes the territorial context in greater detail regarding the pilot IAIP and ACPZ. Section 3 describes the baseline survey, as the main source of data underlying the analysis, and the key indicators used to frame the analysis. Section 4 presents the results, structured by a series of subsections on (i) poverty and food-security patterns; (ii) livelihoods assets base; (iii) livelihoods strategies; (iv) features of ACPZ-centred livelihoods pathways; (v) resilience and coping strategies; and (vi) ACPZ services and infrastructure. Finally, Section 5 discusses the findings in relation to the above questions and concludes.

2 Pilot parks and procurement zones

The Bulbula and Yirgalem IAIP are located, respectively, in the Oromia and Sidama² regions. The Agrocommodity Procurement Zone for the Bulbula park covers 72 woredas within four zones of Oromia region: Arsi, West Arsi, East Shewa and Bale. For Yirgalem, the Agrocommodity Procurement Zone covers Gedeo Zone and Sidama region, accounting for 36 woredas. The IAIP are envisioned to focus investments on specific leading and priority crops for which the production scale up is feasible and the demand for processed output is great. For Bulbula, this implies the prioritization of wheat and dairy as lead commodities, and tomatoes, potatoes, haricot bean and red meat as other priority commodities. For Yirgalem, coffee and avocado represent the lead commodities, while red meat and dairy have been identified as additional priorities.

Figure 1. Agro-industrial park locations of this study and Agrocommodity Procurement Zones (buffer zones)



Notes: Final boundary between the Sudan and South Sudan has not yet been determined.

Source: United Nations Geospatial. 2022. *Ethiopia*. United Nations. Cited 16 September 2022. <https://www.fao.org/hand-in-hand/investment-forum-2022/ethiopia/en>, modified by the authors.

² When the IAIPs were planned, Sidama was a zone forming part of SNNP region. In June 2020, the Sidama Zone separated from SNNP to form its own region.

3 Data and indicators

3.1 Baseline survey

A household survey focused on collecting information on poverty, food security and livelihoods was implemented from 6 May 2022 until 14 June 2022 in 24 woredas within the Bulbula and Yirgalem ACPZ. The survey can be considered as the Hand-in-Hand Initiative baseline for Ethiopia which would ultimately be used to assess the impact of pro-poor agricultural investments in these areas. The sampling design of the survey aimed at deriving statistically representative indicators of the ACPZ areas of interest stratified by the presence of the country's anti-poverty flagship programme. Woredas were selected randomly from the full set of woredas within 125 km of each of the two IAIP, stratifying according to Productive Safety Net Programme (PSNP) status and proximity to the corresponding integrated agro-industrial park. Stratification by PSNP status is important as it is the main initiative of the Government of Ethiopia to tackle poverty and food insecurity, and in its fourth phase started to operationalize a livelihood support component.

Figure 2. Map of Ethiopia with randomly selected woredas for the baseline survey from Oromia, Southern Nations, Nationalities and People's region and Sidama regions



Notes: Figure A1 provides a map of the enumeration areas selected randomly for the survey.

Source: OCHA (United Nations Office for the Coordination of Humanitarian Affairs). 2022. *Ethiopia*. United Nations. Cited 16 September 2022. <https://data.humdata.org/dataset/cod-ab-eth>, modified by the authors.

Three rural enumeration areas were randomly selected from each woreda, within which a listing exercise was conducted in March 2022 to build the sample frame for the survey. The listing exercise instrument collected basic household demographic and dwelling characteristics, as well as the necessary information to stratify households according to poverty status, using the Poverty Probability Index (PPI) methodology. In total, 5 533 households in the Bulbula Agrocommodity Procurement Zone enumeration areas (EAs) and 4 416 households in the Yirgalem

domain were listed. From those, a sample of 2 146 households was drawn from those EAs, and interviewed according to a comprehensive survey instrument, which sought to collect a broad set of information about the full range of household and individual livelihood resources and strategies and their seasonality, livelihood decision-making, household response mechanisms to shocks, risk and time preferences, poverty, and food security. In order to obtain statistics that are representative of the population of the two ACPZ, sampling weights were constructed and are applied in all analyses.

Table 1. Sample size: interviews completed, by Agrocommodity Procurement Zone, poverty status and household head gender

	Bulbula		Yirgalem		Overall	
	Non-poor	Poor	Non-poor	Poor	Non-poor	Poor
Head gender						
Male	389	393	418	431	807	824
Female	146	129	122	118	268	247
Woreda Productive Safety Nets Programme status						
Non-Productive Safety Nets Programme	285	278	186	261	471	539
Productive Safety Nets Programme	230	264	334	308	564	572
Total	1 057		1 089		2 146	

Source: Authors' own elaboration.

3.2 Indicators

The analysis of the livelihood's resources, strategies, constraints and opportunities presented in the next section relies on a series of deprivation and endowment indicators that allow for drawing comparisons across groups within each Agrocommodity Procurement Zone area, for deriving conclusions regarding the questions from Section 4. These indicators are described in the following paragraphs.

The main indicator for assessing poverty status is the **Poverty Probability Index (PPI)** classification. The PPI is a household level estimate of the likelihood a household is poor based on ten criteria: (1) region of residence; (2) household size; (3) education attainment of the household head; (4) household consumption of meat; (5) household consumption of horse bean; (6) construction material of the dwelling roof; (7) main type of toilet facility used by household members; (8) main source of lighting of the household dwelling; (9) main source of cooking fuel; (10) number of axes owned by the household. The responses to those criteria enable the creation of a household PPI score, that is inversely related to poverty. A lower score implies greater deprivation while a higher score greater endowments. Poor households are those falling below the median PPI score within the respective Agrocommodity Procurement Zone.

A Consumption-Augmented Asset Index – hereafter referred to as “asset index” – is constructed following Ngo and Christiansen (2018), applying principal components analysis to obtain an index based on variables from six categories: (1) educational attainment; (2) housing characteristics; (3) durable holdings; (4) staple food consumption; (5) non-staple food consumption; (6) non-food semi-durable holdings.³ The resulting index is increasing in wealth; such that poor households have low values of the index.

Household food insecurity is characterized according to three approaches. First, the **Food Insecurity Experience Scale (FIES)**, an experience-based representation of food insecurity that enables identifying severe, moderate, and

³ Educational attainment is captured through head's years of education; housing characteristics include indicators for households living in house with high-standards toilets, electricity for light, roof made of solid material, floor made of solid materials and walls made of solid materials; durable holdings include the number of tables, sofas, bicycles, wardrobes and sewing machines owned. Staple food consumption indicators include the number of days in the past seven days the household consumed teff, barley, maize, orange roots and other roots. Non-staple food consumption indicators include the number of days in the past seven days the household consumed fats, meat, fish, milk and eggs. Non-food semi-durable holdings include indicators for households owning shoes, soap, toothpaste, charcoal and gabi (traditional handmade cloth).

low insecurity. Second is the **food consumption score** (FCS), a nutrient-weighted dietary diversity score identifying poor, borderline and acceptable food security status (WFP, 2015). Finally, the **food insufficiency** indicator represents insufficient access to food in the previous 12 months, and an indication of when that insufficiency was experienced.

Household vulnerabilities have been demonstrably linked to specific demographic and locational characteristics (Covarrubias, de la O Campos and Cordonnier, 2021). For this reason, the next section also stratifies results according to **gender** in terms of the individual and in terms of the household head; age, identifying **youth** individuals as those between 15 and 30 years of age; and **remoteness** in terms of proximity to specific-key infrastructure.

In addition to the deprivation and vulnerability classifications, an agricultural **resource endowment typology** is also constructed to assess the resource orientation of households in relation to their livelihood's strategies. Households are thus classified as forming part of one of the following groups:

- **No land:** these hold no agricultural land, whether privately or from community sources.
- **Land and livestock constrained:** holdings in the bottom 30 percent of the land and livestock holding (in tropical livestock units [TLU])⁴ distributions.
- **Land endowed:** holdings in the upper 70 percent of the land distribution; crop specialized.
- **Livestock endowed:** holdings in the upper 70 percent of the TLU distribution; livestock specialized.
- **Land and livestock endowed:** includes agropastoralists (according to upper 70 percent criteria, as above).

The livelihoods strategies that will be considered in relation to the resource endowment typology include but are not limited to: (1) ACPZ commodity production (wheat, avocado, dairy, coffee); (2) non-farm enterprise management; (3) salaried-wage participants. A livelihoods activity typology will also enable identifying the predominant sectoral orientation of a household as:

- **On-farm specialized:** households that only participate in crop or livestock production activities.
- **Casual or PSNP labour diversified:** the only diversification strategy employed by the household is in temporary labour or PSNP labour.
- **Non-farm enterprises:** the household diversifies into non-farm enterprises.
- **Salaried-wage work:** the household diversifies into non-agricultural salaries wage work.
- **Non-farm enterprises and salaried-wage work:** the household diversifies into non-farm enterprises and non-agricultural salaries wage work.
- **Maintaining no activity:** the household participates in none of the above activities.

⁴ Tropical livestock units (TLU) represent an equivalence scale for counting different types of livestock in a comparable manner across animals and across global regions. They are calculated using region-specific conversion factors for each animal type: one cow, 0.5 TLU; one heifer, 0.39 TLU; one bull, 0.6; one steer, 0.425 TLU; one calf, 0.2 TLU; one goat, 0.1 TLU; one sheep, 0.1 TLU; one donkey, 0.4 TLU; one horse, 0.4 TLU; one poultry, 0.1 TLU; one bee colony, 0.01 TLU.

4 Results

4.1 Overview of poverty levels and food insecurity prevalence

4.1.1 POVERTY AND FOOD SECURITY

Poverty in the ACPZ analysed affects an important proportion of the rural population. According to the PPI score, nearly half of rural households fall below the median PPI score in their corresponding Agrocommodity Procurement Zone. The average level of the consumption-augmented asset index is also relatively low, with an average value of 0.28 for the entire study area. Around 60 percent of rural households in the Agrocommodity Procurement Zone woredas fall below the average level of the asset index. By both measures – the PPI and the asset index – the level of deprivation is greater in Yirgalem. Both the PPI score and the asset index for Yirgalem households are well below the level of households in Bulbula. However, when considering the PPI, a greater share of households in Bulbula (56 percent) are classified as poor as compared to Yirgalem (47 percent). This suggests that within Bulbula a concentration of ultra-vulnerable households exist, who also suffer from extreme food insecurity, marking a striking disparity with the overall average living standard in the Agrocommodity Procurement Zone.

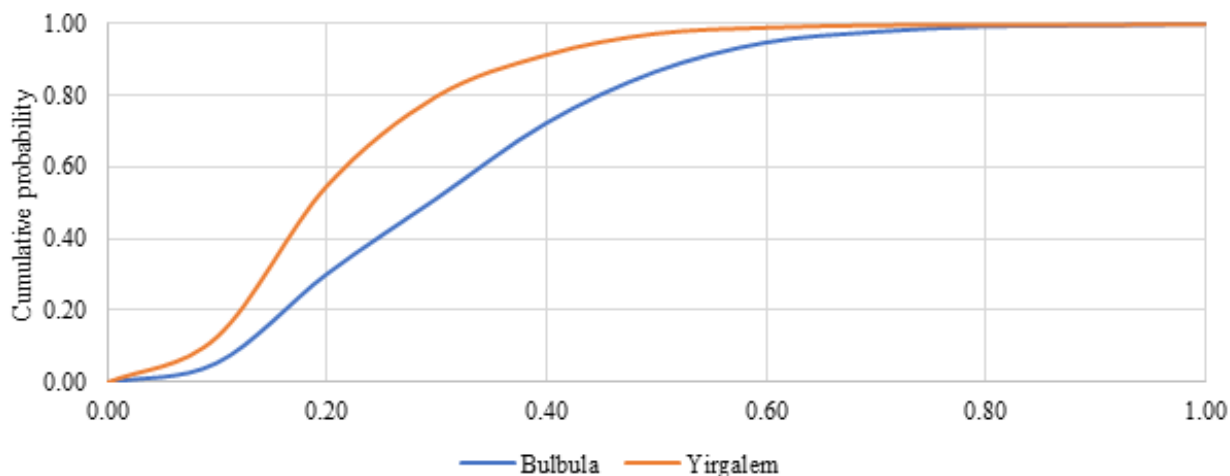
Table 2. Poverty and food insecurity prevalence, by Agrocommodity Procurement Zone

	Bulbula	Yirgalem	Overall
Poverty			
Poverty Probability Index (PPI) Poor (%)	0.56	0.47	0.53
PPI score	0.47	0.31	0.42
Asset index	0.31	0.22	0.28
Food security (%)			
Food Insecurity Experience Scale (FIES) low	0.47	0.33	0.42
FIES moderate	0.32	0.57	0.41
FIES severe	0.21	0.10	0.17
Food Consumption Score (FCS) acceptable	0.30	0.14	0.25
FCS borderline	0.28	0.17	0.24
FCS poor	0.42	0.69	0.51
Food insufficiency	0.69	0.68	0.69
Observations	1 057	1 089	2 146

Source: Authors' own elaboration.

The multidimensional poverty indicators do not fully represent the level of food insecurity – subjective and objective in the ACPZ. Although more than two-thirds of rural households report food insufficiency in Bulbula and Yirgalem, the FCS classifies fewer households as having poor food security in Bulbula than Yirgalem. Nearly 70 percent of rural households in Yirgalem Agrocommodity Procurement Zone are affected by poor food security.

Figure 3. Cumulative distribution of consumption augmented asset index poverty, by Agrocommodity Procurement Zone

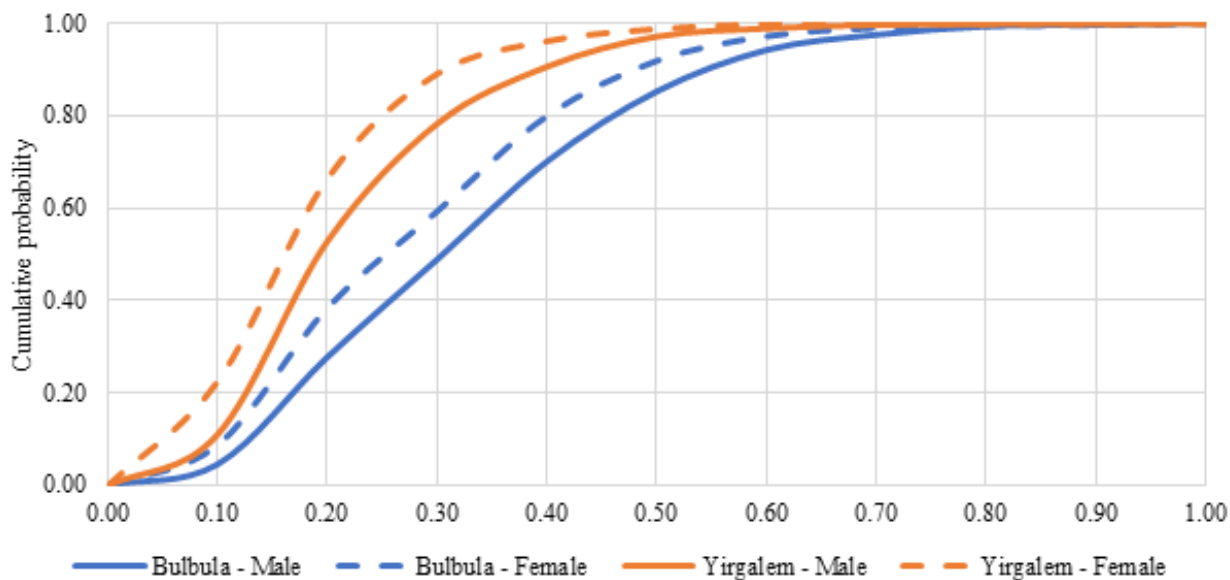


Source: Authors' own elaboration.

4.1.2 GENDER DIFFERENCES IN POVERTY AND FOOD INSECURITY

Poverty and food insecurity in the ACPZ is concentrated among female-headed households. They are more likely than male-headed households to be poor according to the PPI, and they are less endowed in terms of overall assets and consumption, as indicated by the asset index. Female-headed households in Yirgalem Agrocommodity Procurement Zone are among the most vulnerable in their endowments and male-headed households in Yirgalem Agrocommodity Procurement Zone are less endowed than the female-headed in Bulbula Agrocommodity Procurement Zone.

Figure 4. Cumulative distribution of asset index poverty, by Agrocommodity Procurement Zone and head gender

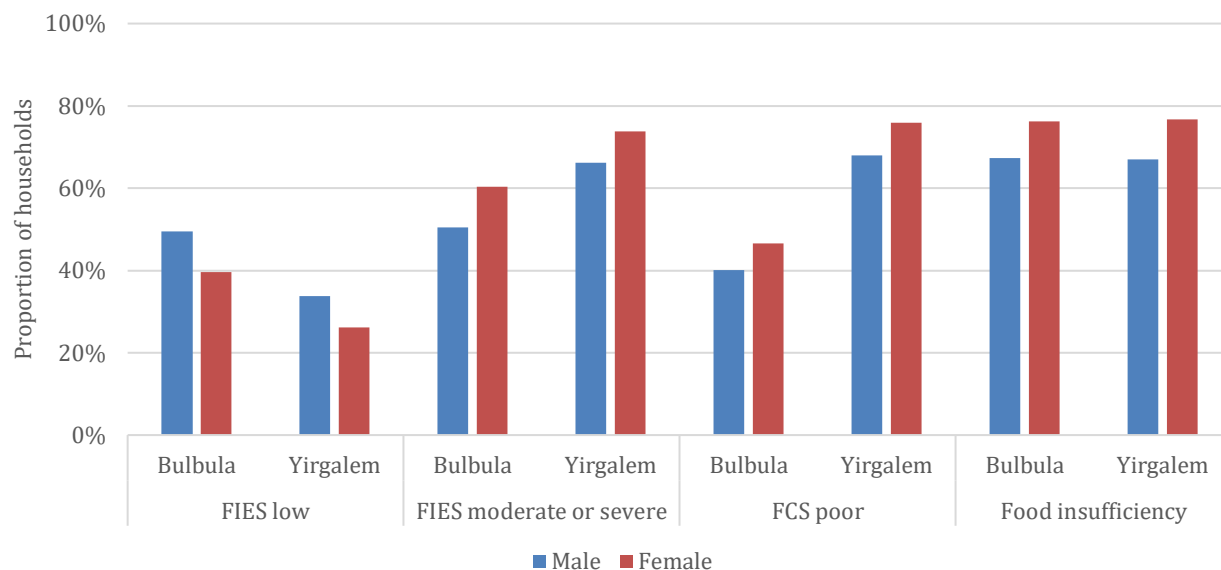


Source: Authors' own elaboration.

In terms of food insecurity, this phenomenon is more prevalent among female-headed households regardless of the indicator used. Across ACPZ areas, male- and female-headed households in Yirgalem are more food insecure than those in Bulbula, reporting greater prevalence of food insecurity experience and significant differences in diet

composition. Across ACPZ areas, among those reporting food insufficiency, at the height of the lean season the prevalence is greater for both male- and female-headed households in Yirgalem as compared to Bulbula, reflecting the generally greater vulnerability of households in that Agrocommodity Procurement Zone.

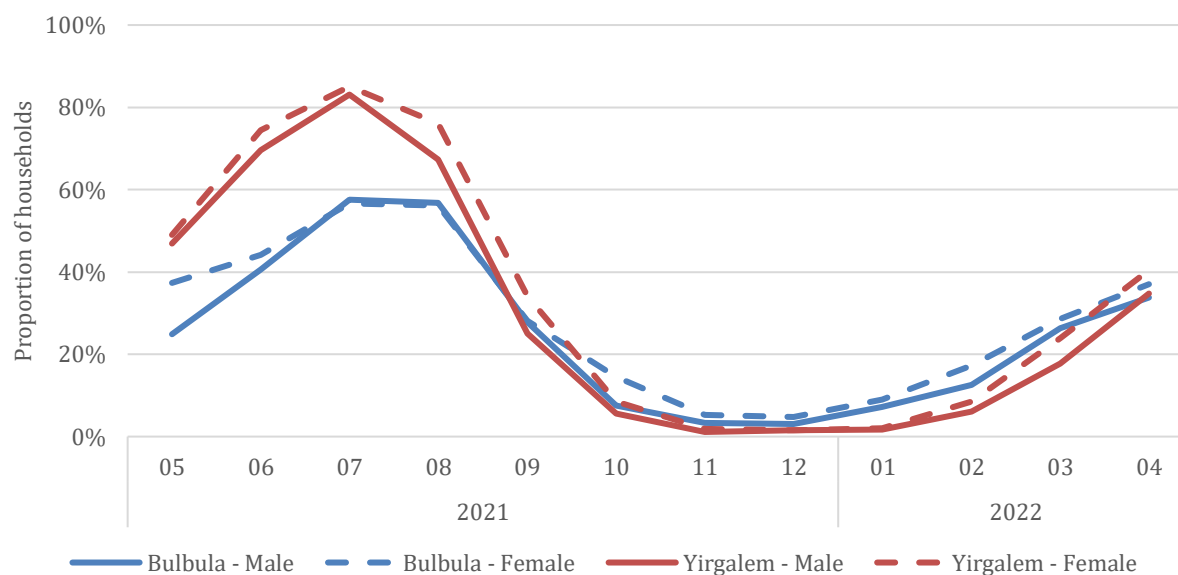
Figure 5. Proportion of food insecure households, by Agrocommodity Procurement Zone and gender of the household head



Notes: FIES stands for food insecurity experience scale; FCS stands for food consumption score.

Source: Authors' own elaboration.

Figure 6. Proportion of households experiencing food insufficiency, by Agrocommodity Procurement Zone, gender of the household head, and month



Source: Authors' own elaboration.

The presence of youth in female- and male-headed households is associated with lower PPI scores and greater food insecurity by the FIES and FCS indicators.

Table 3. Poverty and food insecurity prevalence, by household head gender and presence of youth

	Male headed without youth	Male headed with youth	Female headed without youth	Female headed with youth
Poverty				
Poor (%)	0.41	0.46	0.56	0.55
Poverty Probability Index (PPI) score	40.58	39.58	42.32	38.16
Asset index	0.26	0.27	0.23	0.24
Food security (%)				
Food Insecurity Experience Scale (FIES) low	0.48	0.40	0.34	0.35
FIES moderate	0.42	0.45	0.48	0.44
FIES severe	0.10	0.15	0.18	0.21
Food Consumption Score (FCS) acceptable	0.28	0.22	0.25	0.20
FCS borderline	0.21	0.23	0.22	0.22
FCS poor	0.51	0.55	0.53	0.58
Food insufficiency	0.60	0.68	0.78	0.76
Observations	210	1 421	96	419

Source: Authors' own elaboration.

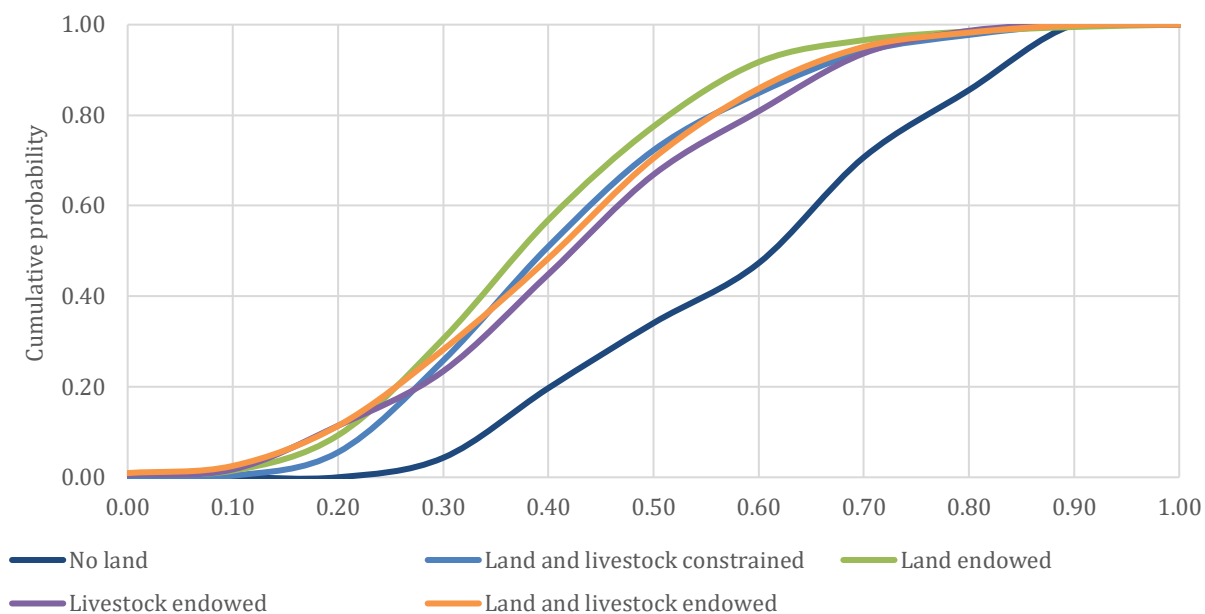
4.1.3 LIVELIHOODS RESOURCE PROFILES

The livelihoods resource base of rural households is closely aligned to poverty and food insecurity incidence, with the most important distinction in deprivation levels depending on access to land, which in turn may reflect the livelihoods strategy available to households. First order stochastic dominance curves in Figure 7 demonstrate that the “no land” households are notably better off in terms of the PPI score, and they report, along with the land and livestock endowed households, the highest endowment in terms of the asset index. The most deprived by these measures are the land endowed (PPI score) and the land and livestock constrained (asset index).⁵

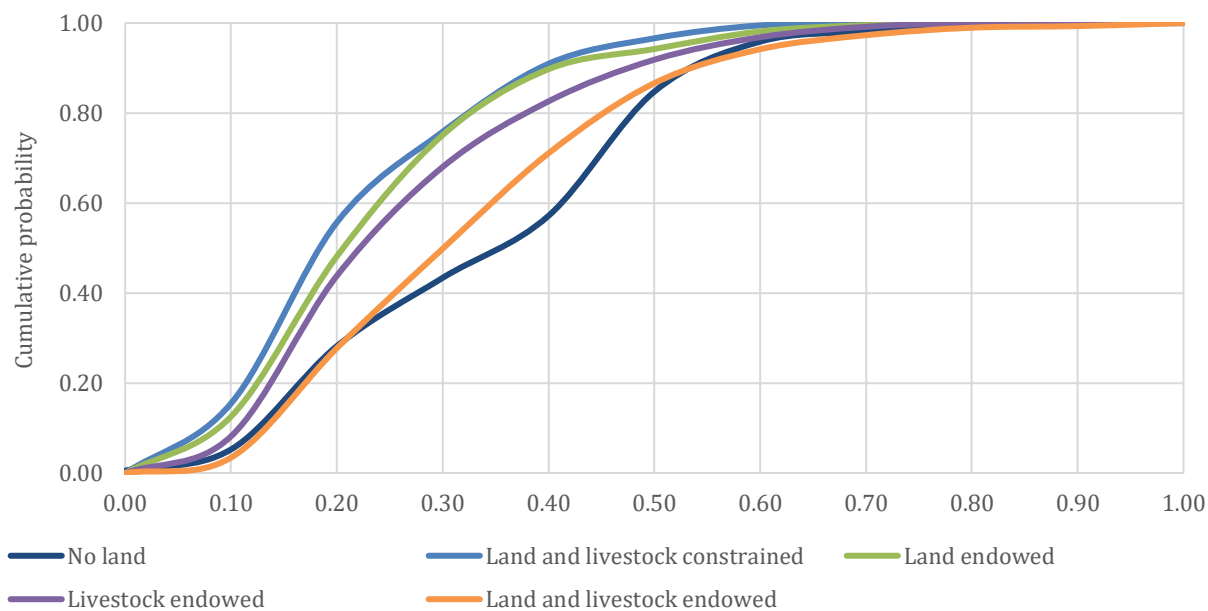
⁵ Table A1 reports the poverty indicators across the livelihood resources typology using the PPI and asset index measures.

Figure 7. Cumulative distribution of poverty and asset indices, by livelihood resources endowment typology

a. Poverty Probability Index



b. Consumption Augmented Asset Index



Source: Authors' own elaboration.

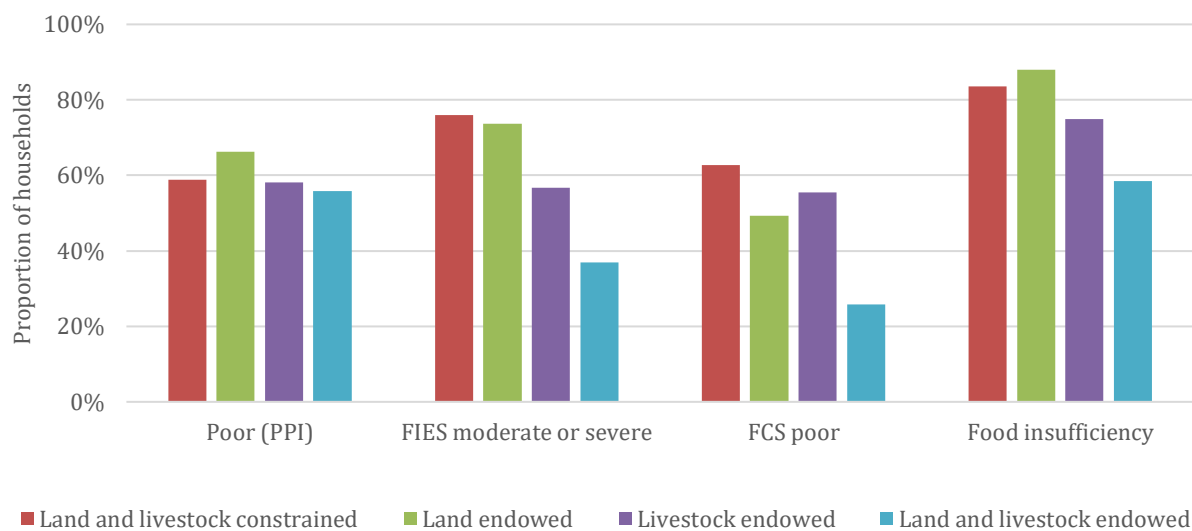
It should be noted that the “no land” group is small – 90 observations split between 76 households in Bulbula and 14 households in Yirgalem – and therefore conclusions based upon this group should be interpreted with caution. Given the size of this group, its results are only reported for the two ACPZ areas combined.

In terms of food security, the land and livestock endowed group in Bulbula is among the most food secure, evidenced by considerably below average prevalence of food insecurity across a range of indicators. In Yirgalem,

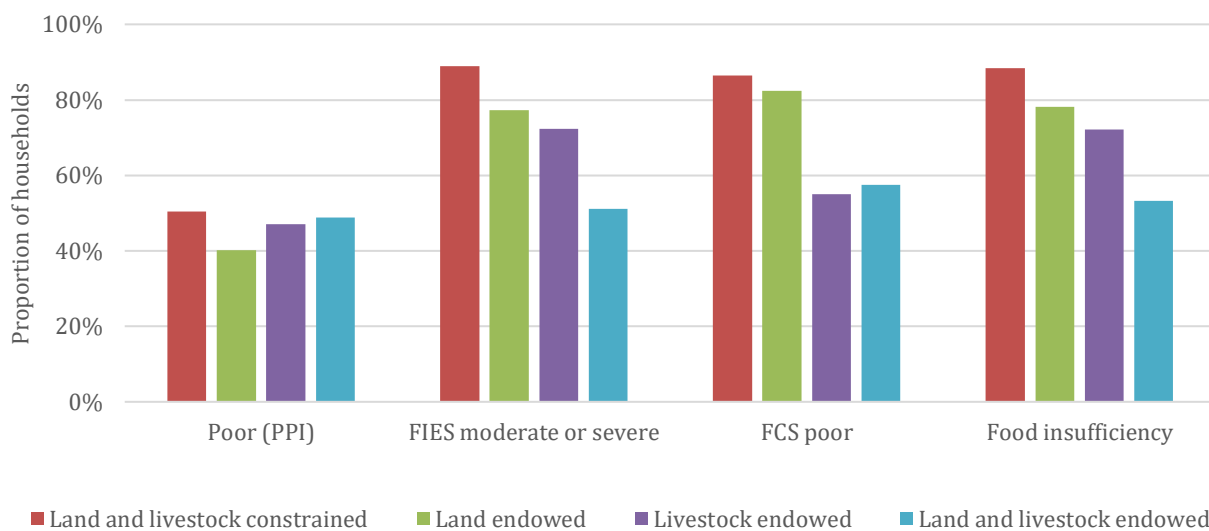
households are generally more food insecure than in Bulbula, but those in the land and livestock endowed group also report a lower prevalence of food insecurity for all three indicators.

Figure 8. Proportion of poor and food insecure households, by livelihoods resources typology

a. Bulbula



b. Yirgalem



Notes: No land group not reported due to limited number of observations. PPI stands for Poverty Probability Index; FIES stands for food insecurity experience scale; FCS stands for food consumption score.

Source: Authors' own elaboration.

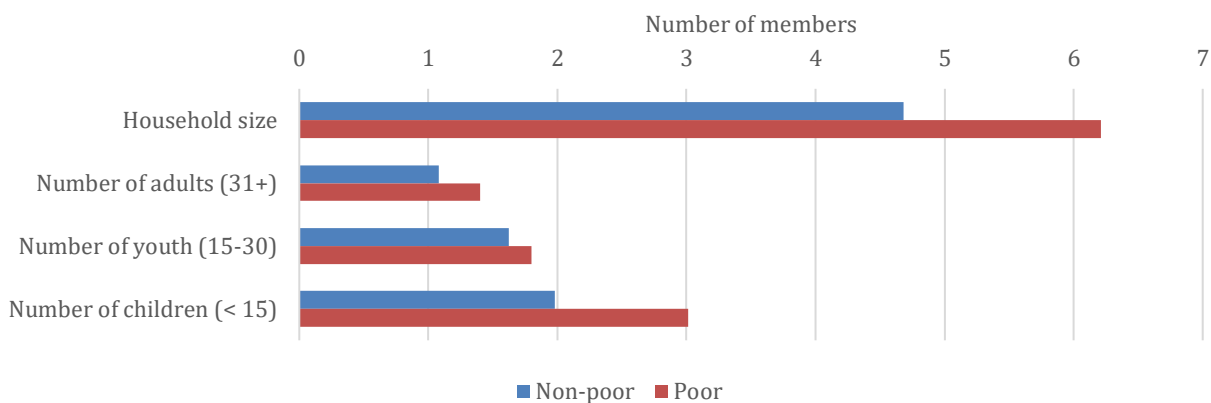
4.2 Asset base of households in the Agrocommodity Procurement Zone areas

4.2.1 HUMAN CAPITAL

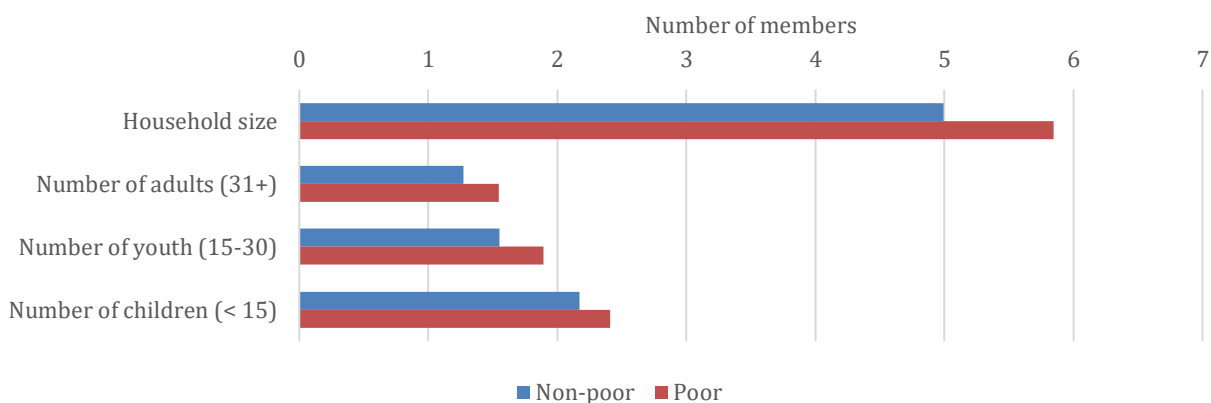
Household structure is closely related to poverty status. Poor households are more likely to be female-headed, to have older heads, and to be larger in size, holding more children and a greater number of male youths.

Figure 9. Household composition, by Agrocommodity Procurement Zone and poverty status

a. Bulbula



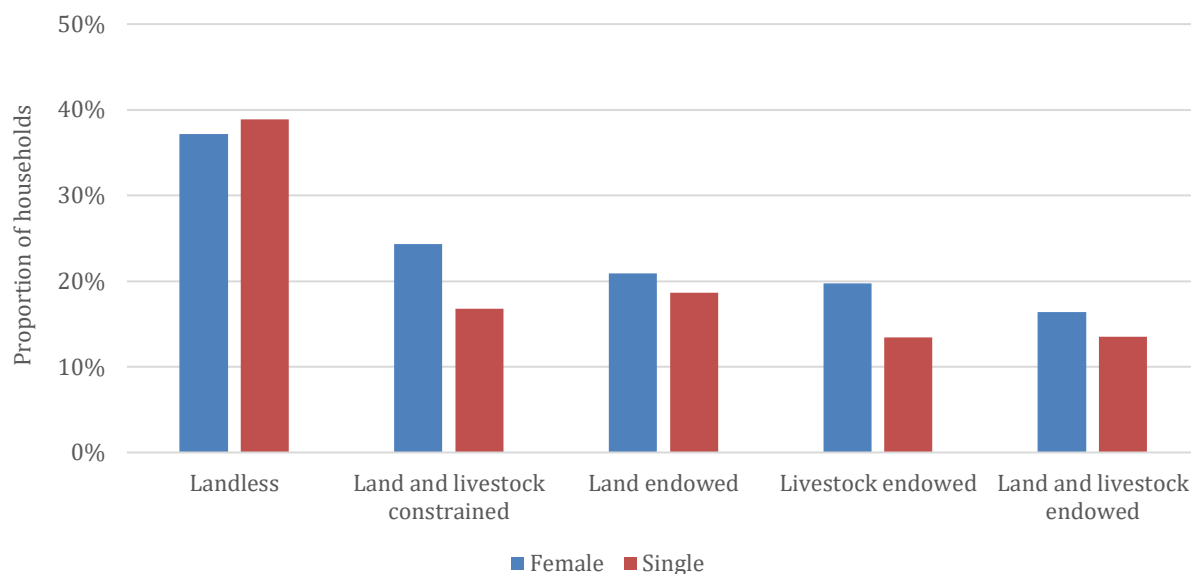
b. Yirgalem



Source: Authors' own elaboration.

Female headship is associated with greater vulnerability as a greater proportion of land constrained households are female headed than those with greater endowments of land and/or livestock. Although over 35 percent of households without land are female headed, these are a small group overall. The head age is oldest and household size greatest among land and livestock endowed households, possibly reflecting land consolidation within multi-generational households.

Figure 10. Household head gender and marital status, by livelihoods resources typology



Source: Authors' own elaboration.

Educational attainment is starkly different across poor and non-poor households in terms of the head's education level, but also the average years of education held by gender and age groups, which are lower in poor households in Bulbula and Yirgalem. In Bulbula, male and female youth in poor households attain only two-thirds to three-quarters the level of education of youth in non-poor households. This difference is likely related to school attendance, which is lower among girls and boys in poor households. In Yirgalem, educational attainment among youth and school attendance among children, is similar across poverty lines, with small differences in average levels. In both ACPZ areas, women report lower levels of educational attainment than men, the greatest divide among mature adults, 31 years and older.

Table 4. Educational attainment and school attendance, by Agrocommodity Procurement Zone and poverty status

	Bulbula			Yirgalem		
	Non-poor	Poor	Difference	Non-poor	Poor	Difference
Years of education						
Head	4.71	2.02	***	5.28	2.60	***
Maximum in household	6.95	5.47	***	7.23	6.38	***
Female 15–30 years old	5.67	3.54	***	5.76	5.44	
Male 15–30 years old	6.46	4.81	***	6.74	6.15	***
Female 31+ years old	1.11	0.66	**	1.50	0.74	***
Male 31+ years old	4.26	2.42	***	5.19	2.91	***
School attendance (among children seven years and older)						
Girls attend school	0.75	0.57	***	0.77	0.71	*
Boys attend school	0.70	0.57	***	0.78	0.72	
Observations	515	542		520	569	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

4.2.2 PHYSICAL CAPITAL: INFRASTRUCTURE, PROXIMITY AND ASSETS

Remoteness characterizes poor households in the ACPZ, with significantly greater distance from roads and markets than non-poor households. Longer travel times are more notable among the poor in Bulbula, reflecting the greater territory covered and greater dispersion of households and infrastructure in that Agrocommodity Procurement Zone as compared to Yirgalem Agrocommodity Procurement Zone, which covers a more limited geography. The greater distance to the nearest water source in Bulbula among the poor may be indicative of the road networks or modes of transportation available to households in Bulbula; but, since it also includes queuing time, the time could also reflect lines experienced at wells, which are accessed by 30 percent of poor households in Bulbula. Instead in Yirgalem, spring water is the most prevalent source of water for domestic use, while wells are used by a minority of households. In terms of water for agriculture, irrigation systems are not mainstream, but their prevalence is 7 percentage points higher among non-poor households in Bulbula.

The relatively greater proximity to infrastructure and services among non-poor households is also reflected in greater connectivity in terms of electricity; non-poor households are twice as likely as poor households to report access to electricity. Furthermore, households in Bulbula are twice as likely as those in Yirgalem to be on the electricity grid.

Table 5. Household access to public services and infrastructure, by Agrocommodity Procurement Zone and poverty status

	Bulbula			Yirgalem		
	Non-poor	Poor	Difference	Non-poor	Poor	Difference
Dwelling						
Owns motor vehicle	0.03	0.01		0.08	0.02	***
Electricity (%)	0.63	0.27	***	0.33	0.15	***
Only rainfed agriculture (%)	0.89	0.96	***	0.93	0.91	
Time to water source (minutes)	46.60	59.52	***	28.43	29.76	
Time to market (minutes)	74.49	84.84	**	45.17	50.71	***
Time to road (minutes)	17.11	27.01	***	12.01	16.10	***
Distance to agro-industrial park	73.79	73.09		33.57	35.68	
Observations	515	542		520	569	

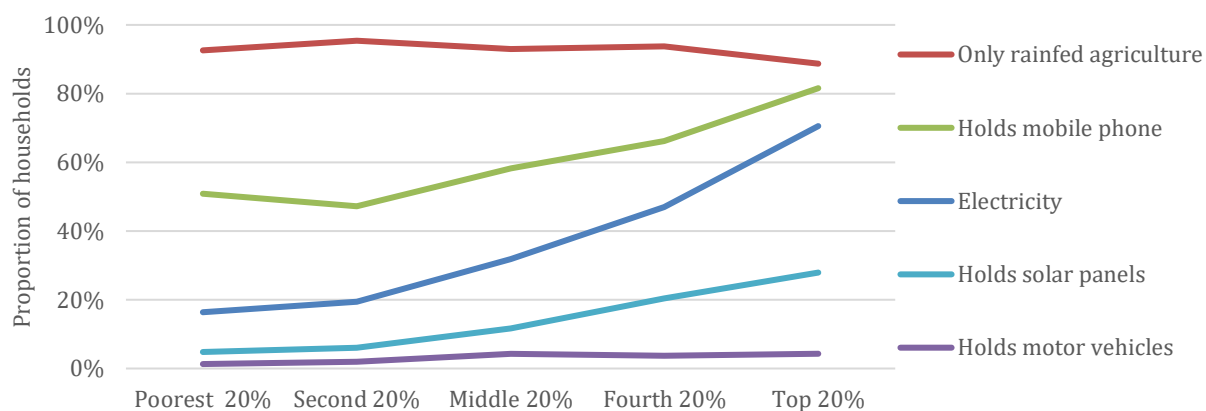
Notes: Time to water source is roundtrip, including queuing time.

Source: Authors' own elaboration.

The limited connectivity of poor households is also reflected in their lower share of mobile phone ownership. In Bulbula, fewer than 60 percent of poor households, report accessing mobile phone as compared to 76 percent among the non-poor group. In Yirgalem, 50 percent of poor households, report accessing mobile phone as compared to 58 percent among the non-poor group.

Motorized and unmotorized vehicle ownership is also limited among all rural households, but significantly less prevalent among poor households.

Figure 11. Access to infrastructure and assets in Bulbula and Yirgalem, by poverty quintiles



Source: Authors' own elaboration.

Access to mechanization for agriculture is extremely constrained, with essentially no households reporting holding a tractor. Traditional ploughs are accessed widely in Bulbula for land preparation among poor and non-poor households. Their use is most prevalent among the livestock endowed and land and livestock endowed groups, reflecting the need for draught animals as labour. For other agricultural implements, harvest and post-harvest equipment, the level of access does not vary substantially across poor and non-poor households. Few households hold equipment that facilitates harvest activities, and a nominal share access silos or drying equipment. Storage bags are held by less than half of rural households; among the poor just over one-third report access. The overall low level of agricultural equipment held points to a limited capacity to store, process and add value to agricultural output.

Table 6. Household access to agricultural machinery and implements, by Agrocommodity Procurement Zone and poverty status

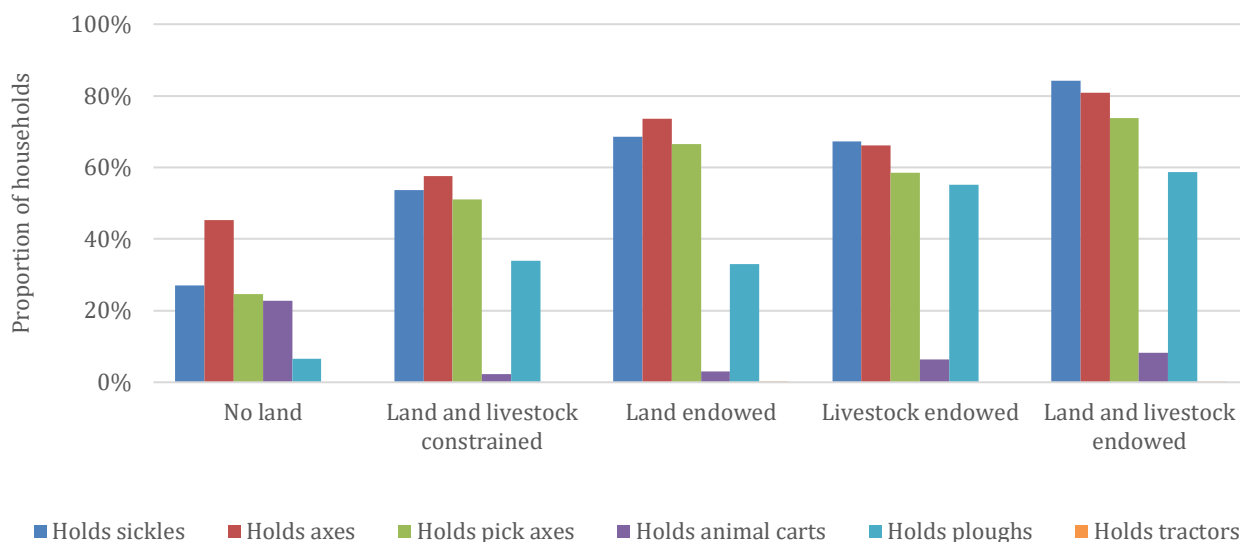
	Bulbula			Yirgalem		
	Non-poor	Poor	Difference	Non-poor	Poor	Difference
Holds animal carts	0.10	0.07		0.03	0.04	
Holds ploughs	0.71	0.69		0.03	0.06	
Holds tractors	0.00	0.00		0.00	0.00	
Holds sickles	0.74	0.77		0.61	0.63	
Holds axes	0.68	0.67		0.79	0.79	
Holds pickaxes	0.62	0.62		0.70	0.64	**
Holds ladders	0.22	0.12	***	0.30	0.32	
Holds avocado harvesters (pole pickers; hand clippers)	0.00	0.00		0.06	0.02	***
Holds harvesting equipment	0.14	0.19	*	0.31	0.28	
Holds storage bags	0.46	0.36	***	0.41	0.38	
Holds silos	0.06	0.05		0.04	0.02	
Holds drying equipment	0.00	0.00		0.08	0.06	
Observations	515	542		520	569	

Notes: Avocado harvester refers to non-mechanized tools (pole pickers; hand clippers).

Source: Authors' own elaboration.

If ownership of agricultural machinery and assets is described over the livelihoods resource typology, the land and livestock constrained group emerges with the lowest prevalence of all sorts of assets, with only around half holding sickles or axes and only 30 percent any plough. Instead, the land and livestock endowed are significantly more likely to hold all sorts of agricultural assets, and nearly twice as likely to hold ploughs.

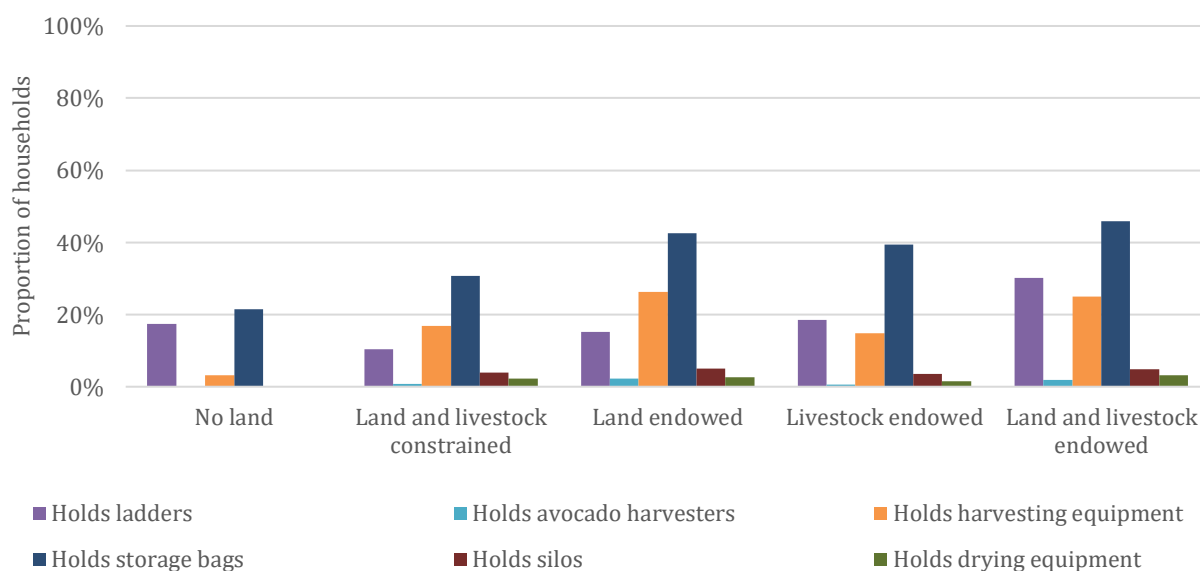
Figure 12. Proportion of households accessing agricultural machinery and assets, by livelihoods resources typology



Source: Authors' own elaboration.

Fewer differences are seen across livelihoods resource typology in terms of access to harvest and post-harvest equipment, with ladders, harvesting equipment and storage bags being the most commonly held implements; however, the majority of producers do not hold any of these items. Land and livestock constrained households are the least likely to hold these items, reflecting their overall more marginal position.

Figure 13. Proportion of households accessing harvest and post-harvest equipment, by livelihoods resources typology

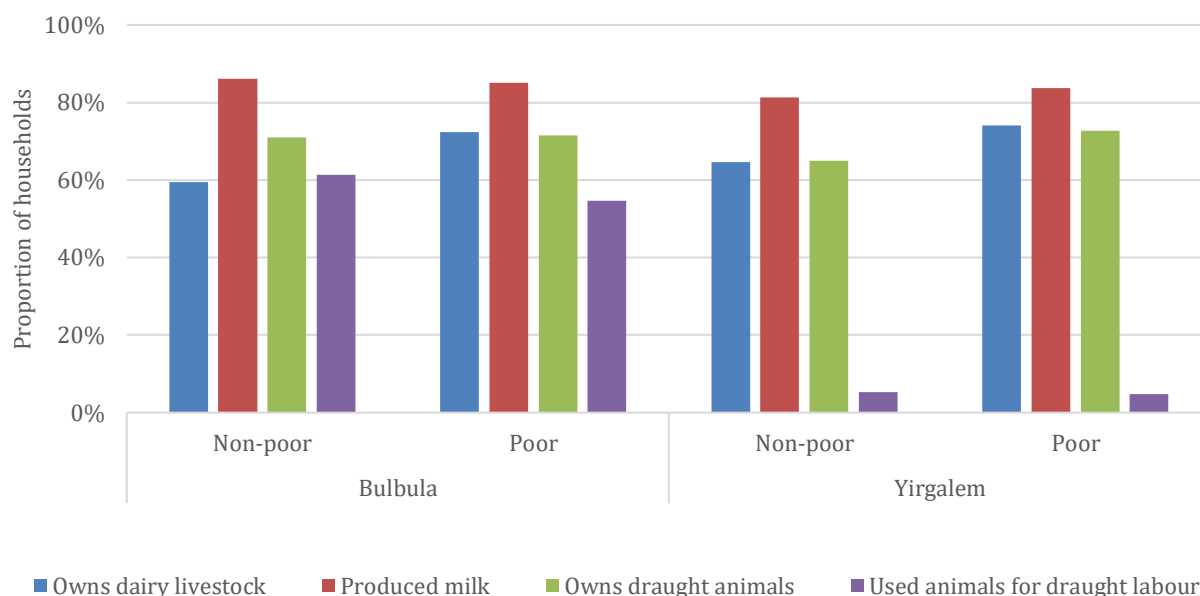


Source: Authors' own elaboration.

4.2.3 LIVESTOCK AND ANIMAL HOLDINGS

Holding animals is not differentiated along poverty lines, with most households holding some sort of small or large farm animal. In both ACPZ areas, raising animals is part of the agricultural livelihood strategy, with most holders holding animals for milk production or draught labour. However, in Yirgalem, few report using animals for draught labour. Furthermore, in Bulbula and Yirgalem, roughly 20 percent of households that hold milk producing animals do not report milking their animals, suggesting a potential animal productivity issue either in terms of breeding to encourage production or in terms of animal nutrition and feeding practices.

Figure 14. Proportion of households holding livestock and its purpose, by Agrocommodity Procurement Zone and poverty status



Source: Authors' own elaboration.

The level of animal holdings varies substantially different across resource base criteria. Livestock endowed households hold five to nine times more livestock than land and livestock constrained households. Households that are land but not livestock endowed hold disproportionate numbers of poultry, as do those that are land and livestock constrained. Furthermore, among the small set of households comprising the “no land” group, more than half report owning livestock of different kinds such as donkeys (27 percent), bulls (24 percent), cows (20 percent) and poultry (20 percent).

While few households in these groups hold bee colonies, those that are land and livestock endowed are slightly more likely to hold some. However, among those holding bee colonies, those that are only land endowed hold a greater number of colonies than land endowed or only livestock endowed households.

Table 7. Household access to livestock, by livelihoods resources typology

	No land	Land and livestock constrained	Land endowed	Livestock endowed	Land and livestock endowed
Owens livestock (%)	0.56	0.65	0.71	1.00	1.00
Tropical livestock units	1.03	0.24	0.29	1.81	2.80
Owens cows (%)	0.20	0.13	0.17	0.75	0.83
Number held	1.77	1.00	1.00	1.51	1.98
Owens heifers (%)	0.08	0.08	0.10	0.36	0.53
Number held	1.41	1.00	1.00	1.62	1.64
Owens bulls (%)	0.24	0.04	0.03	0.43	0.61
Number held	2.71	1.00	1.00	1.55	1.90
Owens steers (%)	0.18	0.01	0.00	0.21	0.28
Number held	2.87	1.23	1.00	1.49	1.44
Owens calves (%)	0.06	0.04	0.03	0.33	0.44
Number held	1.21	1.13	1.09	1.42	1.46
Owens goats (%)	0.02	0.11	0.13	0.26	0.24
Number held	2.24	1.49	1.69	2.40	3.72
Owens sheep (%)	0.05	0.12	0.12	0.23	0.39
Number held	3.37	1.72	1.69	2.69	3.88
Owens donkey (%)	0.27	0.13	0.16	0.40	0.45
Number held	1.18	1.15	1.03	1.30	1.52
Owens horse (%)	0.05	0.01	0.03	0.08	0.19
Number held	1.26	1.00	1.34	1.23	1.43
Owens poultry (%)	0.20	0.30	0.30	0.35	0.50
Number held	3.32	2.92	2.70	3.53	4.49
Owens bee colonies (%)	0.00	0.02	0.02	0.02	0.07
Number held		3.95	6.33	1.00	3.62
Observations	90	420	404	235	997

Source: Authors' own elaboration.

4.2.4 NATURAL CAPITAL: LAND AND TENURE

Land holdings are not differentiated across poverty lines within each ACPZ area; poor and non-poor households hold approximately similar quantities of land. The access mechanism does vary, with more poor households accessing land through allocation. Non-poor households are more likely than poor households to engage in sharecropping arrangements in Bulbula, and to rent-in land.

Table 8. Household access to land and tenure, by Agrocommodity Procurement Zone and poverty status

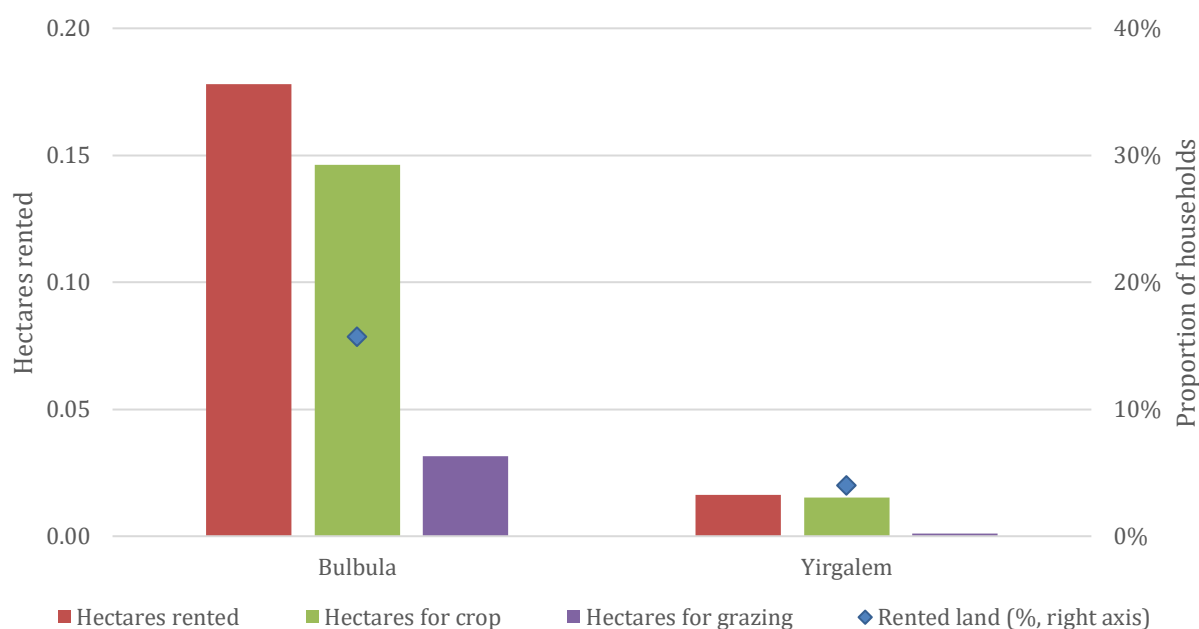
	Bulbula			Yirgalem		
	Non-poor	Poor	Difference	Non-poor	Poor	Difference
Land						
Owns land	0.90	0.97	***	0.98	0.99	
Land size (hectares)	1.20	1.14		0.73	0.71	
Land through allocation	0.19	0.24	*	0.08	0.12	**
Land through inheritance	0.72	0.75		0.90	0.86	*
Land through sharecropping	0.10	0.06	**	0.04	0.04	
Land through rental	0.17	0.10	***	0.04	0.04	
Observations	515	542		520	569	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

Even among households renting in land, the surface area accessed through this mechanism is relatively small, representing less than one-fifth of total land holdings in Bulbula and around 5 percent of holdings in Yirgalem.

Figure 15. Proportion of households renting in land, and hectares rented, by Agrocommodity Procurement Zone



Source: Authors' own elaboration.

Female-headed households are disadvantaged in their access to land. Among households in Bulbula, they hold an average of 0.3 hectares less land than male-headed households and among those in Yirgalem, 0.13 hectares less land than their male counterpart. Female-headed households are also significantly less likely to sharecrop and rent in land. Their access to land relies disproportionately on inheritance and allocation, reflecting the patriarchal system of access to land resources.

Table 9. Household access to land and tenure, by Agrocommodity Procurement Zone and head gender

	Bulbula			Yirgalem		
	Male	Female	Difference	Male	Female	Difference
Land						
Owns land	0.95	0.91	**	0.99	0.96	**
Land size (hectares)	1.24	0.94	***	0.74	0.61	**
Land through allocation	0.19	0.34	***	0.10	0.14	
Land through inheritance	0.77	0.62	***	0.89	0.83	**
Land through sharecropping	0.10	0.03	***	0.04	0.03	
Land through rental	0.15	0.07	***	0.04	0.02	**
Observations	782	275		849	240	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

Access to communal lands for crop cultivation or animal grazing is reported by 18 percent of households in Bulbula and 25 percent of households in the Yirgalem ACPZ area. While in Bulbula comparable shares of household report accessing communal lands for crop cultivation and animal grazing, in the Yirgalem area, twice as many households access communal lands for grazing than cultivation purposes. Across gender lines, more female-headed households in Yirgalem access communal lands for crop cultivation purposes, reflecting their greater constraints in access to land holdings.

Table 10. Household access to communal land, by Agrocommodity Procurement Zone and head gender

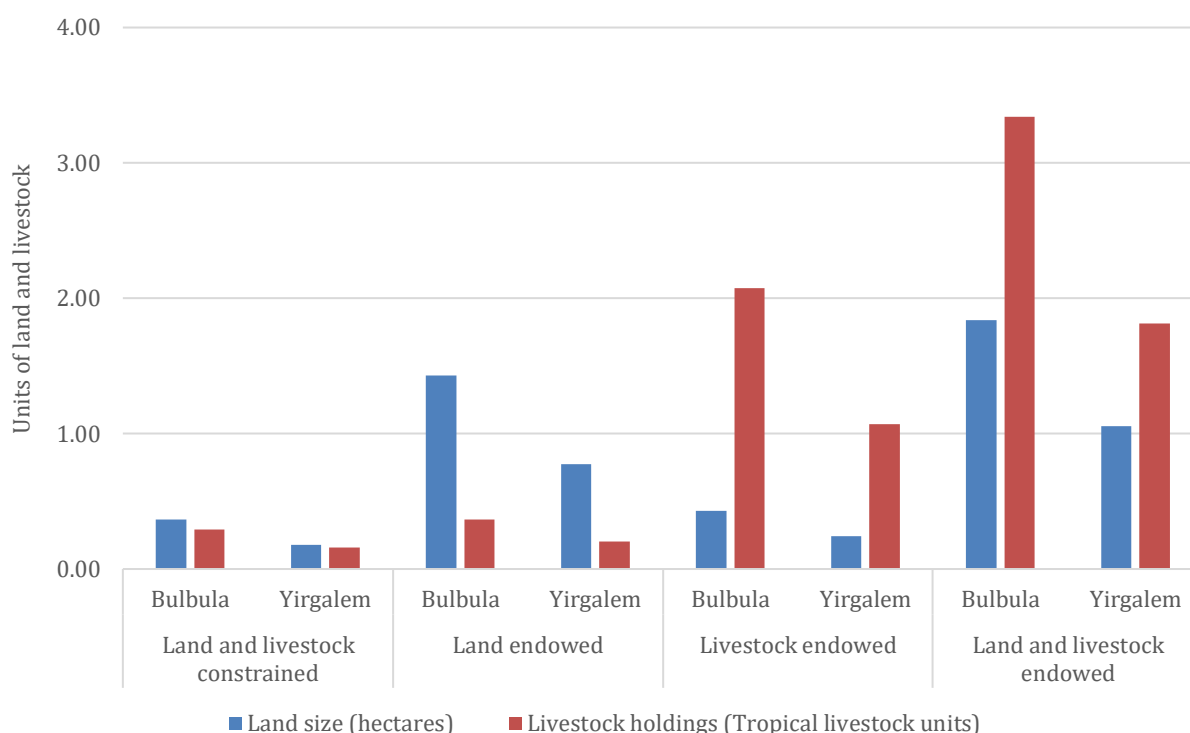
	Purpose		
	Communal lands	Crop cultivation	Grazing
Overall	0.20	0.10	0.14
Bulbula	0.18	0.11	0.12
Male headed	0.18	0.11	0.12
Female headed	0.18	0.11	0.13
Yirgalem	0.25	0.10	0.19
Male headed	0.24	0.09	0.19
Female headed	0.29	0.15	0.18
Livelihoods activity typology			
On-farm specialization	0.21	0.11	0.15
Temporary/Productive Safety Nets Programme (PSNP) diversification	0.27	0.14	0.15
Non-farm enterprises diversification	0.13	0.03	0.12
Wage diversification	0.12	0.02	0.10
Non-farm enterprise + wage diversification	0.30	0.26	0.14
Livelihoods resource typology			
Landless	0.00	0.00	0.00
Land and livestock constrained	0.18	0.14	0.07
Land endowed	0.25	0.16	0.13
Livestock endowed	0.15	0.07	0.12
Land and livestock endowed	0.23	0.08	0.20

Source: Authors' own elaboration.

A slightly greater proportion of poor households than non-poor households make use of communal lands as part of their agricultural strategy. This tendency is reflected in the disproportionately higher share of households with casual labour and PSNP livelihoods diversification making use of communal lands, despite being classified as “land endowed” households. Instead, on-farm specialized households that are land and livestock constrained, are less likely to access communal lands, despite their resource constraints. Communal lands are also disproportionately accessed by land and livestock endowed households, reflecting their overall greater animal holdings.

Overall, the resource base of households varies considerably across the ACPZ areas, in relation to the level of access to agricultural land and livestock. The land and livestock constrained in both ACPZ areas are marginal holders of both agricultural resources, representing one-fifth of rural households in both regions. These households hold less than one half of a hectare of agricultural land, and only small livestock, as they also hold around one-quarter of a unit of TLU. Land and/or livestock endowed households hold between 1 and 2 hectares of land, and anywhere from 1 to more than 3 TLUs, representing a much more significant resource base, when compared to the land and livestock constrained group. The next section illustrates how that resource base influences the livelihoods orientation of different population groups in the ACPZ areas.

Figure 16. Average land and livestock holdings, by Agrocommodity Procurement Zone



Source: Authors’ own elaboration.

4.3 Livelihoods strategies

4.3.1 HOUSEHOLD LIVELIHOOD ACTIVITIES PROFILES

The resource base to which households hold access is an important factor that influences the livelihoods activities undertaken by the household. This section describes how household livelihoods are shaped considering their resource base. Firstly, households without land are characterized by a starkly different livelihoods orientation than those with some endowment of land and/or livestock. Nearly 80 percent of the “no land” group engages in non-farm enterprises and/or salaried-wage employment.

Table 11. Household livelihoods activity typology, by livelihoods resources typology

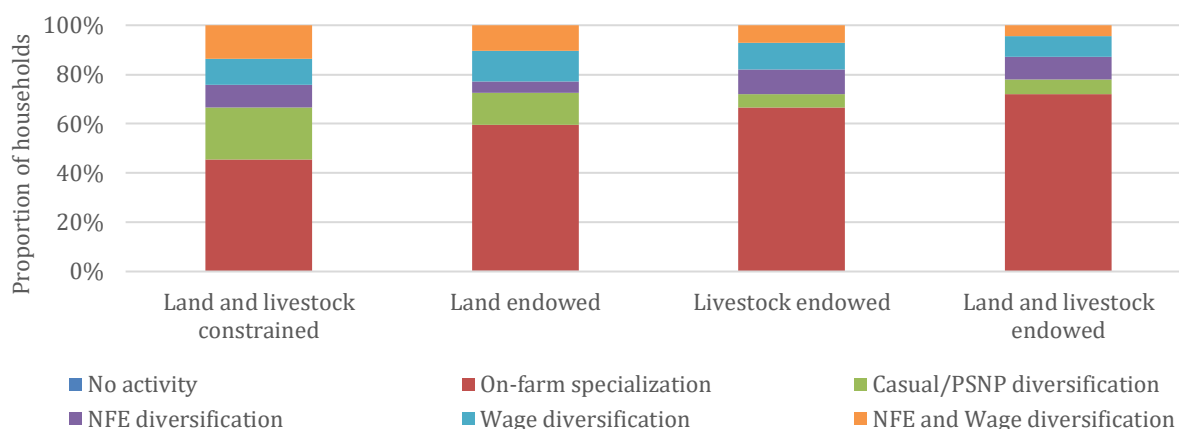
	No land	Land and livestock constrained	Land endowed	Livestock endowed	Land and livestock endowed
On-farm specialization	0.09	0.51	0.62	0.68	0.71
Casual/ Productive Safety Nets Programme (PSNP) diversification	0.10	0.20	0.12	0.07	0.06
Non-farm enterprises (NFE) diversification	0.42	0.12	0.11	0.10	0.12
Wage diversification	0.11	0.08	0.09	0.09	0.08
NFE + wage diversification	0.25	0.09	0.06	0.06	0.03

Source: Authors' own elaboration.

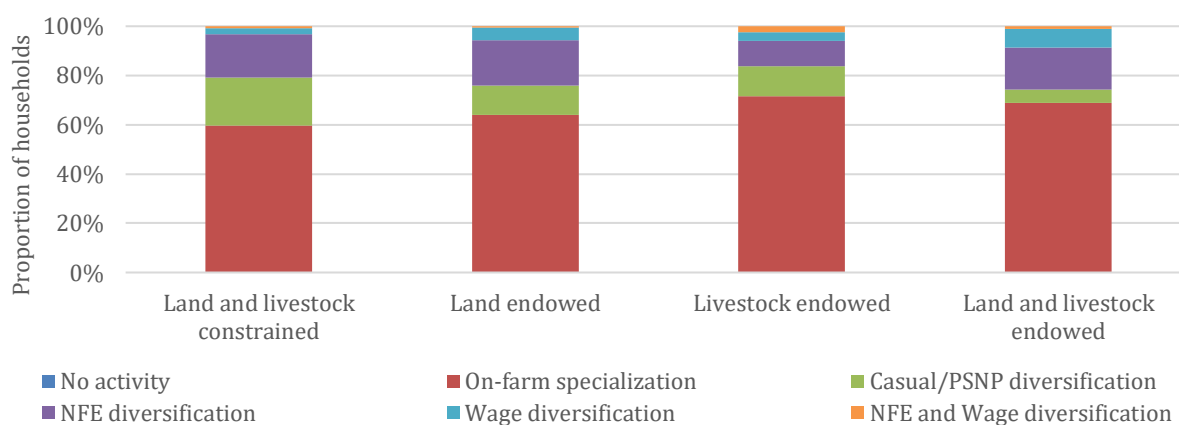
In both Bulbula and Yirgalem, diversification into non-farm enterprises and/or salaried-wage work characterizes only around 20 to 30 percent of households, with minor variation across livelihoods groups.

Figure 17. Proportion of households, by livelihoods activity and livelihoods resources typology

a. Bulbula



b. Yirgalem



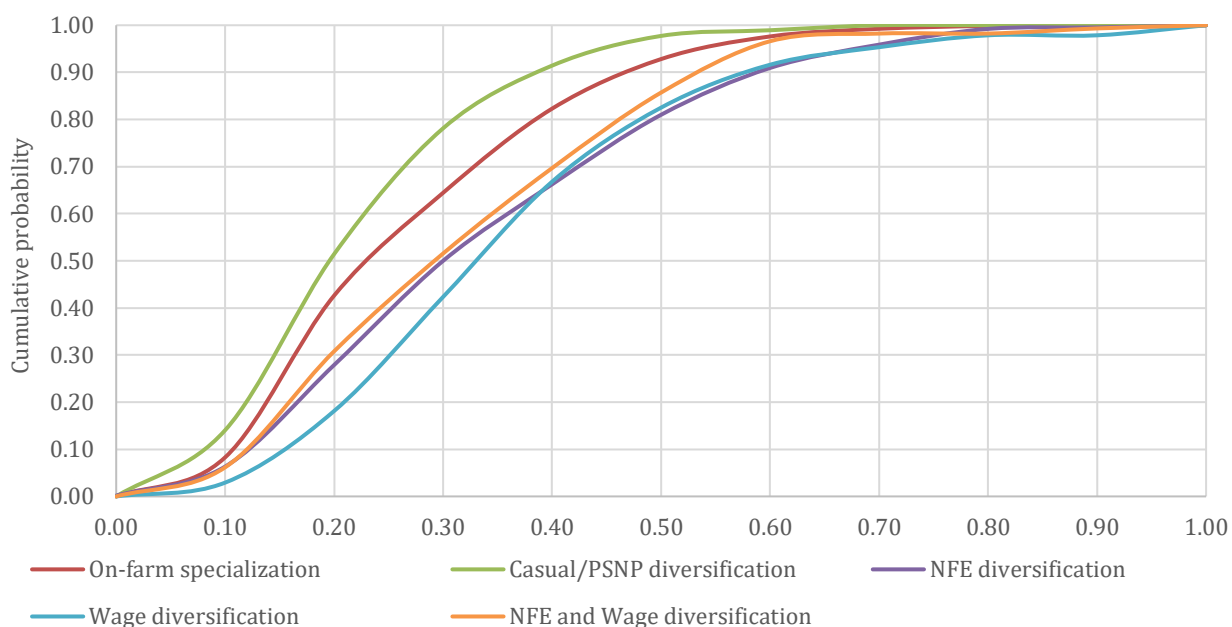
Note: PSNP stands for Productive Safety Nets Programme; NFE stands for non-farm enterprises.

Source: Authors' own elaboration.

By contrast, households holding the greatest endowment of land and livestock are largely specialized in on-farm activities, with about one-quarter diversifying in higher-entry-barrier off-farm activities (wage and non-farm enterprises). Among those constrained in land and livestock, on-farm specialization characterizes less than half of households, reflecting their land constraints. Off-farm diversification among this group is evenly split between those maintaining salaried-wage work and non-farm enterprises, and those that instead diversify primarily into casual work and PSNP labour, reflecting their more vulnerable position; they are more likely to receive social assistance and to have been a PSNP beneficiary in the previous 12 months.

Overall, households across all resources endowments that engage in casual or PSNP labour are among the poorest in the ACPZ areas. Instead, those participating in wage and non-farm enterprise diversification are those with the greatest endowment of the asset index as well, reflecting an overall stronger livelihood position.

Figure 18. Cumulative distribution of consumption augmented asset index, by livelihood activity typology



Notes: PSNP stands for Productive Safety Nets Programme; NFE stands for non-farm enterprises.

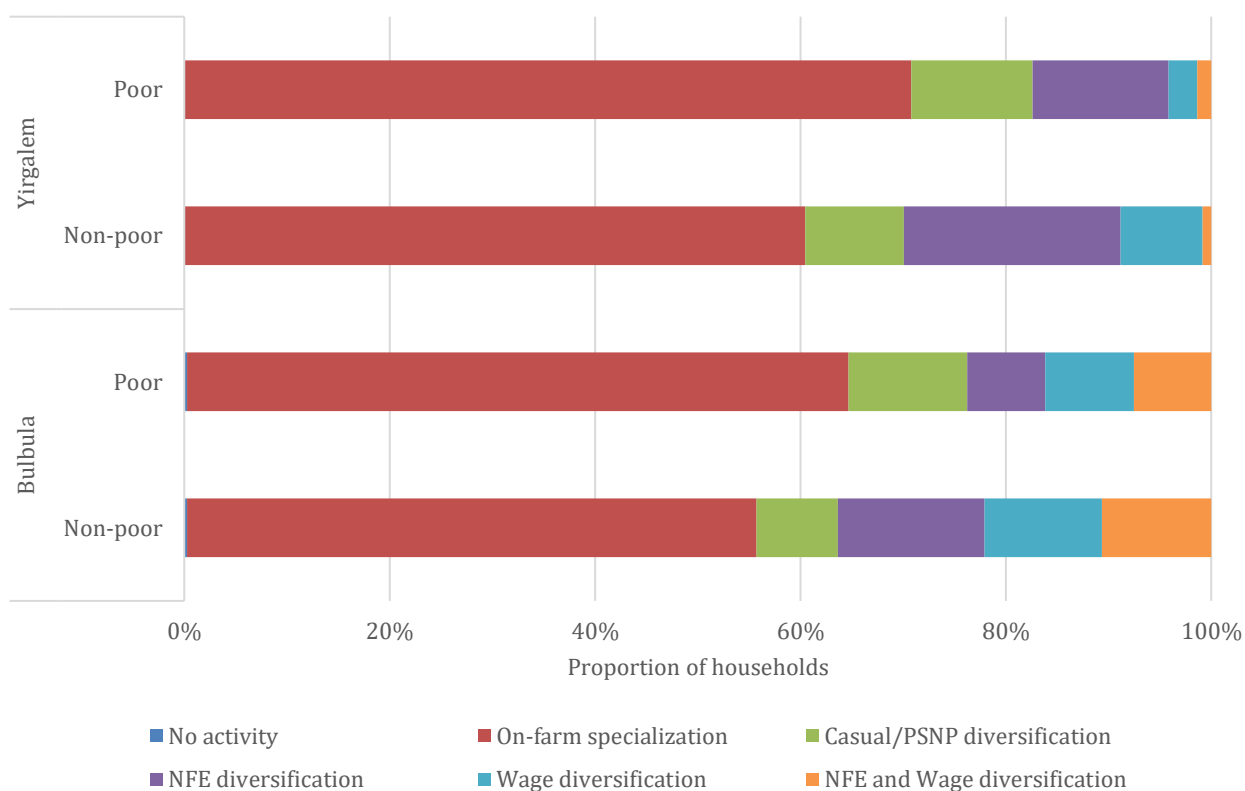
Source: Authors' own elaboration.

Across the ACPZ areas, diversification into non-farm enterprises⁶ and salaried-wage work is greater in Bulbula Agrocommodity Procurement Zone, with nearly 40 percent of the non-poor households reporting participation and over 20 percent of poor households engaged in such activities. The types of enterprises that poor versus non-poor households engage in reflect entry barriers to certain activities, but also highlight the areas in which poor households may be better positioned to diversify off-farm. For example, nearly twice as many poor households in Bulbula operate as traders or in aggregation than non-poor households, illustrating how poor households seek to leverage the highly agricultural orientation of rural areas (see Table A2).

Participation in these activities is somewhat lower among households in Yirgalem Agrocommodity Procurement Zone, and very few households participate in both non-farm enterprises and salaried-wage work. The characteristics of participants in off-farm work are further described in Sections 4.4.5 and 4.4.6.

⁶ Section 4.4.6 provides more details and shows that main types of non-farm enterprises include trading and agroprocessing enterprises.

Figure 19. Proportion of households, by livelihoods activity, Agrocommodity Procurement Zone and poverty status



Note: PSNP stands for Productive Safety Nets Programme; NFE stands for non-farm enterprises.

Source: Authors' own elaboration.

Within the agricultural sector, nearly all households report some agricultural activity, with few differences across poverty status. Across ACPZ areas, only meat production is more differentiated geographically, with 20 to 30 percent of households in Bulbula participating, as compared to fewer than 15 percent of households in Yirgalem. This difference reflects a 10 percentage points different in livestock participation across households in the two ACPZ.

Table 12. Household livelihoods activity participation, by Agrocommodity Procurement Zone and poverty status

	Bulbula			Yirgalem		
	Non-poor	Poor	Difference	Non-poor	Poor	Difference
On-farm activities						
Any on-farm activity	0.97	0.99	**	0.99	1.00	*
Crop	0.89	0.97	***	0.98	0.99	
Livestock	0.88	0.91		0.78	0.82	
Dairy production	0.32	0.39	**	0.32	0.37	
Meat production	0.30	0.22	**	0.11	0.14	
Diary & meat production	0.04	0.03		0.01	0.00	
Off-farm activities						
Any off-farm activity	0.41	0.27	***	0.36	0.26	***
Salaried wage	0.22	0.16	**	0.09	0.04	***

	Bulbula			Yirgalem		
	Non-poor	Poor	Difference	Non-poor	Poor	Difference
Casual labour	0.12	0.09		0.09	0.12	
Non-farm enterprises (NFE)	0.25	0.15	***	0.22	0.15	***
Migration						
Any migration	0.02	0.01		0.04	0.04	
Temporary migration	0.00	0.00		0.00	0.00	
Labour migration	0.02	0.01		0.04	0.04	
Social protection						
Productive Safety Nets Programme (PSNP) ever	0.08	0.13	**	0.05	0.09	**
PSNP past 12 months	0.07	0.13	***	0.03	0.08	***
PSNP direct support	0.03	0.07	***	0.02	0.05	**
PSNP public works	0.06	0.09		0.03	0.06	**
PSNP livelihoods	0.03	0.09	***	0.02	0.06	***
Other social assistance	0.14	0.06		0.11	0.08	
Livelihood activities typology						
No activity	0.04	0.04		0.02	0.02	
On-farm specialization	0.00	0.00		0.00	0.00	
Casual/PSNP diversification	0.55	0.64	***	0.60	0.71	***
NFE diversification	0.08	0.12	*	0.10	0.12	
Wage diversification	0.14	0.08		0.21	0.13	***
NFE + wage diversification	0.11	0.09		0.08	0.03	
Observations	0.11	0.08		0.01	0.01	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

4.3.2 INDIVIDUAL-LEVEL PARTICIPATION IN ECONOMIC ACTIVITIES

This section describes the livelihoods activities at an individual level, focusing on gender and age-related trends, as well as in relation to poverty status and resource endowments.

Participation in household agriculture is reported by 65 to 90 percent of adults in the ACPZ areas. Male individuals and those over 30 years of age participate with greater frequency in household agriculture than women or youth. Along education lines, participation in household agriculture decreases with higher levels of education, particularly among individuals in Yirgalem. Individuals in Bulbula with greater levels of education are more likely to engage in non-farm enterprises and salary wage work, a trend that is evident only for salaried-wage work in Yirgalem. Participation in non-farm enterprises is similarly prevalent among all education levels in Yirgalem, however the type of enterprise may vary according to educational attainment and in relation to poverty, as Section 4.4.6 will illustrate.

Figure 20. Proportion of adult individuals participating in economic activities, by Agrocommodity Procurement Zone, age, gender and educational attainment

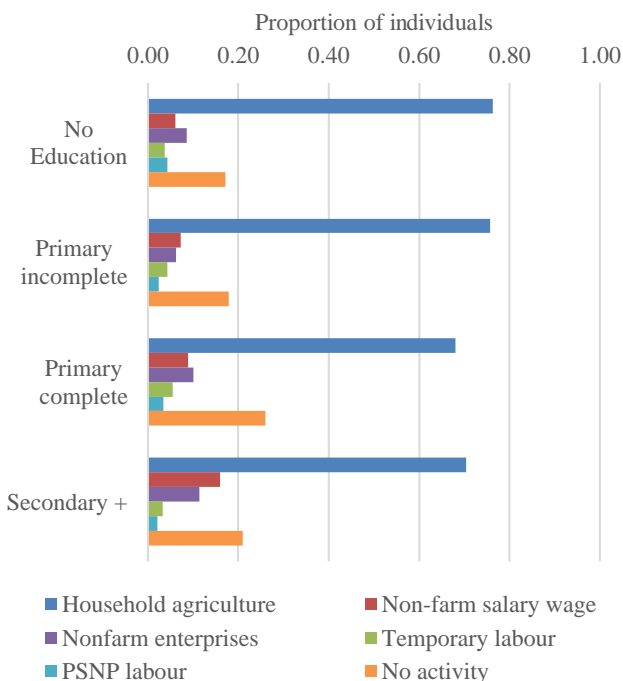
a. Bulbula: individual participation in livelihoods activities



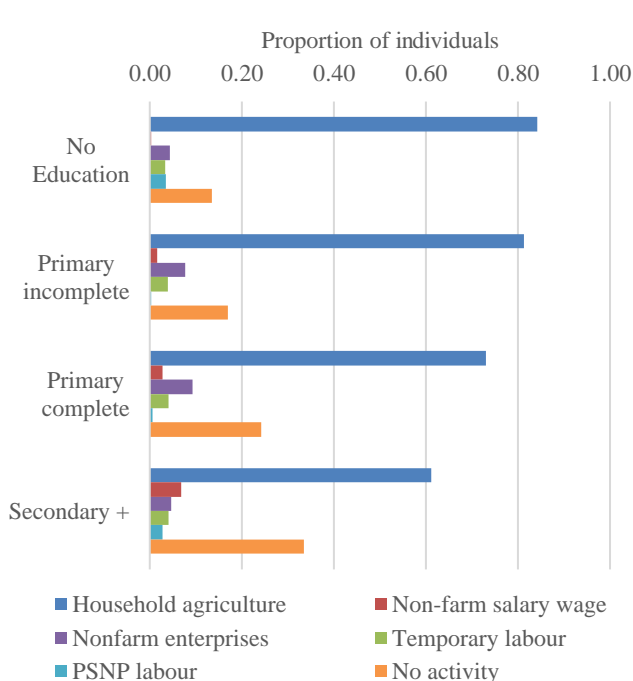
b. Yirgalem: individual participation in livelihoods activities



c. Bulbula: individual participation in livelihoods activities



d. Yirgalem: individual participation in livelihoods activities



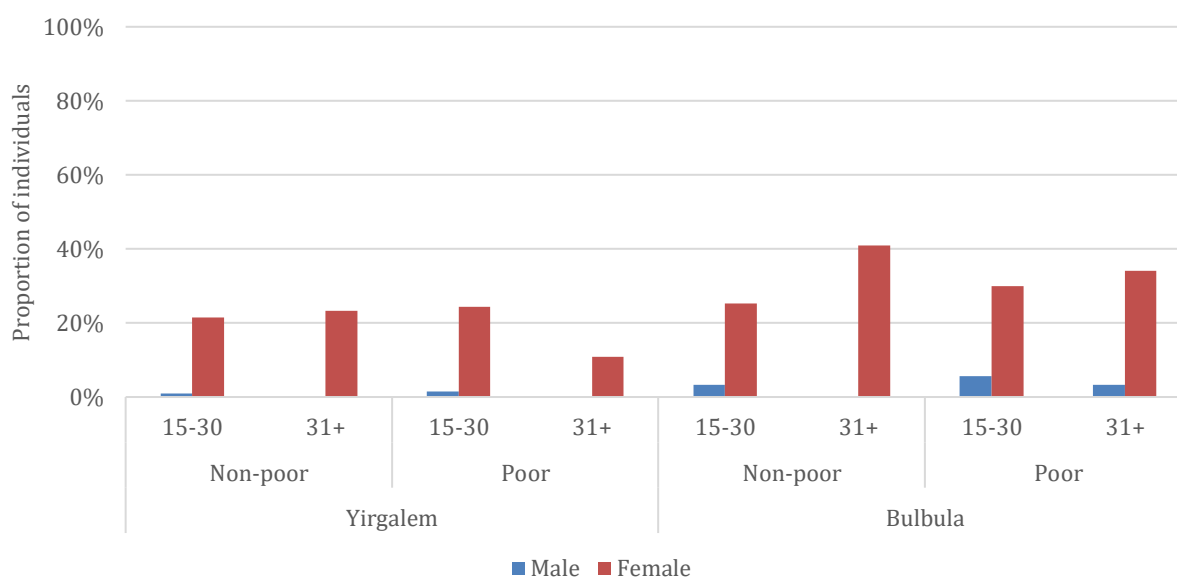
Note: PSNP stands for Productive Safety Nets Programme.
Source: Authors' own elaboration.

Inactivity – defined as not engaging in any economic labour activity (Gammarano, 2019) – is widely observed among the adult individuals in the Bulbula and ACPZ areas. Close to 30 percent of female adults and of individuals 15–30 years old report no economic activity participation in the previous 12 months. Among individuals in Yirgalem, the share of economically inactive adults is increasing with educational attainment.

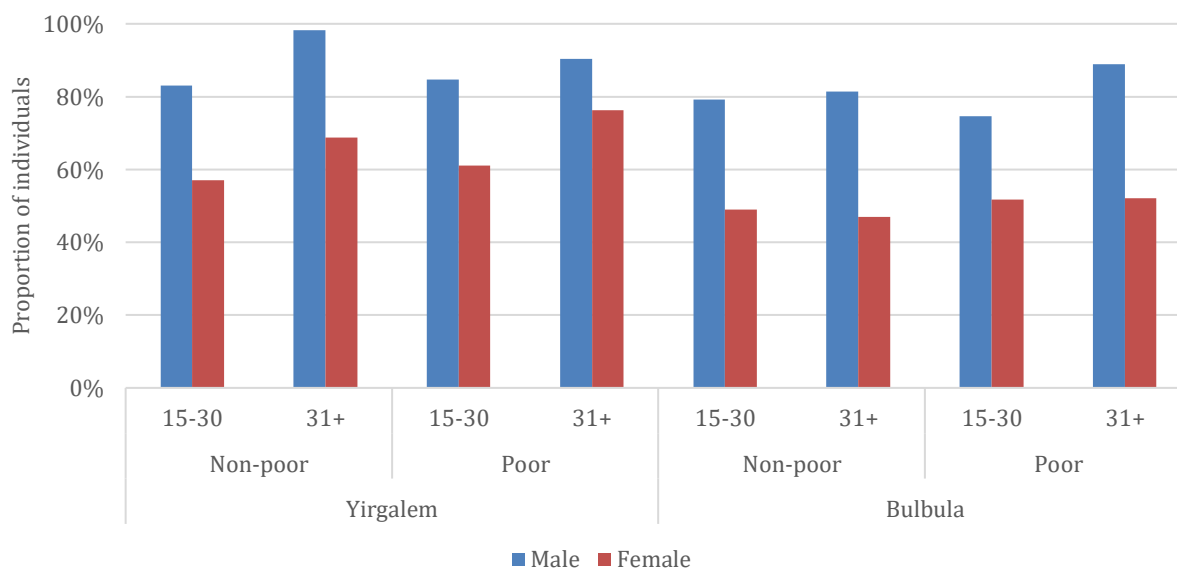
The main reasons cited for being economically inactive are domestic responsibilities among women, and education/studying among men. Only a small number of individuals self-identify as unemployed, and even fewer report being inactive due to a lack of employment opportunities. This suggests that inactivity is more likely due to other constraints, such as limited economic resources and time availability due to competing priorities. Notably, women are more affected by these constraints, underscoring the need to create an enabling environment that supports their participation in economic activities.

Figure 21. Reasons for inactivity among economically inactive adults, by Agrocommodity Procurement Zone, gender and age groups

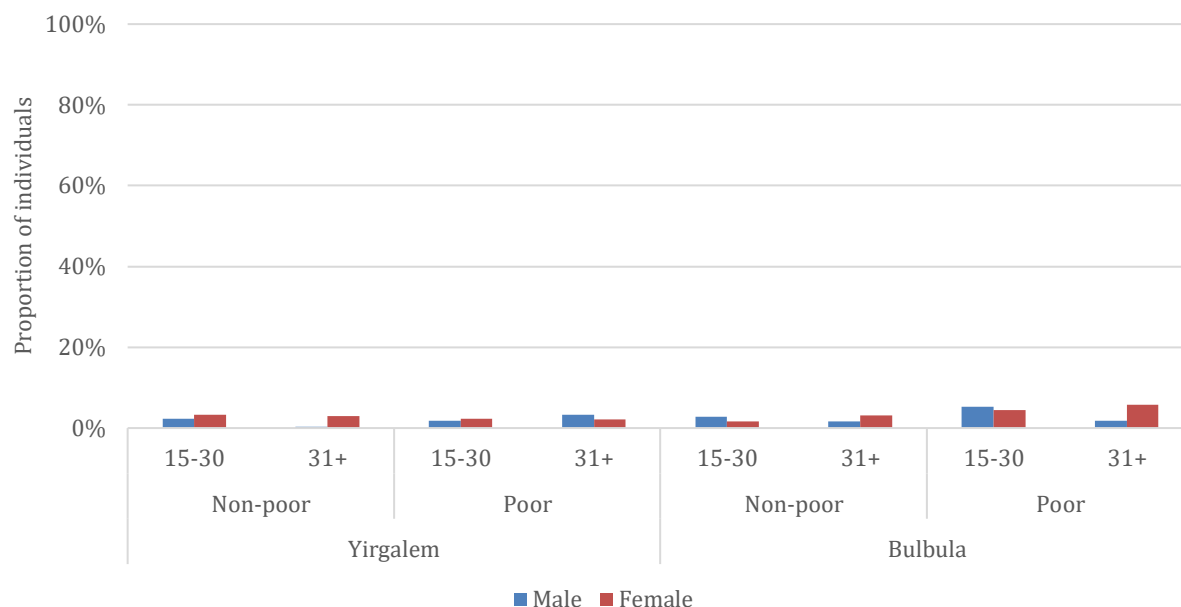
a. Domestic tasks



b. Studying



c. No employment opportunities



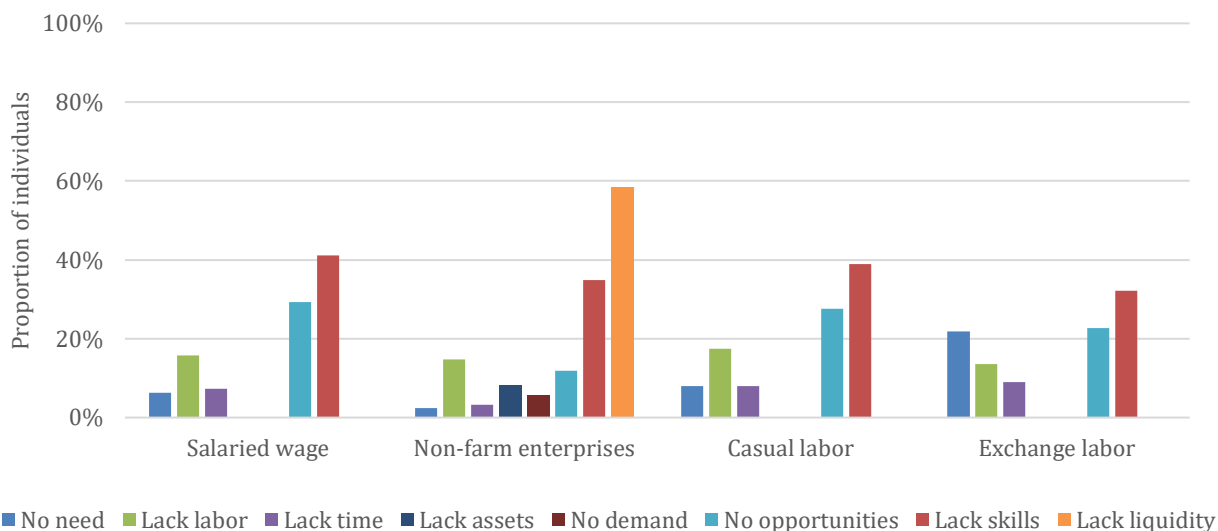
Source: Authors' own elaboration.

Inactivity at household level is reported at a much lower rate, accounting for only 5 percent of households in rural ACPZ areas. However, the reasons for non-participation in specific activities reveals that a lack of liquidity, skills, and opportunities hinders engagement in off-farm activities, including salaried-wage work and non-farm enterprises.

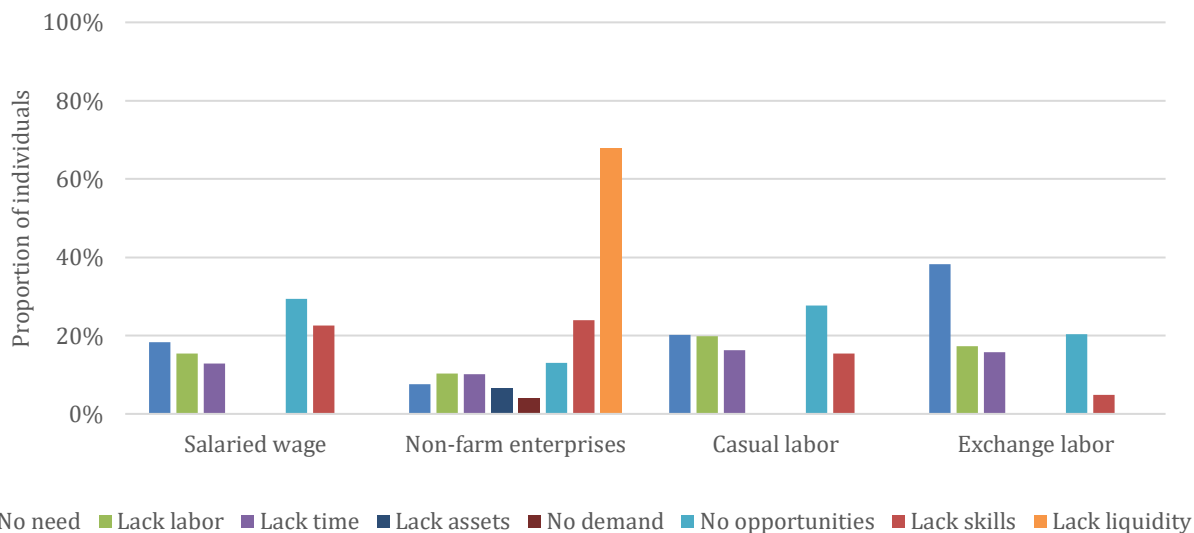
In both Bulbula and Yirgalem areas, close to 30 percent of households identify the lack of opportunities as the main reason for not engaging in salaried-wage work. Among households in Bulbula, over 40 percent of households also indicate they lack the necessary skills for salaried-wage employment, a constraint that is also identified as important for non-farm enterprise work, casual labour, and exchange labour non-participants in the Bulbula area. In both ACPZ areas, non-farm enterprise work is primarily limited by liquidity constraints for around 60 percent of households.

Figure 22. Reasons for household non-participation in off-farm activities, by Agrocommodity Procurement Zone

a. Bulbula



b. Yirgalem



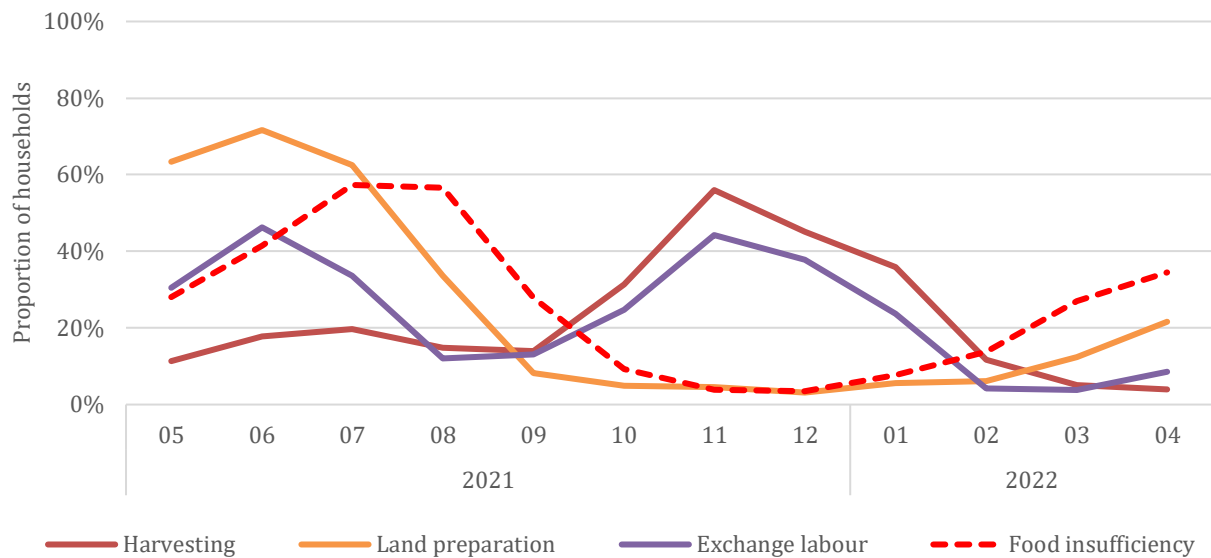
Source: Authors' own elaboration.

4.3.3 SEASONALITY OF LIVELIHOODS STRATEGIES

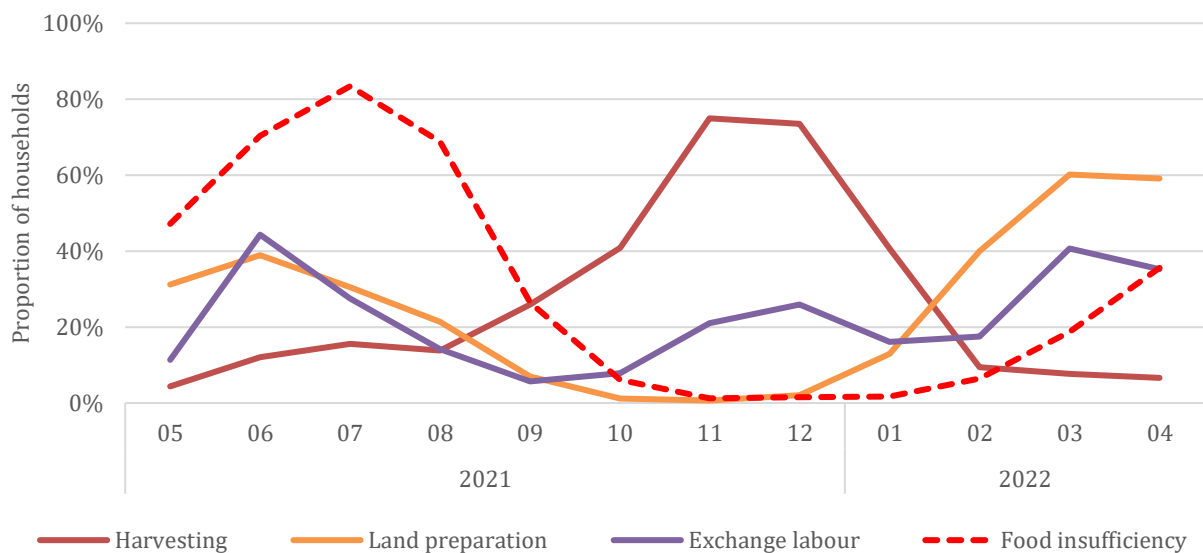
Seasonal fluctuation in labour demand for on-farm activities is evidenced by the 12-month activity participation graph reporting participation in land preparation, harvesting and exchange labour. The agricultural calendar is also reflected in the food insufficiency trend, for which prevalence is reportedly high in the months prior to the harvest, and close to zero at the height of the harvest season.

Figure 23. Seasonality: monthly household participation in on-farm activities and food insufficiency, by Agrocommodity Procurement Zone

a. Bulbula



b. Yirgalem

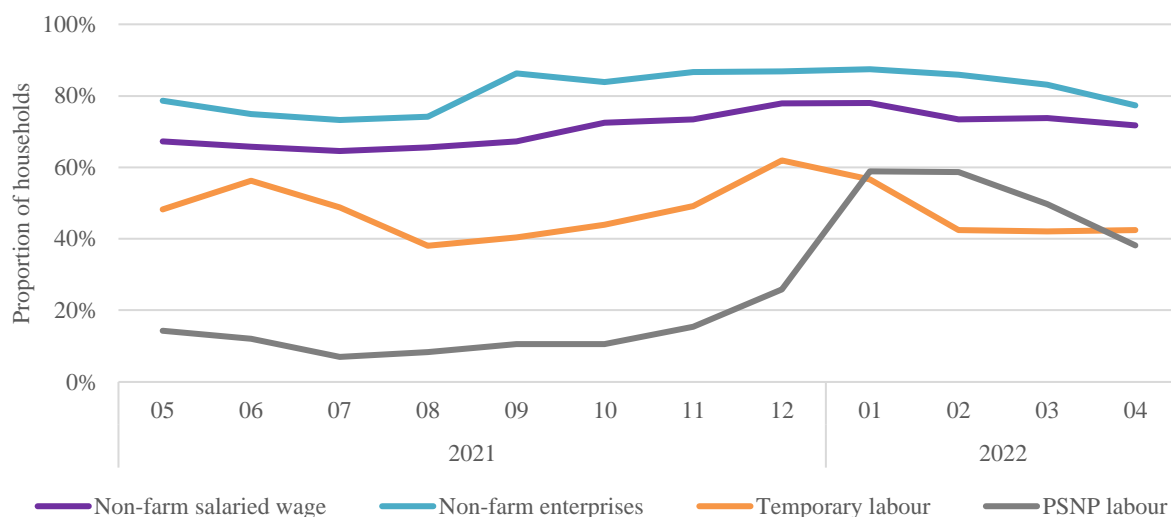


Source: Authors' own elaboration.

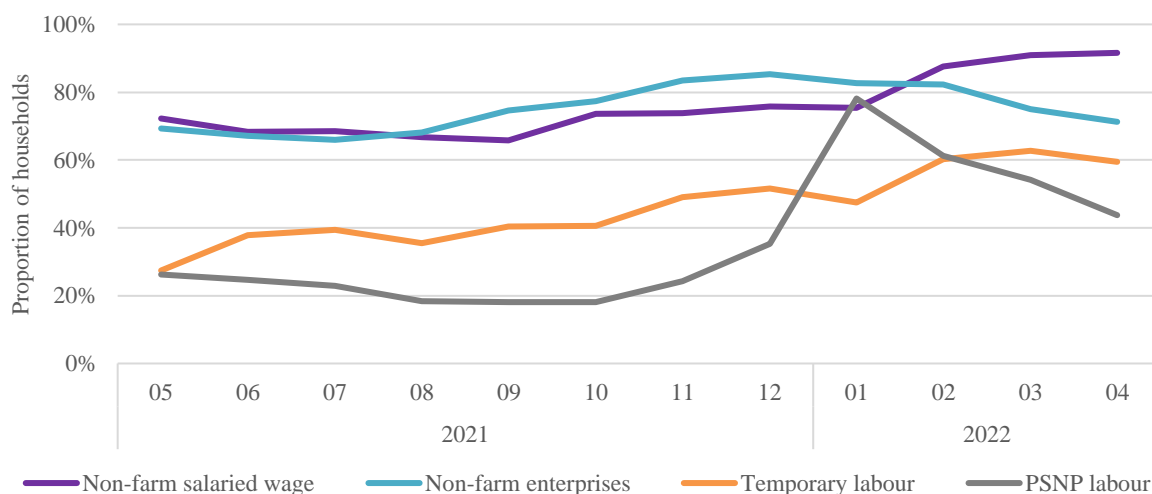
Participation in off-farm activities is relatively stable over the course of the year. Among households engaging in non-farm wage work or non-farm enterprises, participation remains relatively constant. In Bulbula Agrocommodity Procurement Zone, temporary labour participation reflects the peaks and troughs of the land preparation and harvest periods, suggesting that casual labour is directed to agriculture. This trend is not observed among households in Yirgalem. In both ACPZ areas, PSNP labour peaks following the harvest period instead.

Figure 24. Seasonality: monthly household participation in off-farm activities, by Agrocommodity Procurement Zone

a. Bulbula



b. Yirgalem



Note: PSNP stands for Productive Safety Nets Programme.

Source: Authors' own elaboration.

The commercialization of agricultural output peaks during and just following the harvest season. Households report the last month in which they commercialized their output, pointing to a concentration of wheat, maize, barley and teff output being sold in Bulbula in the first quarter of the year, which also coincides with the peak period of the harvest, as confirmed by geospatial imagery of the study area, reported in Figure A2.⁷

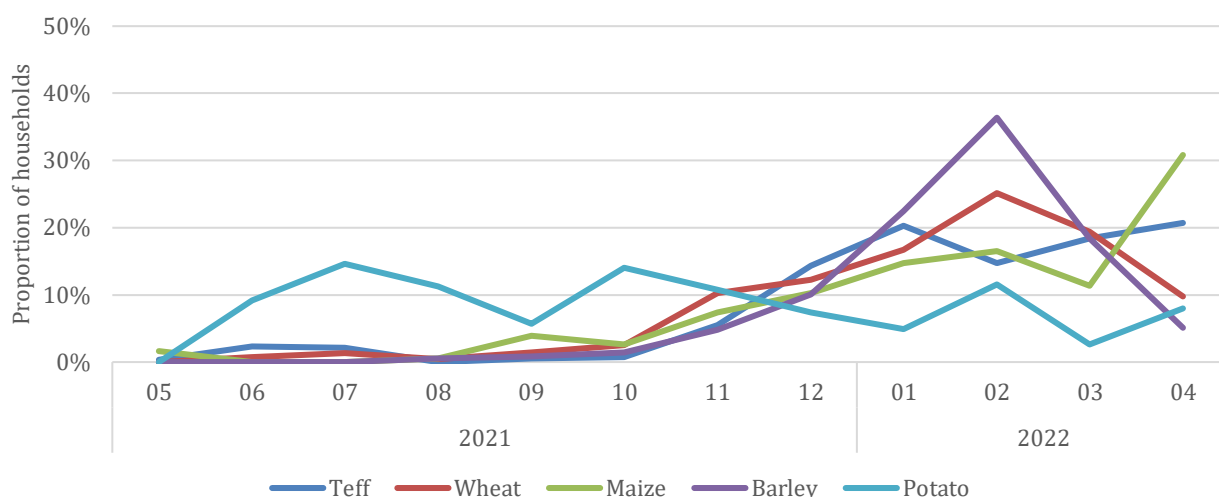
The concentration of commercialization in this period aligned with the peak harvest reflects the reliance on single-season meher production and suggests household commercialization strategies are most intense in that period, potentially to relieve liquidity constraints, and considering the limited storage facilities reported by households.

⁷ Maps provided in Figure A2 illustrate the evolution of cropped versus uncropped land at three-month intervals over the course of the year preceding the baseline survey.

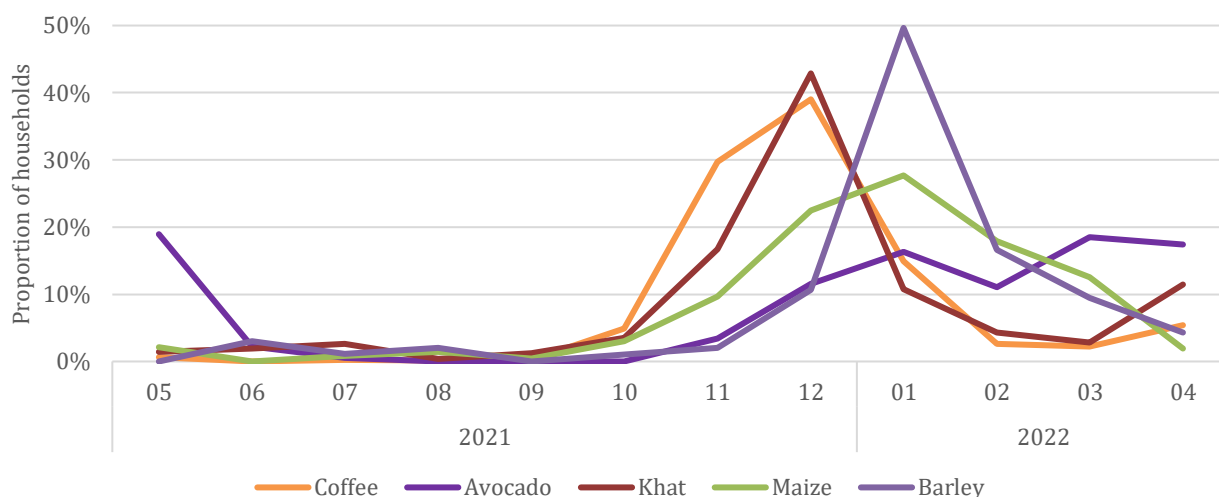
In Yirgalem, the end of the coffee commercialization period peaks in November and December (following a similar pattern to khat sales), while avocado extends into the first quarter of the year.

Figure 25. Seasonality: monthly proportion of households finalising their commercialization, by main crop and Agrocommodity Procurement Zone

a. Bulbula



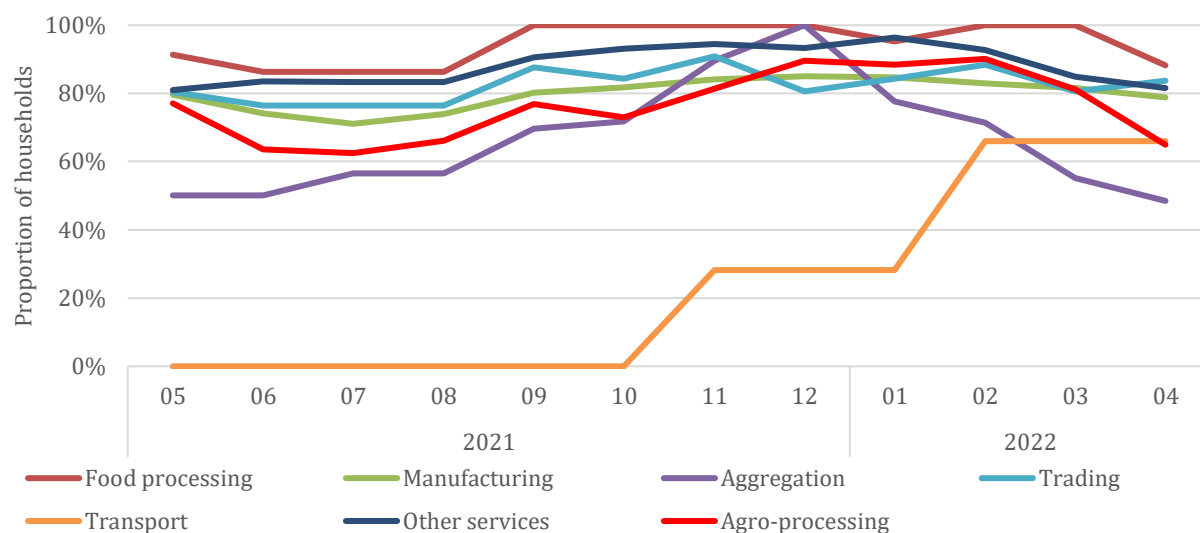
b. Yirgalem



Source: Authors' own elaboration.

Although the agricultural livelihood and its related labour demand are centred around the meher season, certain activities further along the value chain, such as food processing and trading, appear to be less affected by seasonal fluctuations. This may contribute to greater resilience against the strong seasonality of the agricultural production cycle. Other types of enterprises, such as aggregation and agroprocessing, illustrate clear seasonality patterns, reflecting the annual fluctuations in supply.

Figure 26. Seasonality: monthly household participation in non-farm enterprises, by type of enterprise

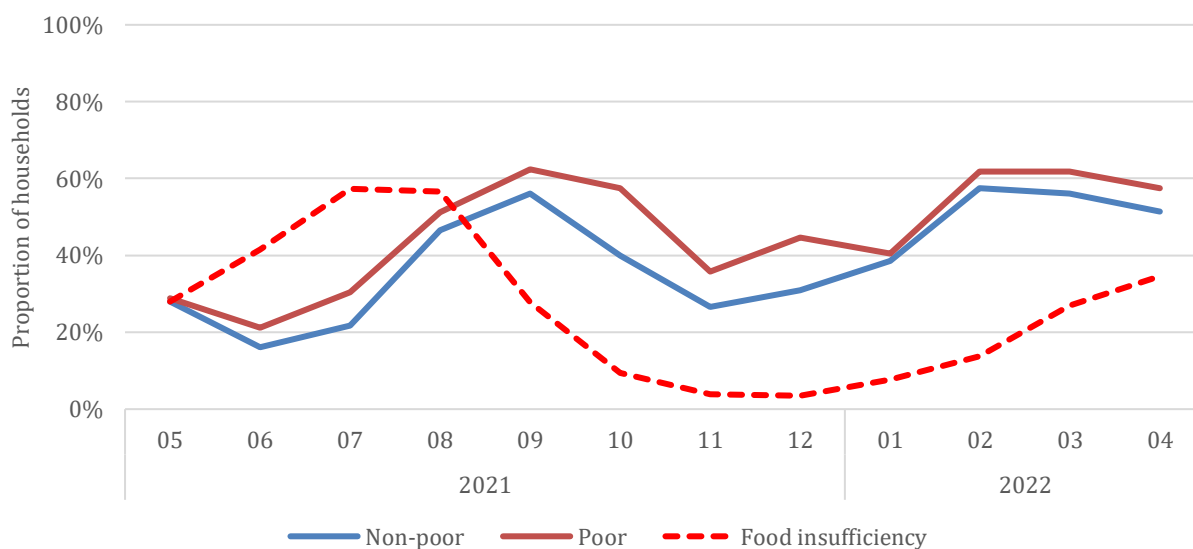


Source: Authors' own elaboration.

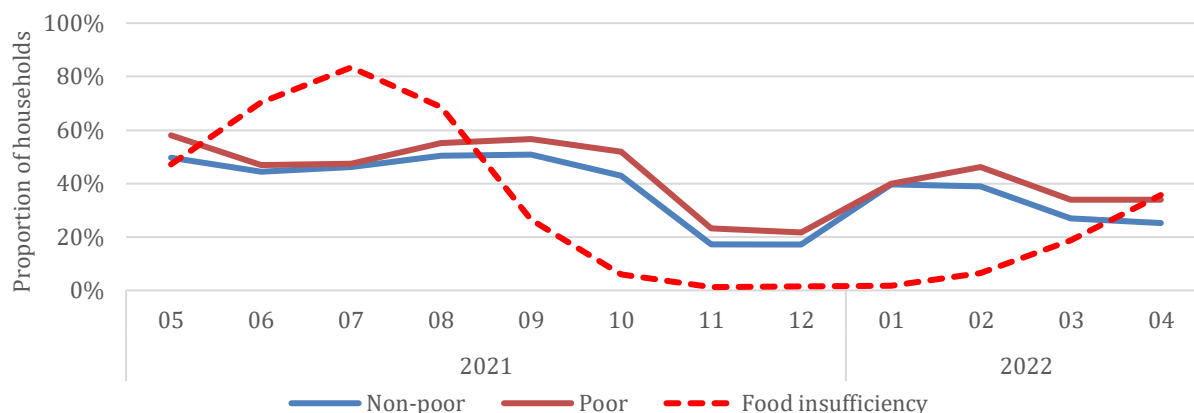
Despite the plurality of activities reported to take place over the course of the year, a significant share of households report carrying out no activities at given points throughout the year. In Bulbula, inactivity peaks between August and October, and again between February and April. In Yirgalem, the share of households without any activity ranges from 40 to 50 percent throughout the year, dipping only between November and December. In neither Bulbula nor Yirgalem is the pattern different across poverty lines, except for the slightly higher level of inactivity among poor households throughout the year.

Figure 27. Seasonality: monthly proportion of households reporting no economic activity participation, by poverty status and Agrocommodity Procurement Zone

a. Bulbula



b. Yirgalem



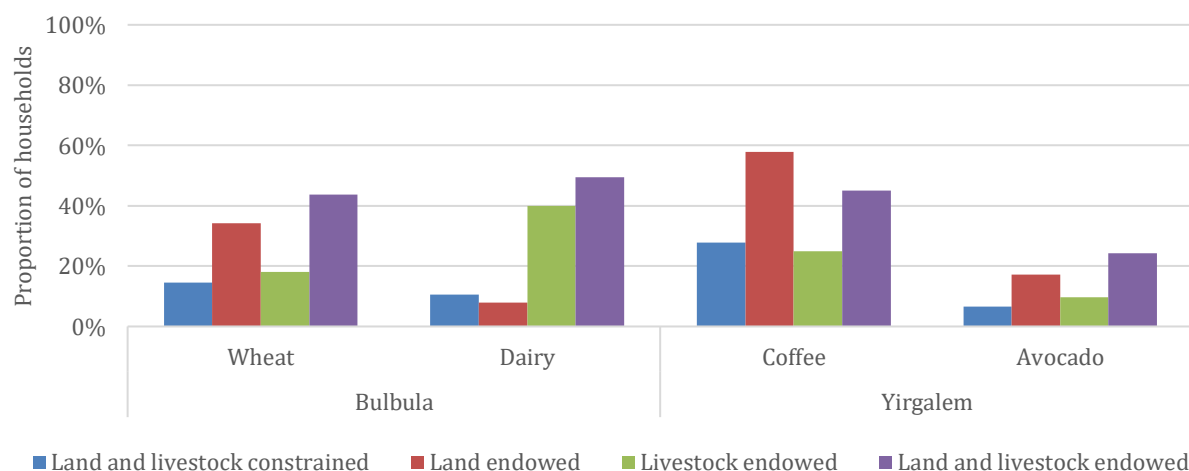
Source: Authors' own elaboration.

4.4 Understanding the characteristics of Agrocommodity Procurement Zone-relevant livelihoods strategies

This section delves deeper into the features of households that engage in specific livelihoods activities of relevance to the ACPZ areas, providing detailed characterizations of the strategies of lead commodity producers, and those engaged in off-farm activities. By focusing on the participants, the key entry conditions are characterized, as well as the constraints faced for enhancing each specific activity. In that context, barriers to participation in off-farm activities and to commercialization of agricultural output are identified.

Although this section addresses the off-farm sector, considerable attention is given to the agricultural pathways of the agricultural commodities of interest. Of relevance to note is that on average, the production of ACPZ prioritized commodities is not widespread across the ACPZ areas. Instead, production is concentrated among groups of specific resource profiles that reflect the production requirements of those crops. Wheat is more likely to be produced among land and livestock endowed households, pointing to the land requirements and the need for draught labour for land preparation activities. Dairy production necessitates dairy producing livestock, and hence its production is concentrated among households classified as livestock endowed. Engagement in coffee production benefits from greater land area; hence, the disproportionate cultivation of coffee among land endowed households. By contrast, avocado is not widely produced among any group.

Figure 28. Proportion of household cultivating priority commodities, by Agrocommodity Procurement Zone and livelihoods resource typology

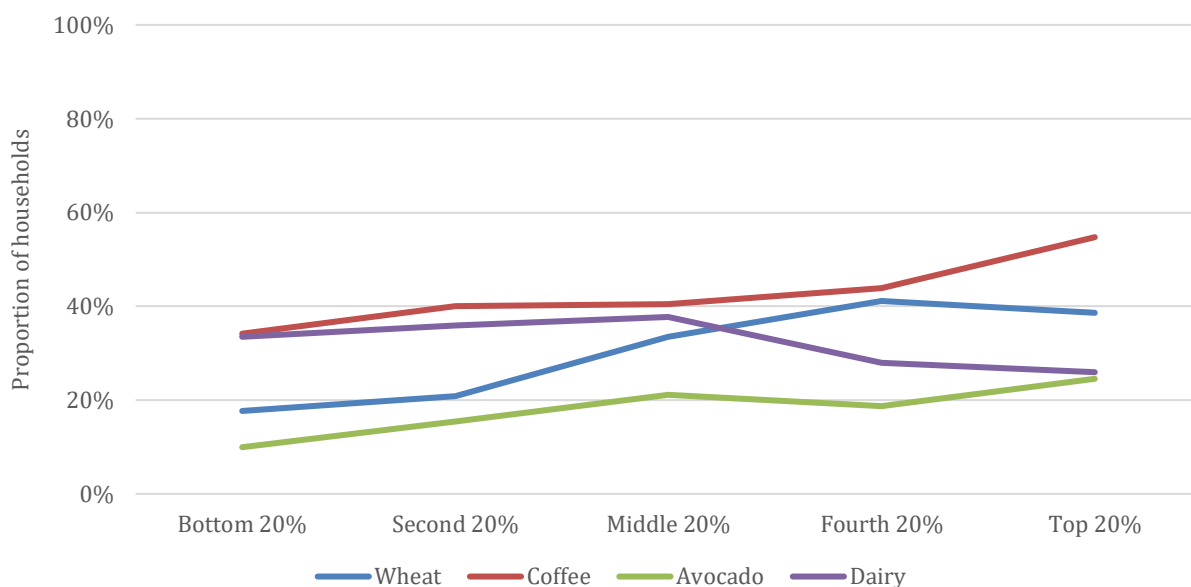


Source: Authors' own elaboration.

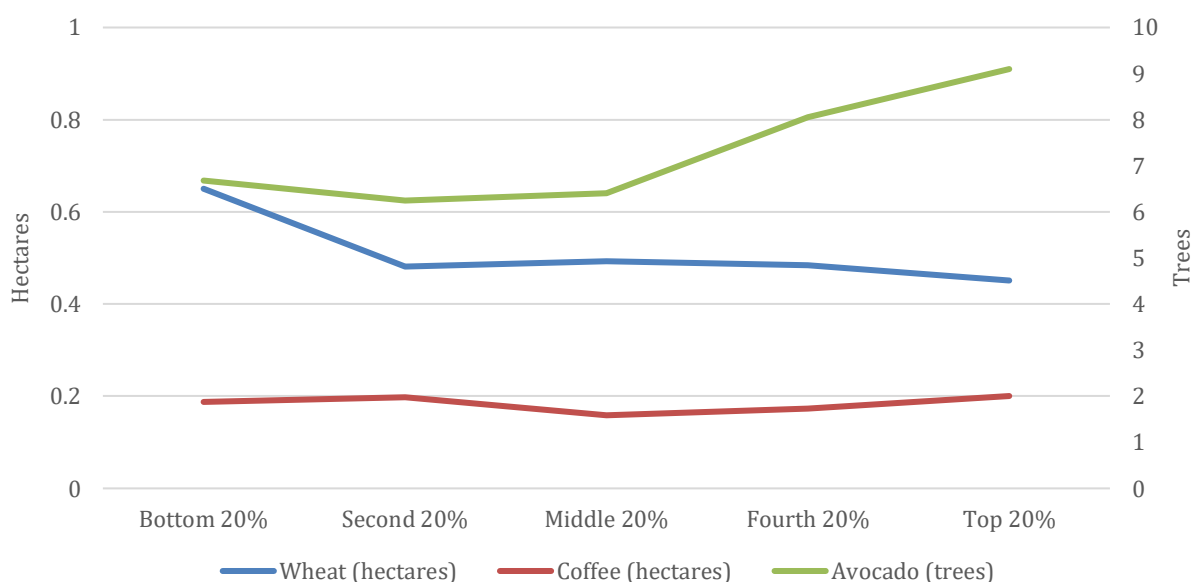
The resource requirements that lead certain groups to be more likely to produce prioritized commodities are in themselves related to the poverty status of households. Except for dairy production, the cultivation of wheat, coffee and avocado is less likely among poorer households. However, the scale of production of these commodities does not systematically vary along the poverty distribution. For coffee, the average area is flat across the distribution. Among avocado producers, the number of trees only expands among households in the top quintile. In the case of wheat, the average area is comparable among producers in the second to top quintiles; however, the bottom quintile cultivates 40 percent more land, which raises concerns about the production diversity of that group, particularly, in relation to their food and nutrition security.

Figure 29. Agrocommodity Procurement Zone commodity production over Poverty Probability Index poverty quintiles

a. Proportion of households producing commodity

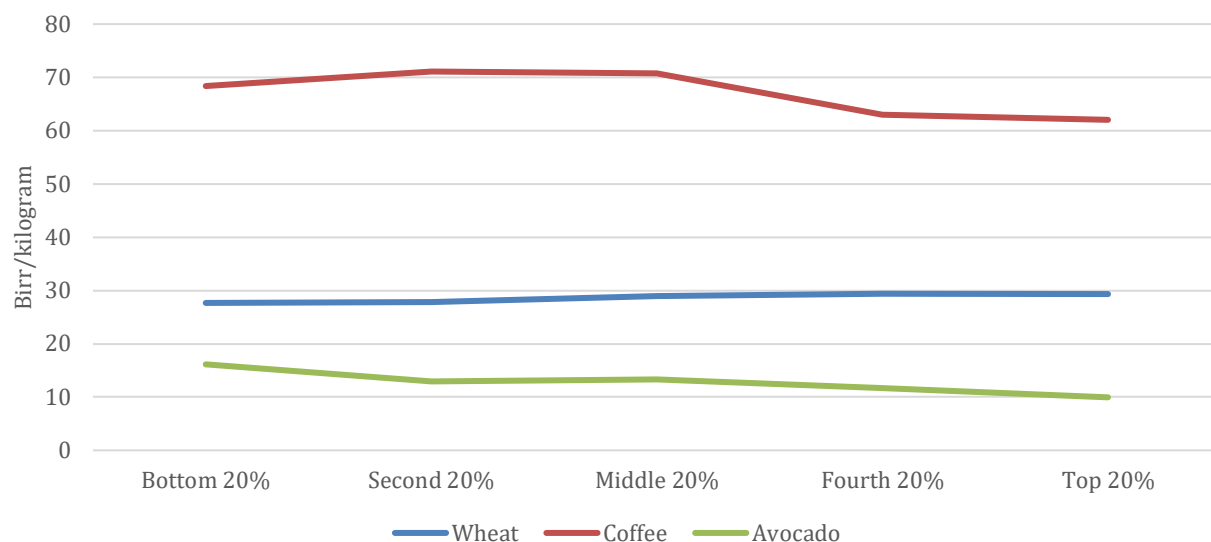


b. Scale of production



Source: Authors' own elaboration.

Figure 30. Price received in the month when commodity was last sold



Source: Authors' own elaboration.

From a commercialization perspective, the price received by sales-oriented producers of these commodities does not vary across welfare levels. Similar prices are reported among producers at different levels of the poverty distribution, which reflects the primary outlet common to all producers – the local market. Across commodities, price differences reflect market structure, as in the case of coffee, and potentially factors such as varieties and qualities of output. In the next subsections, the characteristics of priority commodity producers is further explored.

4.4.1 BULBULA: WHEAT PRODUCERS

PARTICIPATION AND BASIC CHARACTERISTICS

Wheat production in the Bulbula Agrocommodity Procurement Zone is reported by around 30 percent of households, representing nearly two times the Oromia region average in 2018/19 (CSA, 2018). **Male-headed and non-poor households disproportionately cultivate wheat:** while only one-quarter of poor or female-headed households cultivate wheat in Bulbula Agrocommodity Procurement Zone, 39 percent of non-poor and 32 percent of male-headed households report its cultivation. Wheat producing households are more likely to be land and livestock endowed (67 percent) or land endowed (15 percent), reflecting their above average total landholdings of 1.83 hectares, and above average livestock holdings of 2.5 TLUs. They are also more likely to have access to mobile phone and standard agricultural tools and implements assets (plough, sickle, axe, pickaxe), pointing to an overall stronger asset base.

Nearly all production was reported to take place during the meher season, representing a single harvest coming from an average of 0.5 hectares of land cultivated with wheat. In addition to wheat, producers cultivate two other crops on average. Other most produced crops include teff (53 percent), maize (45 percent) and barley (23 percent). The scant belg season production reflects the limited diffusion of irrigation and potentially the lack of appropriate locally adapted inputs, thus representing a single harvest per year for nearly all producers of wheat.

Poor households are significantly closer to the agro-industrial parks than non-poor households, yet a smaller proportion indicates they are close to an agricultural collection centre. The lack of collection centre close to households could be due to a lack of such infrastructure, it being positioned far from most dwellings, or reflect information constraints about potential aggregation venues.

Table 13. Participation in wheat production and characteristics of producers

	Bulbula		
	Non-poor	Poor	Difference
Participation			
Produces crop	0.39	0.24	***
Produces crop in meher season	0.99	1.00	
Produces crop in belg season	0.01	0.00	
Decision maker plantation			
Head	0.93	0.95	
Female	0.16	0.19	
Age	42.45	46.70	***
Affiliation to organizations			
Cooperative/union	0.35	0.35	
Assistance			
Productive Safety Nets Programme (PSNP) on-farm livelihoods pathway	0.02	0.02	
Agricultural support programmes	0.06	0.02	
Proximity to agro-industrial park infrastructure			
Distance to agro-industrial park	78.51	65.16	***
Agro-industrial park in the region	0.72	0.65	
Rural transformation centre nearby	0.23	0.18	
Agricultural collection centre nearby	0.15	0.08	**

Notes: Two Bulbula farmers report wheat production during the belg season. Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

INPUTS AND TECHNOLOGY

The use of improved seeds for agricultural production (not necessarily for wheat) was reported by 44 percent of wheat producing households, while three-quarters of these reported using agrochemicals and 82 percent inorganic fertilizers. Most wheat producers have access to mobile phone and standard agricultural tools and implements assets (plough, sickle, axe, pickaxe). However, households cultivating wheat were unlikely to use mechanization or irrigation; only 6 percent report any access to the former and 2 percent to the latter. None report access to tractors, although 87 percent do hold a plough. Very few producers hold transportation assets such as bicycles, motor vehicles and animal carts.

While 20 percent of non-poor wheat producing households report hiring labour for agricultural production; only 5 percent of poor households producing wheat do the same. Unpaid non-family labour (such as exchange labour) is accessed by 24 percent of non-poor and 17 percent of poor wheat producing households. As such, most farms rely uniquely on family labour for production.

STORAGE

More than 70 percent of wheat producers report storing part of their harvest, despite only 48 percent having access to storage bags, and only 4 percent to silos. None report access to storage facilities and most of the wheat producers did not report any Rural Transformation Centre (RTC) or other agricultural collection centre nearby. Comparing across poverty lines, poor households are significantly less likely to hold storage bags than non-poor households (48 percent versus 58 percent). Producers of wheat, and particularly those in poor households, are likely to be storing grains in suboptimal conditions, propense to post-harvest losses.

Table 14. Access to assets and inputs of wheat producing households

	Bulbula		
	Non-poor	Poor	Difference
Assets			
Holds mobile phone	0.81	0.70	**
Holds bicycle	0.01	0.01	
Holds motor vehicle	0.02	0.02	
Holds animal cart	0.09	0.10	
Holds plough	0.87	0.87	
Holds tractor	0.00	0.00	
Holds sickle	0.84	0.88	
Holds axe	0.74	0.65	*
Holds pickaxe	0.76	0.72	
Holds harvesting equipment	0.13	0.14	
Holds storage bag	0.52	0.42	*
Holds silo	0.04	0.05	
Land and yields			
Meher: land area cultivated	0.48	0.52	
Meher: share of total crop area	0.51	0.49	
Meher: yields	1 967	1 803	
Belg: land area cultivated	0.13		
Belg: share of total crop area	1.00		
Belg: yields	1 936		
Inputs			
Traditional seeds	0.69	0.64	
Improved seeds	0.44	0.44	
Grafted seedlings	0.00	0.00	
Agrochemicals	0.80	0.69	**
Organic fertilizers	0.46	0.47	
Inorganic fertilizers	0.87	0.75	***
Mechanization	0.09	0.03	**
Irrigation	0.03	0.01	
Unpaid non-family labour	0.24	0.17	*
Paid labour	0.20	0.05	***

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

HARVEST ALLOCATION

Two-thirds of wheat producing households sold some part of their harvest; on average 40 percent of output was commercialized. Nearly all households consumed part of their harvest, but only 20 percent consumed all their wheat harvest. On average wheat producing households consumed around 60 percent of their production. However, this proportion is considerably lower among the subset of wheat producers that commercialize output: among those, the share of output self-consumed was lower at 44 percent, pointing to the commercialization – consumption trade-off for this commodity.

About 57 percent of poor wheat producing households, and 67 percent of non-poor wheat producers commercialized other crops in addition to wheat. The most common crops commercialized in addition to wheat included: teff (56 percent), maize (19 percent), barley (18 percent) and horsebean (18 percent).

Table 15. Production outcomes of wheat producing households

	Bulbula		
	Non-poor	Poor	Difference
Land and yields			
Meher: land area cultivated	0.48	0.52	
Meher: share of total crop area	0.51	0.49	
Meher: Yields	1 967	1 803	
Belg: land area cultivated	0.13		
Belg: share of total crop area	1.00		
Belg: yields	1 936		
Harvest allocation			
Auto-consumed harvest	0.99	0.97	
Share harvest auto-consumed	0.59	0.61	
Auto-consumed all harvest	0.22	0.23	
Sold harvest	0.62	0.59	
Share harvest sold	0.39	0.41	
Other uses harvest	0.49	0.46	
Share harvest other uses	0.22	0.23	

Source: Authors' own elaboration.

COMMERCIALIZATION OUTLETS

The main commercialization outlet for wheat was on the local market with direct sales reported among 91 percent of households. Eighteen percent sold their output to SMEs or traders as a primary or secondary outlet. Only 1 percent of producing households report having sold to a primary cooperative or cooperative union, even though 35 percent of wheat producers are affiliated to those entities.

REASONS FOR NON-COMMERCIALIZATION

Among households that did not commercialize any wheat output, the main reason cited was insufficient production among 74 percent of poor households producing wheat and 54 percent of non-poor wheat producing households. Only 23 percent of poor wheat producing households report their production was only for household consumption, which stands far below the 40 percent of non-poor households reporting this reason. Poor households seem to produce wheat for its market potential.

Table 16. Commercialization of wheat producing households

	Bulbula		
	Non-poor	Poor	Difference
Commercialized other crops	0.67	0.57	*
Teff	0.60	0.50	
Maize	0.15	0.24	
Barley	0.16	0.22	
Haricot bean	0.04	0.13	*

	Bulbula		
	Non-poor	Poor	Difference
Main commercialization outlet			
Direct	0.01	0.01	
Local market	0.90	0.93	
Primary cooperative/union	0.00	0.02	
Small and medium enterprises/traders	0.10	0.03	**
Secondary commercialization outlet			
Direct	0.91	0.81	
Local market	0.00	0.00	
Primary cooperative/union	0.00	0.00	
Small and medium enterprises/traders	0.09	0.19	
Barrier to commercialization			
Not produced enough	0.54	0.74	
Only for household consumption	0.40	0.23	
Price too low	0.03	0.02	
Lack skills	0.00	0.00	
Lack information	0.00	0.00	
Market too far	0.00	0.00	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

4.4.2 BULBULA AND YIRGALEM: DAIRY PRODUCTION

PARTICIPATION AND BASIC CHARACTERISTICS

Over 70 percent of poor households in Bulbula Agrocommodity Procurement Zone report owning dairy livestock while 59 percent of non-poor households do. Despite this difference, approximately the same share – 85 percent – of those holding dairy livestock report producing milk. Female-headed households are less likely to hold dairy livestock (61 percent), but they hold approximately the same quantity of livestock in TLUs as male-headed households (just over three units). Dairy livestock ownership is also not differentiated along poverty lines with both poor and non-poor households owning approximately two cows, four goats, and four sheep on average.

More than 70 percent of producers of dairy products are well endowed in land and livestock, indicating they also likely maintain a crop production strategy. Indeed, on average milk producing households cultivate two to three crops on average. Maize is cultivated by 42 percent of milk producers in Bulbula; barley by 46 percent and between 24 and 27 percent cultivate teff, wheat or potatoes.

Table 17. Characteristics of dairy producing households

	Bulbula		
	Non-poor	Poor	Difference
Owns dairy livestock	0.59	0.72	***
Produced milk	0.47	0.49	
Decision-maker livestock			
Head	0.95	0.96	
Female	0.17	0.25	
Age	42.28	46.21	**

	Bulbula		
	Non-poor	Poor	Difference
Animals			
Own cows	0.94	0.95	
Number of cows	1.78	2.07	
Own goats	0.33	0.26	
Number of goats	4.90	3.76	
Own sheep	0.35	0.39	
Number of sheep	5.08	4.36	
Assets			
Holds mobile phone	0.74	0.58	***
Holds bicycle	0.01	0.01	
Holds motor vehicle	0.04	0.00	**
Holds refrigerator	0.02	0.00	
Holds animal cart	0.13	0.05	**
Holds plough	0.87	0.74	***
Holds tractor	0.00	0.00	
Holds sickle	0.87	0.87	
Holds axe	0.85	0.76	
Holds pickaxe	0.77	0.70	
Holds harvesting equipment	0.24	0.20	
Holds storage bag	0.49	0.35	**
Holds silo	0.06	0.07	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

INPUTS AND TECHNOLOGY

Only one-fifth of dairy producers report purchasing commercial feed for their livestock, a proportion that is significantly differentiated along poverty lines: 18 percent of poor households producing dairy used commercial feed while 27 percent of non-poor did. These differences are also observed regarding veterinary services and drug shops, both of which are significantly less accessed by poor dairy producing households. Among non-poor households, 58 percent used veterinary services, as compared to 45 percent of poor households, and 73 percent accessed veterinary drugs shops, compared to 58 percent of poor households.

Hired labour was also accessed by 7 percent of non-poor dairy producers, while no poor households reported its use for animal husbandry.

STORAGE

Among dairy producers in poor households, 2 percent report a milk collection in their vicinity, a share that is significantly lower than the 14 percent of non-poor households reporting the same. Access to refrigerators is low, and with limited access to or awareness of milk collection centres, the potential for accessing cooling facilities is limited, and disproportionately for poor producers of dairy. Particularly, few poor households are aware of value chain infrastructure such as RTCs and milk collection centres, reflecting information constraints that may affect the scaling of dairy in the IAIP.

Table 18. Input use and access to services, support and infrastructure by dairy producing households

	Bulbula		
	Non-poor	Poor	Difference
Inputs and services			
Commercial feed	0.27	0.18	*
Veterinary services	0.58	0.45	**
Veterinary drug shops	0.73	0.58	**
Unpaid non-family labour	0.01	0.01	
Paid labour	0.07	0.00	***
Affiliation to organizations			
Cooperative/union	0.37	0.27	
Assistance			
Productive Safety Nets Programme (PSNP)	0.04	0.02	
Agricultural support programmes	0.05	0.03	
Proximity to agro-industrial park infrastructure			
Distance to agro-industrial park	73.46	80.89	*
Agro-industrial park in the region	0.66	0.57	
Rural transformation centre nearby	0.22	0.05	***
Milk collection centre nearby	0.14	0.02	***

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

OUTPUT ALLOCATION

Nearly all households consumed their dairy production, and 92 percent (non-poor) to 98 percent (poor) consumed the entirety of their milk output. Women are significantly more likely to take dairy commercialization decisions in poor households than non-poor; however, very few households – poor and non-poor – sell dairy. Only 8 percent of non-poor households and 2 percent of poor households, report selling fresh or processed milk. Female-headed households were also less likely to sell any milk products than male-headed households.

Among those that sold fresh milk, the share sold is also differentiated along poverty lines with poor households selling 19 percent of their output, approximately half of non-poor household fresh milk sales. For processed milk producers, the share sold was approximately one-fourth of total production and not different along poverty lines.

COMMERCIALIZATION OUTLETS

Among the producers that commercialized dairy output, most sold direct to consumers or on the local market; however, only 4 percent reported selling to SMEs or traders. Although 31 percent of dairy producers are affiliated to primary cooperatives or unions, none sold output through these.

REASONS FOR NON-COMMERCIALIZATION

Approximately half of dairy producers report that they produce only for household consumption, hence the low level of market integration. However, more than 40 percent indicate they did not produce enough to commercialize, reflecting issues with scale and/or productivity, as well as the need to meet household consumption needs first. Only 1 percent of producers reported being too far from the market.

Table 19. Output allocation characteristics of dairy producing households

	Bulbula		
	Non-poor	Poor	Difference
Allocation			
Auto-consumed milk	1.00	1.00	
Share milk auto consumed	0.97	0.99	**
Auto consumed all milk	0.92	0.98	**
Sold fresh milk	0.05	0.01	*
Share fresh milk sold	0.38	0.19	**
Sold processed milk	0.04	0.02	
Share processed milk sold	0.22	0.26	
Commercialization			
Sold dairy products	0.08	0.02	**
Decision maker commercialization			
Head	0.92	0.95	
Female	0.17	0.27	*
Age	42.30	46.28	**
Main commercialization outlet			
Direct	0.35	0.21	
Local market	0.58	0.79	
Cooperative/union	0.00	0.00	
Small and medium enterprises/traders	0.07	0.00	
Barrier to commercialization			
Not produced enough	0.38	0.47	
Only for household consumption	0.61	0.50	
No buyers	0.00	0.02	
Lack skills	0.00	0.00	
Market too far	0.01	0.01	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

4.4.3 YIRGALEM: COFFEE PRODUCERS

PARTICIPATION AND BASIC CHARACTERISTICS

Among rural households in Yirgalem Agrocommodity Procurement Zone, **42 percent report cultivating coffee in the previous 12 months**. While nearly all coffee producing households engage in meher season production, **14 percent also report cultivation during the belg season**. An overall favourable resource endowment position is observed among coffee producers, with 49 percent as “land and livestock endowed” and 32 percent as “land endowed”. Indeed, significantly fewer poor households cultivate coffee (36 percent) than non-poor households (47 percent).

The average holding of coffee producers is about 0.85 hectares. Coffee producers report cultivating only 0.16 hectares in the meher season, and 0.18 hectares in the belg season; these area allocations are not differentiated along poverty lines. On average, producers of coffee cultivate a portfolio of around four crops, which includes enset (95 percent), teff (53 percent), maize (68 percent) and avocado (36 percent).

Table 20. Participation in coffee production

	Yirgalem		
	Non-poor	Poor	Difference
Participation			
Produces crop	0.47	0.36	***
Produces crop in meher season	0.98	1.00	*
Produces crop in belg season	0.12	0.16	
Decision maker plantation			
Head	0.98	0.97	
Female	0.07	0.19	***
Age	42.61	48.46	***
Affiliation to organizations			
Cooperative/union	0.20	0.09	***
Assistance			
Productive Safety Nets Programme (PSNP) on-farm livelihoods pathway	0.01	0.02	
Agricultural support programmes	0.02	0.02	
Proximity to agro-industrial park infrastructure			
Distance to agro-industrial park	36.90	41.92	*
agro-industrial park in the region	0.86	0.82	
Rural transformation centre nearby	0.09	0.06	
Agricultural collection centre nearby	0.17	0.16	
Observations	520	569	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

INPUTS AND TECHNOLOGY

Traditional seeds are used by 84 percent of coffee producers and 52 percent use improved seeds for their agricultural production. Few households producing coffee report the use of grafted seedlings; on average 11 percent of non-poor and only 6 percent of poor coffee producing households report their use. Their use could be for coffee or avocado as 37 percent of coffee producing households also produce avocado.

Agrochemicals such as pesticides and herbicides are only used by 7 percent of coffee producing households. Coffee producers disproportionately use organic (84 percent) rather than inorganic (42 percent) fertilizers.

Mechanization and irrigation are not reported by any coffee producing household, and the use of paid labour is only reported by 4 percent of producers.

STORAGE

Nearly one-fourth of coffee producing households store some part of their output; only half of these households report owning storage bags, with no observable differences across poverty or gender lines. Storage facilities are not accessed by any coffee producing household with most producers not reporting any RTC or other agricultural collection centre nearby.

Table 21. Assets and inputs of coffee producing households

	Yirgalem		
	Non-poor	Poor	Difference
Assets			
Holds mobile phone	0.62	0.46	***
Holds bicycle	0.00	0.01	
Holds motor vehicle	0.11	0.02	***
Holds animal cart	0.01	0.03	
Holds plough	0.02	0.01	
Holds sickle	0.65	0.65	
Holds axe	0.87	0.81	*
Holds pick axe	0.79	0.69	**
Holds harvesting equipment	0.45	0.38	
Holds storage bag	0.48	0.43	
Holds silo	0.05	0.01	**
Holds drying equipment	0.11	0.06	*
Inputs			
Traditional seeds	0.81	0.89	***
Improved seeds	0.55	0.48	
Grafted seedlings	0.11	0.06	**
Agrochemicals	0.07	0.06	
Organic fertilizers	0.84	0.85	
Inorganic fertilizers	0.41	0.43	
Mechanization	0.00	0.00	
Irrigation	0.00	0.00	
Unpaid non-family labour	0.03	0.03	
Paid labour	0.05	0.03	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Source: Authors' own elaboration.

HARVEST ALLOCATION

Although nearly all coffee producing households self-consume their harvest, on average households consume only around one-quarter of coffee production. Instead, more than 90 percent sell their output, a share that rises to 98 percent among female-headed coffee producing households. Over 70 percent of production is commercialized.

COMMERCIALIZATION OUTLETS

Half of households that sold coffee sold on the local market as their primary outlet; 40 percent identified the local market as their secondary market and 49 percent as a tertiary market. Around 26 percent of coffee producers sold to primary cooperatives or cooperative unions as their primary or secondary commercialization outlet. Processors were identified as primary (17 percent), secondary (14 percent) and tertiary (22 percent) sales outlets.

Female-headed households were significantly less likely to sell coffee output to cooperatives or unions; only 11 percent reported them as a primary commercialization outlet. Poor households were also less likely to sell via cooperatives or unions, with only 20 percent using them as a main sales outlet, compared to 30 percent of non-poor coffee producers. Instead, poor households were significantly more likely to sell first to processors (21 percent versus 14 percent of non-poor producers).

Around half of coffee producing households commercialized other crops, the most important one being avocado, among 68 percent of coffee producing households. Khat was commercialized among 32 percent, and maize among 24 percent. Twelve percent also commercialized inset.

REASONS FOR NON-COMMERCIALIZATION

Among the 9 percent of coffee producers that did not sell any output, 58 percent reported insufficient production and 38 percent having produced only for household consumption.

Table 22. Land and production outcomes of coffee producing households

	Yirgalem		
	Non-poor	Poor	Difference
Land and yields			
Meher: land area cultivated	0.16	0.16	
Meher: share of total crop area	0.60	0.63	
Meher: yields	4 270	4 421	
Belg: land area cultivated	0.19	0.16	
Belg: share of total crop area	0.52	0.66	**
Belg: yields	3 207	2 776	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

4.4.4 YIRGALEM: AVOCADO PRODUCERS

PARTICIPATION AND BASIC CHARACTERISTICS

Among rural households in the Yirgalem Agrocommodity Procurement Zone, 17 percent report production of avocado. The share of poor households cultivating avocado is 13 percent, which is significantly lower than the 21 percent of non-poor households cultivating the crop. The scale of production across these groups is also significantly different, with poor households harvesting around six trees, and non-poor households harvesting around eight trees on average.

Male- and female-headed households are equally likely to cultivate avocado (17 percent) but female-headed households that cultivate it are twice as likely to be poor (63 percent) than male-headed households (31 percent).

The scale of avocado production is limited and differentiated along poverty lines, with non-poor households harvested more than twice as many trees as poor households. Avocado producers cultivate on average more than five crops in their portfolio. The most cultivated include enset (97 percent), maize (90 percent) and coffee (88 percent); however close to 30 percent also cultivate banana, khat or haricot bean.

Table 23. Avocado production strategies, among avocado producing households

	Yirgalem		
	Non-poor	Poor	Difference
Produces avocado	0.21	0.13	***
Trees and yields			
Trees harvested	15.72	6.33	*
Yields	83.45	112.19	
Inputs			
Traditional seeds	0.87	0.95	
Improved seeds	0.73	0.75	

	Yirgalem		
	Non-poor	Poor	Difference
Grafted seedlings	0.11	0.04	*
Agrochemicals	0.11	0.12	
Organic fertilizers	0.89	0.91	
Inorganic fertilizers	0.60	0.64	
Mechanization	0.00	0.00	
Irrigation	0.00	0.00	
Unpaid non-family labour	0.05	0.06	
Paid labour	0.07	0.04	
Assets			
Holds mobile phone	0.58	0.50	
Holds sickle	0.90	0.80	*
Holds axe	0.82	0.81	
Holds pickaxe	0.75	0.60	*
Holds avocado harvester	0.16	0.06	*
Holds harvesting equipment	0.40	0.40	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

INPUTS AND TECHNOLOGY

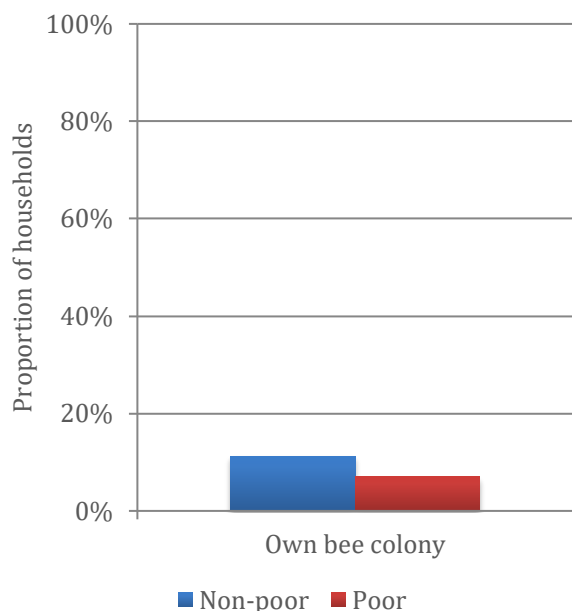
While only 4 percent of poor, avocado-cultivating households report using grafted seedlings, 11 percent of non-poor households accessed this input. Since 85 percent of avocado producers also cultivate coffee, it is possible that the seedlings were used either for coffee or avocado production. Modern inputs such as improved seeds were used by three-quarters of avocado producers; however, agrochemical use is reported by 11 percent. Inorganic fertilizers are used by 61 percent of avocado producers and organic by the vast majority (90 percent).

Access to standard agricultural tools (sickle, axe, pickaxe) is frequent but less than half have access to ladder and even fewer hold harvesting equipment. Just over 10 percent report access to avocado harvesters (pole picker or hand clipper). Access to bicycle and motor vehicles as well as animal carts is also very low.

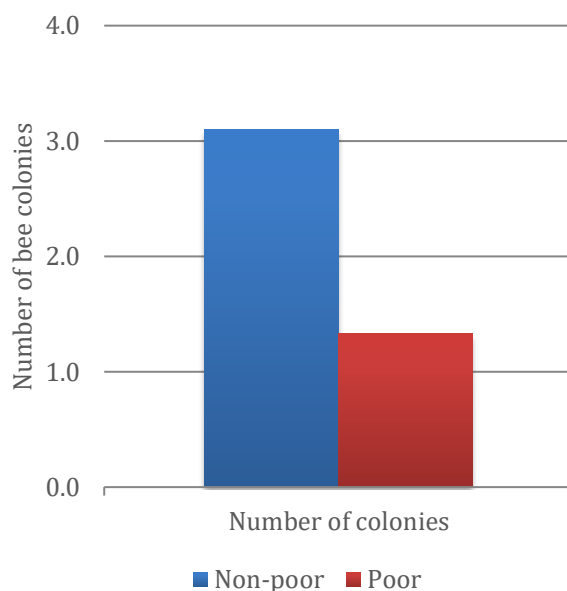
Production of avocado relies on the successful bee pollination of the fruit tree. Ten percent of non-poor avocado producing households have invested in bee colonies, but fewer poor households report the same. Among those holding bee colonies, an important difference exists across poverty lines with non-poor households holding nearly three times the number of bee colonies as poor households.

Figure 31. Bee colony ownership among avocado producers in Yirgalem, by poverty status

a. Proportion of avocado producing households owning bee colonies



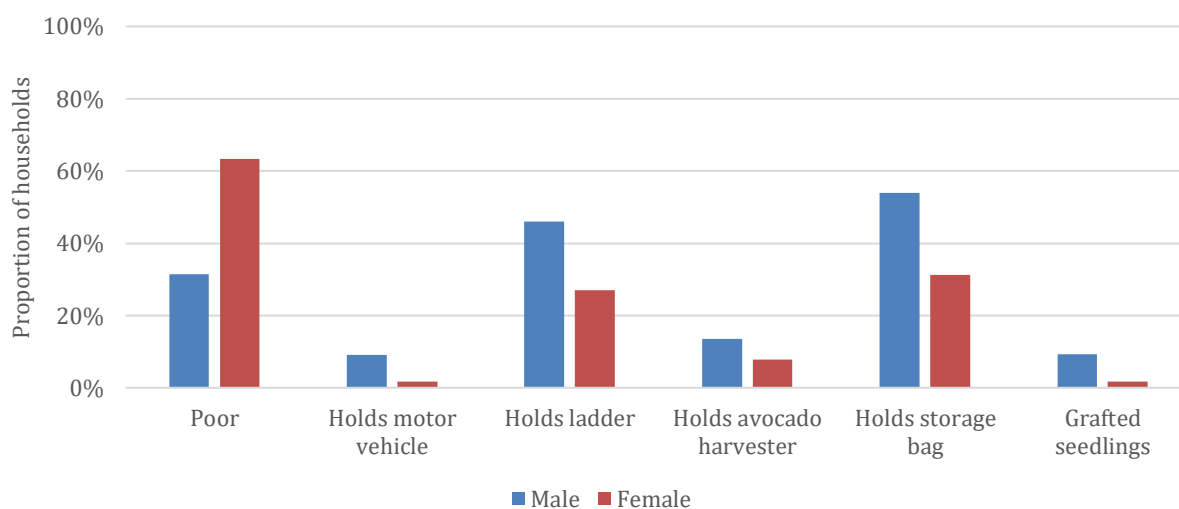
b. Number of bee colonies owned



Source: Authors' own elaboration.

The level of technology used in avocado production and harvesting is limited. Avocado harvesters (pole picker or hand clipper) are held by only 6 percent of poor avocado-producing households, compared to 16 percent of the non-poor. Ladders are held by around 46 percent of avocado producers, but only 27 percent of female-headed avocado-producing households report access. Reliance on non-family sources of labour is also limited with only 6 percent hiring in labour and the same share accessing unpaid non-family labour.

Figure 32. Gender differentials among avocado producers in Yirgalem



Source: Authors' own elaboration.

STORAGE

Approximately the same share of male- and female-headed households (15 percent) report storing some part of their avocado harvest but only 2 percent of non-poor producers report accessing any storage facility and no poor producers report the same. Just under 30 percent of producers report they are close to an agricultural collection centre, and 9 percent are aware of a RTC in their vicinity.

HARVEST ALLOCATION

Nearly all producers of avocado commercialize the majority (around 75 percent) of their crop. All producers reporting household consumption of the avocado harvest, but only around a quarter of production is self-consumed. This allocation pattern is not differentiated along gender or poverty lines.

COMMERCIALIZATION OUTLETS

The local market is the main commercialization outlet for avocado production, followed by direct sales to consumers (neighbours, family, friend, etc.) as a secondary outlet. Seven percent report SMEs or traders as a secondary outlet and only 4 percent sell to a primary cooperative or union, reflecting the low engagement with cooperatives; only 16 percent of avocado producers are affiliated to 1 and only 7 percent of poor avocado-producing households are members.

REASONS FOR NON-COMMERCIALIZATION

Of the 4 percent of avocado producers that did not commercialize any output, the only reason reported was insufficient harvest, pointing to the importance of production conditions and potentially of successful pollination.

Table 24. Output allocation characteristics of avocado producing households

	Yirgalem		
	Non-poor	Poor	Difference
Allocation			
Auto-consumed harvest	1.00	1.00	
Share harvest auto-consumed	0.27	0.26	
Auto-consumed all harvest	0.02	0.02	
Sold harvest	0.94	0.97	
Share harvest sold	0.73	0.73	
Other uses harvest	0.29	0.31	
Share harvest other uses	0.13	0.08	**
Storage			
Stored harvest	0.15	0.13	
Access to storage facilities	0.02	0.00	
Decision maker commercialization			
Head	0.96	0.93	
Female	0.09	0.22	**
Age	43.43	46.76	
Commercialization			
Price sold	11.75	13.73	
Main commercialization outlet			
Direct	0.00	0.06	**
Local market	0.95	0.91	
Cooperative/union	0.04	0.03	
Small and medium enterprises/traders	0.00	0.00	

	Yirgalem		
	Non-poor	Poor	Difference
Rural transformation centre	0.01	0.00	
Processors	0.00	0.00	
Public procurement	0.00	0.00	
Contract farming	0.00	0.00	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

Table 25. Access to assistance and proximity to agro-industrial park by avocado-producing households

	Yirgalem		
	Non-poor	Poor	Difference
Affiliation to organizations			
Cooperative/union	0.21	0.07	**
Assistance			
Productive Safety Nets Programme (PSNP) non-farm livelihoods pathway	0.00	0.09	**
Agricultural support programmes	0.00	0.00	
Proximity to agro-industrial park infrastructure			
Distance to agro-industrial park	17.59	24.37	*
Agro-industrial park in the region	0.84	0.86	
Rural transformation centre nearby	0.10	0.07	
Agric collection centre nearby	0.33	0.20	
Observations	86	61	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration

4.4.5 OFF-FARM PATHWAYS: SALARIED-WAGE WORK

Participation in salaried employment is reported by 19 percent of households in Bulbula and 7 percent in Yirgalem. Men are more likely to participate in wage work, and even more so in Yirgalem, where only 17 percent of participants are women, compared to 28 percent among households in Bulbula. The average age of participants is between 30 and 35 years.

Salaried-wage work is more prevalent among land and livestock constrained households in Bulbula, among which 24 percent participate. Further, at 34 percent, female participation is also disproportionately higher among participants in this group in the Bulbula area.

Mobile phone ownership exceeds 80 percent among households engaged in salaried-wage work. In Yirgalem 21 percent also hold a motor vehicle, while only 2 percent in Bulbula report the same.

The share of individuals with lower educational background that engage in salaried-wage work is higher in Bulbula than in Yirgalem, which may suggest the existence of different job opportunities. Participants in Yirgalem tend to have completed primary (62 percent) or secondary school (28 percent). Among those in Bulbula, the greatest share completed primary school (47 percent), followed by 30 percent holding no formal education.

The human capital accumulation of participant households is nevertheless relevant for accessing wage work. Among those that did not engage in salaried employment, 41 percent in Bulbula reported a lack of skills as the main barrier to participation. Twenty-three percent of non-participants in Yirgalem reported this constraint.

Furthermore, around 30 percent of households across both ACPZ and across poverty lines stated a lack of job opportunities explained their non-participation in salaried-wage work, pointing to important supply issues on the rural labour market.

Table 26. Characteristics of households participating in salaried-wage work

	Bulbula			Yirgalem		
	Non-poor	Poor	Difference	Non-poor	Poor	Difference
Engaged in salaried-wage work	0.22	0.16	**	0.09	0.04	***
Observations	515	542		520	569	
Participants						
Female	0.30	0.26		0.14	0.26	
Age	30.69	29.21		33.77	33.52	
No education	0.21	0.39	***	0.00	0.11	*
Below primary	0.07	0.15	*	0.04	0.11	
Primary completed	0.54	0.40	**	0.64	0.59	
Secondary completed	0.18	0.06	***	0.32	0.18	
Decision maker non-farm						
Head	0.87	0.83		0.96	0.91	
Female	0.15	0.25		0.06	0.12	
Age	35.70	38.92		39.14	41.65	
Assets						
Holds mobile phone	0.94	0.66	***	0.87	0.73	
Holds motor vehicle	0.04	0.02		0.26	0.07	**
Holds animal cart	0.16	0.08		0.00	0.00	
Holds plough	0.61	0.61		0.02	0.21	*
Holds sickle	0.68	0.76		0.61	0.66	
Holds axe	0.62	0.60		0.83	0.79	
Holds pickaxe	0.56	0.52		0.72	0.75	
Holds harvesting equipment	0.11	0.11		0.31	0.42	
Holds storage bag	0.41	0.39		0.39	0.22	
Holds silo	0.16	0.04	**	0.16	0.00	**
Resources endowment						
Land size (hectares)	1.02	0.99		0.98	0.74	
Tropical livestock unit	1.83	1.54		1.25	0.86	
Poverty						
Poverty Probability Index (PPI) score	0.65	0.34	***	0.45	0.21	***
Asset index	0.43	0.25	***	0.33	0.24	**

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

Table 27. Barriers to participation in salaried-wage work, among non-participating households

	Bulbula			Yirgalem		
	Non-poor	Poor	Difference	Non-poor	Poor	Difference
Barrier to participation						
No need	0.08	0.05		0.16	0.21	**
Lack skills	0.37	0.44	*	0.21	0.24	
Lack labour	0.18	0.14		0.16	0.15	
Lack time	0.09	0.06		0.14	0.12	
No job opportunities	0.28	0.30		0.32	0.27	
Assistance						
Productive Safety Nets Programme (PSNP) employment pathway	0.02	0.02		0.00	0.00	

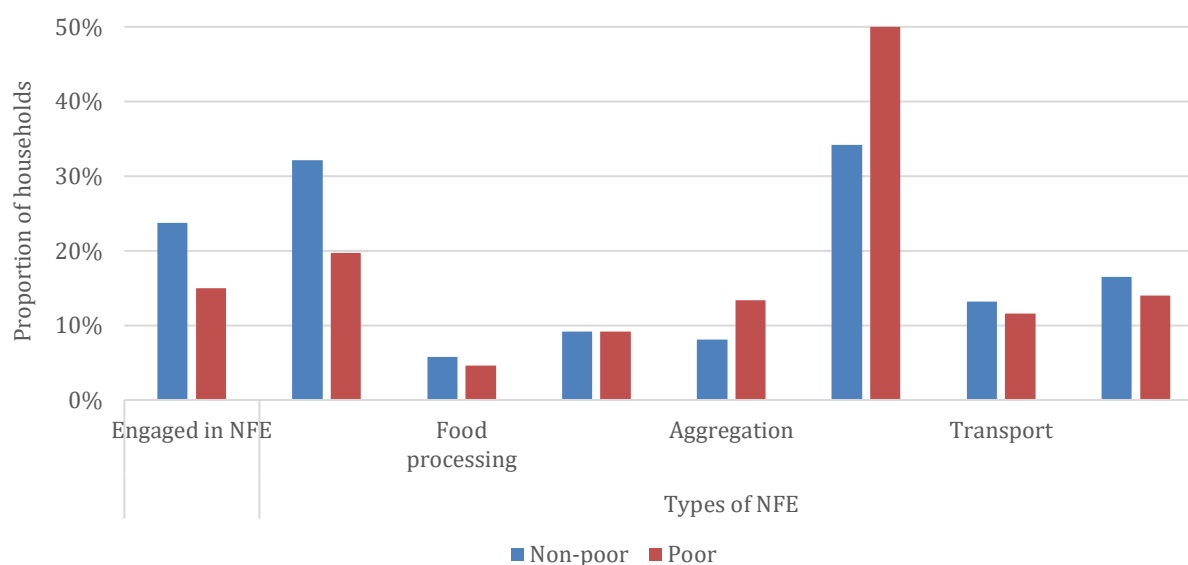
Source: Authors' own elaboration.

4.4.6 OFF-FARM PATHWAYS: NON-FARM ENTERPRISES

One-fifth of households in the ACPZ areas engaged in non-farm enterprise work, with participation around 10 percentage points more likely among non-poor households. The most prevalent types of businesses were reported to be trading and agroprocessing businesses; however, the former was more prevalent among poor households and the latter among non-poor households.

Female participation in non-farm enterprises is notable ranging from 34 to 52 percent, the highest participation recording among poor households in Bulbula. Female-headed households in Bulbula were significantly more likely to be engaged in aggregation business; among those in Yirgalem, agroprocessing was twice as likely than for male-headed households. On average the age of participants ranges between 31 and 35 years and is not differentiated along poverty lines.

Figure 33. Participation in non-farm enterprises, by poverty status

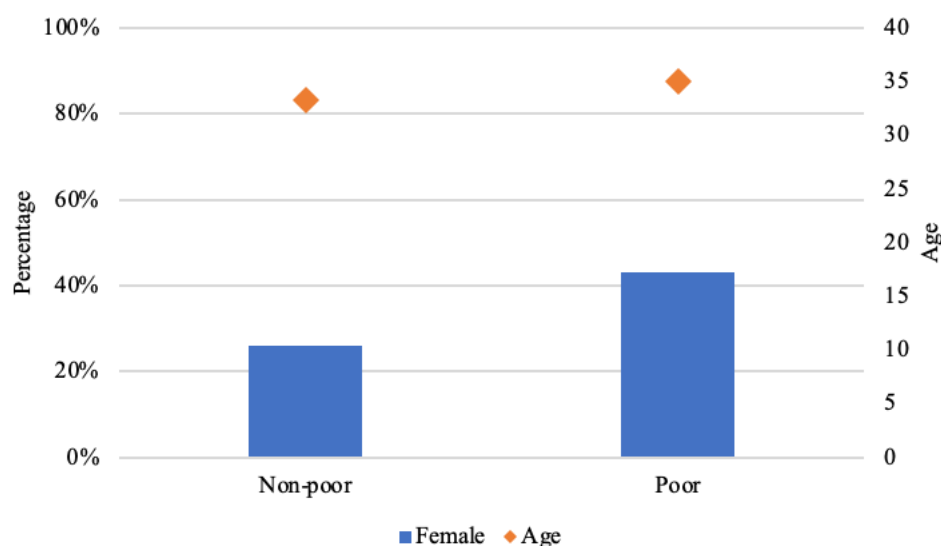


Note: NFE stands for non-farm enterprises.

Source: Authors' own elaboration.

The educational attainment of managers was primary school level for 55 percent of non-poor and 36 percent of poor households in Bulbula. In Yirgalem Agrocommodity Procurement Zone, 71 percent of non-poor households had managers with primary school education while only 58 percent of poor households did. Among 51 percent of poor households in Bulbula and 27 percent in Yirgalem the manager had no formal schooling. The share of individuals with lower educational background that engage in NFE labour is higher in Bulbula than in Yirgalem, which may suggest the existence of different enterprise opportunities. About 20 percent and 10 percent of households who formed or managed a NFE received technical support in Bulbula and Yirgalem, respectively.

Figure 34. Characteristics of non-farm enterprise manager, by poverty status



Source: Authors' own elaboration.

In terms of asset holdings, 83 of non-poor and 81 percent of poor households held a mobile phone. Motor vehicle ownership was also above the Agrocommodity Procurement Zone average, with 9 percent of NFE-participant households reporting ownership. Electricity was reported among 28 percent of poor NFE-participant households, and 62 percent of non-poor participant households.

Among the 80 percent of households without any NFEs, the main constraint cited was the lack of liquidity by 62 percent of non-participants. A lack of skills was reported by 31 percent of households while 13 percent also reported lacking labour supply. Female-headed households were significantly more likely to report labour constraints for enterprises than male-headed households.

Table 28. Characteristics of households participating in non-farm enterprise work

	Bulbula			Yirgalem		
	Non-poor	Poor	Difference	Non-poor	Poor	Difference
Engaged in non-farm enterprise (NFE)	0.25	0.15	***	0.22	0.15	***
Types of NFE						
Agroprocessing	0.37	0.21	**	0.23	0.16	
Food processing	0.07	0.07		0.04	0.00	
Manufacturing	0.10	0.05		0.08	0.18	*
Aggregation	0.07	0.16	*	0.10	0.08	
Trading	0.26	0.51	***	0.48	0.47	
Transport	0.20	0.13		0.02	0.07	

	Bulbula			Yirgalem		
	Non-poor	Poor	Difference	Non-poor	Poor	Difference
Other services	0.17	0.12		0.16	0.20	
Observations	515	542		520	569	
Participants						
Female	0.40	0.52	*	0.40	0.34	
Age	30.41	30.69		32.19	33.82	
No education	0.27	0.51	***	0.15	0.27	*
Below primary	0.07	0.11		0.07	0.12	
Primary completed	0.55	0.36	***	0.71	0.58	*
Secondary completed	0.12	0.02	***	0.07	0.04	
Observations	191	122		125	88	
Decision-maker non-farm						
Head	0.93	0.84	*	0.93	0.94	
Female	0.16	0.27	*	0.08	0.17	*
Age	33.62	39.13	***	37.57	43.85	***
Assets						
Electricity	0.74	0.26	***	0.42	0.33	
Holds mobile phone	0.91	0.75	***	0.69	0.63	
Holds bicycle	0.03	0.01		0.00	0.00	
Holds motor vehicle	0.07	0.06		0.16	0.07	*
Holds refrigerator	0.04	0.00	**	0.00	0.00	
Holds animal cart	0.23	0.07	***	0.08	0.12	
Holds plough	0.53	0.67	**	0.04	0.07	
Holds sickle	0.60	0.75	**	0.69	0.62	
Holds axe	0.72	0.60	*	0.77	0.77	
Holds pickaxe	0.53	0.55		0.78	0.68	
Holds harvesting equipment	0.13	0.12		0.34	0.31	
Holds storage bag	0.35	0.34		0.47	0.49	
Holds silo	0.12	0.04	*	0.06	0.03	
Holds drying equipment	0.00	0.00		0.15	0.13	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

Table 29. Barriers to participation in non-farm enterprises, among non-participating households

	Bulbula			Yirgalem		
	Non-poor	Poor	Difference	Non-poor	Poor	Difference
Barrier to participation						
No need	0.03	0.02		0.07	0.08	
Lack liquidity	0.64	0.55	**	0.66	0.69	
Lack skills	0.33	0.36		0.21	0.27	*
Lack labour	0.13	0.16		0.11	0.10	
Lack assets	0.08	0.09		0.07	0.06	
Lack time	0.03	0.03		0.13	0.07	**
No business opportunities	0.15	0.10	*	0.12	0.14	
No demand	0.07	0.05		0.04	0.04	
Observations	386	451		416	497	
Support						
Technical support	0.21	0.15		0.11	0.11	
Assistance						
Productive Safety Nets Programme (PSNP) off-farm livelihoods	0.00	0.00		0.00	0.03	
Observations	128	89		104	72	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

4.5 Resilience and coping strategies

4.5.1 GROUP MEMBERSHIP

While most households in the ACPZ are affiliated with *iddir*, a traditional village insurance network (Aredo, 1993), few households report membership in other types of groups. Around one-fifth of households in Bulbula report membership in a Common Interest Group (CIG), but very few in Yirgalem. Membership is largely concentrated among men; fewer than 5 percent of poor and non-poor women in the ACPZ areas report any membership in CIGs, as well as in savings associations, cooperatives or unions.

Nearly 30 percent of rural households in Bulbula are affiliated with a primary cooperative or cooperative union, and around 11 percent in Yirgalem. Finally, exchange labour group membership is reported by over 60 percent of Bulbula rural households, but only 13 percent in Yirgalem. Whereas some differences in group membership may be due to the nature of the production system in Bulbula versus Yirgalem, they could also be due to the extent to which social entities have managed to thrive in Oromia more than in Sidama and Southern Nations, Nationalities and People's Region (SNNPR).

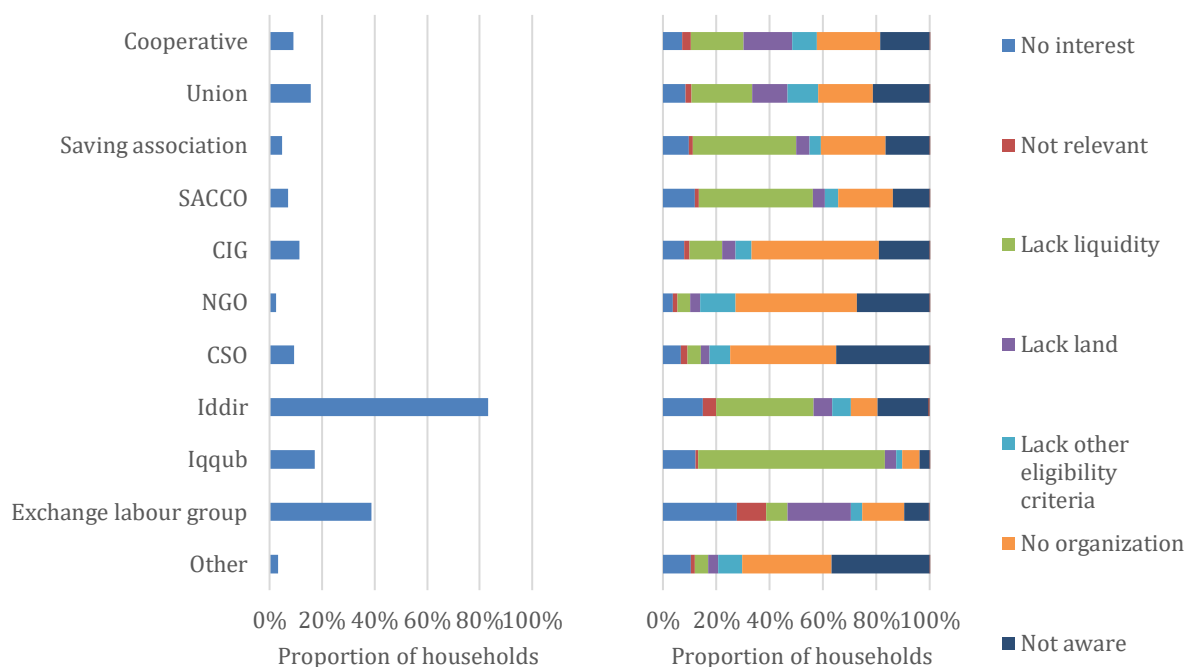
While traditional networks such as *iddir* and *iqqub*⁸ are widespread in Yirgalem areas, far fewer households report membership or interactions with civil society. Indeed, for all organization types probed, households in Yirgalem report no organization exists in their locality.

Households in Yirgalem report liquidity constraints as the main or second most important factor limiting participation in a cooperative or union. Liquidity also affects other contribution-based group membership in Bulbula and Yirgalem, such as Savings and Credit Cooperatives (SACCOs) and Village savings and loan associations (VSLAs).

⁸ A traditional rotating savings association typically accessed by poor households without access to formal banks (Aredo, 1993).

Figure 35. Household participation in groups

a. Proportion of households affiliated with local organizations **b. Participation barriers among unaffiliated households, by organization type**



Notes: SACCO stands for savings and credit cooperatives; CIG stands for common interest group; NGO stands for Non-Governmental Organization; CSO stands for civil society organization.

Source: Authors' own elaboration.

The characteristics of households affiliated with groups are significantly different from those that are not members or linked to any groups. Affiliated households hold more assets, by the asset index in Bulbula and Yirgalem, and are less likely to be poor among households in Yirgalem. Remote households are less likely to be members of groups, and in Bulbula, female-headed households are less likely to report membership. Affiliated households have higher levels of education in Bulbula, in terms of the household head and among all members. The livelihoods profile also matter in Yirgalem, as membership is less likely among on-farm specialized households, and more likely among those engaged in causal or PSNP labour.

Table 30. Characteristics of households, by affiliation status and Agrocommodity Procurement Zone

	Bulbula			Yirgalem		
	Unaffiliated	Affiliated	Difference	Unaffiliated	Affiliated	Difference
Poverty						
Poor	0.56	0.56		0.48	0.35	**
Poverty Probability Index (PPI)	0.47	0.47		0.31	0.36	***
Consumption augmented asset index	0.30	0.34	***	0.20	0.31	***
Remoteness						
Time to water source	54.32	52.82		30.06	20.81	***
Time to market	83.68	71.87	***	48.35	42.92	*

	Bulbula			Yirgalem		
	Unaffiliated	Affiliated	Difference	Unaffiliated	Affiliated	Difference
Time to road	23.92	19.56	*	14.35	10.38	***
Distance to agro-industrial park	73.04	74.28		35.15	29.73	**
Household composition						
Head is female	0.25	0.18	**	0.14	0.12	
Head age	43.06	42.00		44.96	46.75	
Household size	5.38	5.98	***	5.35	5.74	*
Dependency ratio	1.08	1.19		1.00	1.03	
Education						
Head's years of education	2.98	3.73	***	3.97	4.55	
Max years of education	5.93	6.58	***	6.82	6.94	
Livelihoods resources typology						
No land	0.08	0.01	***	0.01	0.00	***
Land and livestock constrained	0.20	0.21		0.21	0.12	***
Land endowed	0.13	0.14		0.23	0.25	
Livestock endowed	0.16	0.11	*	0.10	0.11	
Land and livestock endowed	0.43	0.53	**	0.45	0.52	
Livelihoods activity typology						
No activity	0.00	0.00	**	0.00	0.00	
On-farm specialization	0.60	0.61		0.67	0.48	***
Casual/Productive Safety Nets Programme (PSNP) diversification	0.10	0.09		0.10	0.17	*
Non-farm enterprise diversification	0.11	0.10		0.17	0.24	
Wage diversification	0.10	0.10		0.05	0.08	
Non-farm enterprise and wage diversification	0.08	0.11		0.01	0.03	
Observations	770	287		978	111	

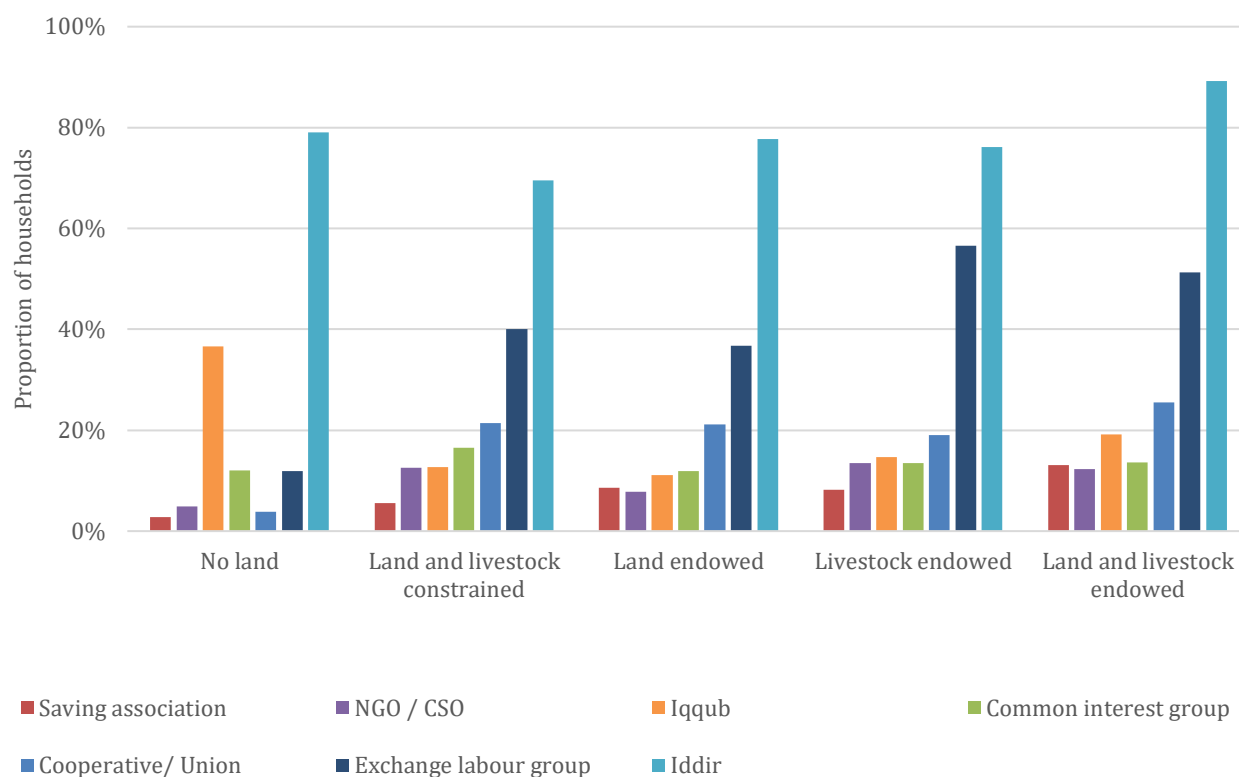
Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

Resource endowment is relevant in different ways across ACPZ areas. Among households in Bulbula, membership is less likely among livestock endowed households and more likely among land and livestock endowed households. In Yirgalem, landless and resource constrained households are less likely to be members of groups, reflecting asset requirements for membership.

These differences reflect the importance of agricultural orientation for participation in exchange labour groups and cooperatives as evidenced by the low share of "no land" and notable share of land and livestock holders engaging in such groups. However, membership in *iddir* is not resource-based, as significant shares across all resource groups participate.

Figure 36. Proportion of households participating in groups, by livelihoods resources typology



Note: NGO stands for Non-Governmental Organization; CSO stands for civil society organization.

Source: Authors' own elaboration.

Membership in groups is significantly less likely for women and men in poor households as compared to non-poor households, reflecting the liquidity, asset and information constraints that are more prevalent among the poor. Across women and men, differences also exist in terms of group membership. Women have lower participation rates in cooperatives, common interest groups, civil society groups, and exchange labour in both Bulbula and Yirgalem ACPZ.

Along the age dimension, young adults are far less engaged in all types of membership groups related and unrelated to agriculture. This observation is consistent across both ACPZ areas. Older adults in the ACPZ areas experience fewer differences in group membership across poverty lines. The most notable distinction being membership in *iddir* in Bulbula for which older adults in poor households report 15 percentage points lower engagement.

Table 31. Membership in organizations, by gender of individual, Agrocommodity Procurement Zone and household poverty status

	Women						Men					
	Bulbula			Yirgalem			Bulbula			Yirgalem		
	Non-poor	Poor	Difference	Non-poor	Poor	Difference	Non-poor	Poor	Difference	Non-poor	Poor	Difference
Cooperative/union	0.05	0.05		0.01	0.01		0.18	0.15		0.09	0.04	***
Saving association	0.05	0.03	**	0.02	0.01		0.06	0.04	**	0.04	0.03	
Common interest group	0.04	0.04		0.00	0.00		0.13	0.11		0.02	0.01	
Non-governmental, civil society organization	0.04	0.03		0.00	0.01	**	0.10	0.06	***	0.06	0.06	
Iddir	0.48	0.31	***	0.39	0.36		0.47	0.33	***	0.59	0.46	***
Iqqub	0.06	0.05		0.04	0.02	**	0.11	0.04	***	0.14	0.08	***
Exchange labour	0.15	0.15		0.03	0.02		0.45	0.36	***	0.10	0.08	*
Other	0.00	0.00		0.02	0.02		0.01	0.00		0.03	0.03	
Observations	695	847		730	950		694	867		722	976	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

Table 32. Membership in organizations, by age groups, Agrocommodity Procurement Zone and household poverty status

	15-30 years old						31+ years old					
	Bulbula			Yirgalem			Bulbula			Yirgalem		
	Non-poor	Poor	Difference	Non-poor	Poor	Difference	Non-poor	Poor	Difference	Non-poor	Poor	Difference
Cooperative/union	0.09	0.04	***	0.01	0.00	**	0.16	0.18		0.09	0.05	***
Saving association	0.03	0.01	***	0.02	0.01	*	0.09	0.06	*	0.04	0.04	
Common interest group	0.07	0.03	***	0.00	0.00		0.11	0.13		0.02	0.01	
Non-governmental, civil society organization	0.05	0.01	***	0.01	0.01		0.11	0.08		0.06	0.06	
Iddir	0.32	0.12	***	0.28	0.13	***	0.72	0.58	***	0.75	0.75	
Iqqub	0.07	0.02	***	0.06	0.03	***	0.11	0.08		0.14	0.09	***
Exchange labour	0.24	0.18	***	0.05	0.02	***	0.40	0.36		0.08	0.08	
Other	0.00	0.00		0.00	0.00		0.00	0.00		0.06	0.05	
Observations	811	946		801	1 067		578	768		651	859	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

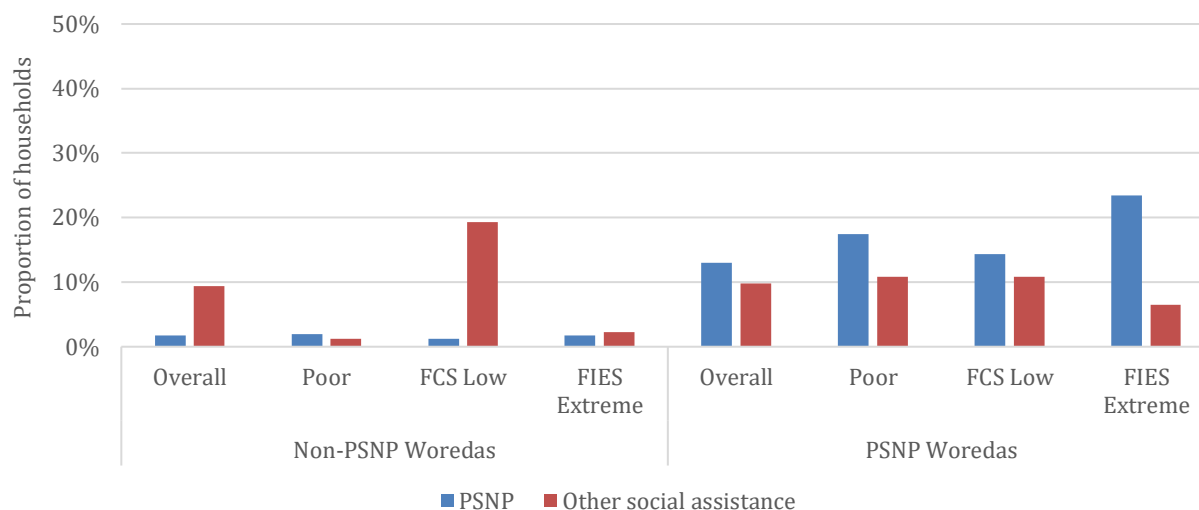
Source: Authors' own elaboration.

4.5.2 SAFETY NETS

Formal support networks

Access to institutional sources of social support was reported by 16 percent of households in the ACPZ areas, half of which report benefitting from the PSNP in the 12 months prior to the baseline survey. However, the proportion of PSNP beneficiaries is higher if considering only woredas where PSNP is active. In those areas 13 percent of the population benefitted from any part of the PSNP programme, and higher shares if considering only the poor (17 percent) or those classified as severe under the FIES index (23 percent), reflecting the appropriateness of PSNP-4 food insecurity targeting criteria.

Figure 37. Proportion of households benefitting from Productive Safety Nets Programme or other social assistance



Note: PSNP stands for Productive Safety Nets Programme.

Source: Authors' own elaboration.

Although poor and food insecure households were effectively more likely to have benefitted from PSNP in the previous 12 months, a greater share of non-poor households reported benefitting from other sources of social assistance.

Table 33. Proportion of households benefitting from social protection, by Agrocommodity Procurement Zone and poverty status

	Bulbula			Yirgalem		
	Non-poor	Poor	Difference	Non-poor	Poor	Difference
Social protection						
Productive Safety Nets Programme (PSNP) ever	0.08	0.13	**	0.05	0.09	**
PSNP past 12 months	0.07	0.13	***	0.03	0.08	***
PSNP direct support	0.03	0.07	***	0.02	0.05	**
PSNP public works	0.06	0.09		0.03	0.06	**
PSNP livelihoods	0.03	0.09	***	0.02	0.06	***
Other social assistance	0.14	0.06		0.11	0.08	
Agricultural support	0.04	0.04		0.02	0.02	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

Female-headed households disproportionately benefitted from PSNP in Bulbula; however, they were significantly less likely to be beneficiaries of other types of social or agricultural assistance programmes.

Table 34. Proportion of households benefitting from social protection, by Agrocommodity Procurement Zone and head gender

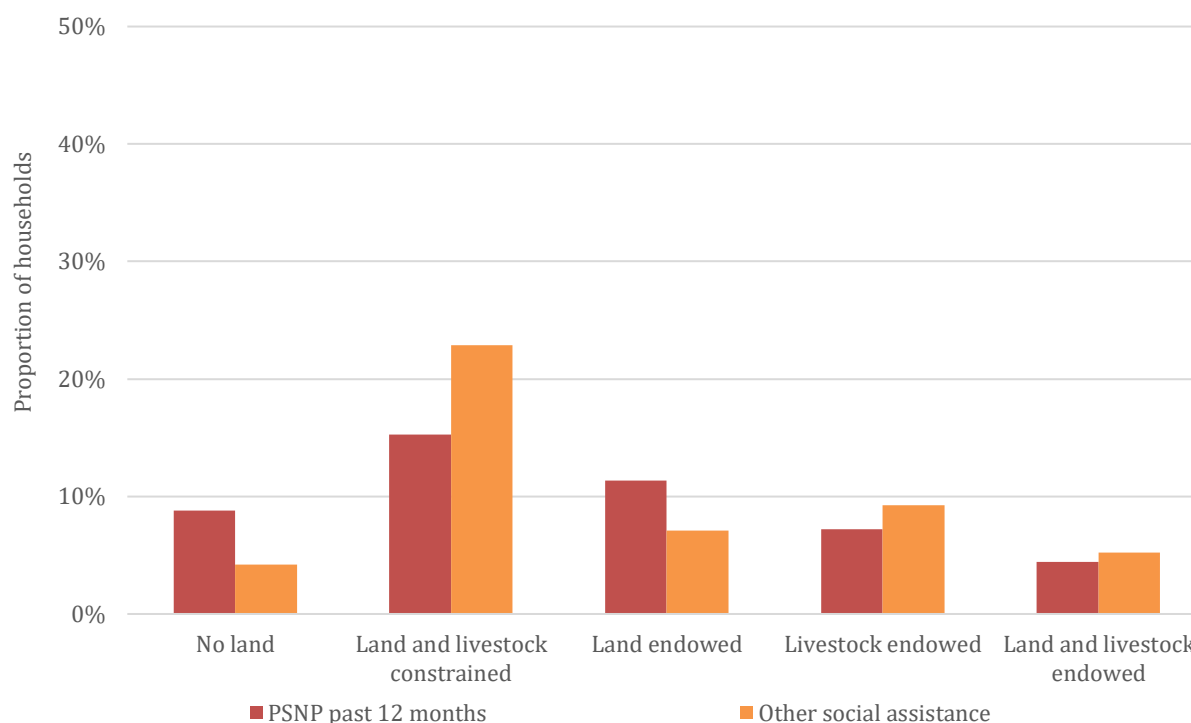
	Bulbula			Yirgalem		
	Male	Female	Difference	Male	Female	Difference
Social protection						
Productive Safety Nets Programme (PSNP) ever	0.10	0.15	*	0.06	0.09	
PSNP past 12 months	0.09	0.15	**	0.05	0.08	
PSNP direct support	0.04	0.08	*	0.03	0.06	
PSNP public works	0.08	0.08		0.04	0.06	
PSNP livelihoods	0.06	0.07		0.03	0.06	
Other social assistance	0.05	0.27		0.10	0.05	**
Agricultural support	0.04	0.03		0.02	0.00	***

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

In general, the proportion of social assistance beneficiaries is greatest among households in the land and livestock constrained group, reflecting their relatively higher prevalence of poverty and food insecurity.

Figure 38. Proportion of households benefitting from social protection, by livelihoods resources typology



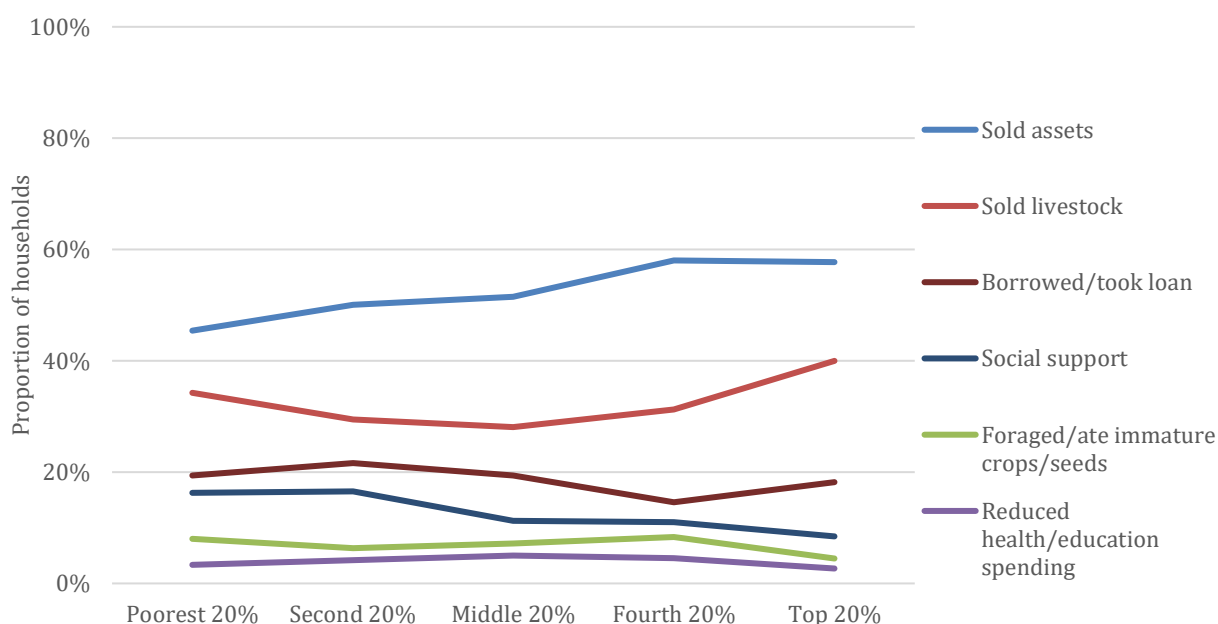
Note: PSNP stands for Productive Safety Nets Programme.

Source: Authors' own elaboration.

Informal support networks

Households also engage in informal support networks and coping strategies to face unexpected or adverse situations. Nearly 90 percent of all households reported exposure to some shock though most pursued resource-depleting rather than social-network based support. While 13 percent of households sought help from their network, more than half sold assets and around one-third sold livestock. Nineteen percent sought to obtain a loan as a coping strategy. Differences in coping strategies were not differentiated along poverty or gender lines. In terms of insurance as a safety net, no households reported any access to crop insurance and just 2 percent of households reported livestock insurance in the Bulbula Agrocommodity Procurement Zone area.

Figure 39. Proportion of households adopting coping strategies in response to shocks, by poverty quintiles



Source: Authors' own elaboration.

Table 35. Proportion of households facing shocks and adopting coping strategies, by Agrocommodity Procurement Zone and poverty status

	Bulbula			Yirgalem		
	Non-poor	Poor	Difference	Non-poor	Poor	Difference
Shocks						
Faced any shock	0.88	0.94		0.82	0.85	
Type of shock						
Loss of non-farm job	0.55	0.41		0.60	0.61	
Illness/accident	0.53	0.64	**	0.34	0.42	
Death of main bread earner	0.03	0.04		0.03	0.04	
Death of under-five child	0.01	0.01		0.01	0.01	
Death of household member over 5 years old	0.03	0.01		0.02	0.02	
Drought	0.55	0.57		0.06	0.06	
Flood	0.13	0.13		0.19	0.16	
Erratic rainfall	0.18	0.13		0.06	0.06	

	Bulbula			Yirgalem		
	Non-poor	Poor	Difference	Non-poor	Poor	Difference
Hail/Frost	0.09	0.05		0.03	0.04	
Landslide/avalanche	0.01	0.01		0.01	0.01	
Fire	0.01	0.01	**	0.00	0.02	
Loss of livestock	0.31	0.29		0.09	0.10	
Crop damage	0.31	0.22		0.16	0.16	
Theft or robbery	0.07	0.04		0.11	0.09	
Displacement	0.00	0.00		0.00	0.00	
Conflict	0.02	0.02		0.07	0.09	
Other	0.00	0.00		0.01	0.01	
Detrimental coping strategies						
Sold assets	0.59	0.54		0.45	0.43	
Sold livestock	0.37	0.36	***	0.20	0.29	
Forage/ate immature crops/seeds	0.06	0.06		0.07	0.09	
Reduced health/education spending	0.02	0.04	**	0.07	0.03	
Took children out of school	0.01	0.01	*	0.01	0.02	
Sent children to look for work	0.00	0.01		0.00	0.01	
Positive coping strategies						
Social support	0.08	0.10		0.19	0.22	
Borrowed/took loan	0.17	0.17		0.23	0.22	
Looked for work/migration	0.01	0.00	**	0.01	0.03	
Access to insurance						
Crop	0.00	0.00		0.00	0.00	
Livestock	0.04	0.01	*	0.01	0.00	
Observations	446	496		445	498	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

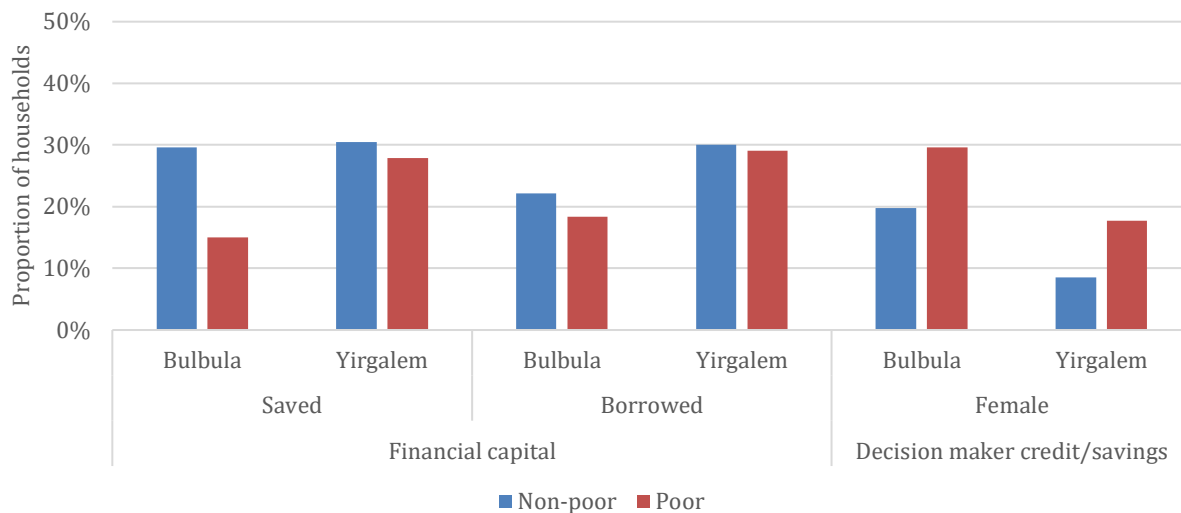
Source: Authors' own elaboration.

4.5.3 LIQUIDITY

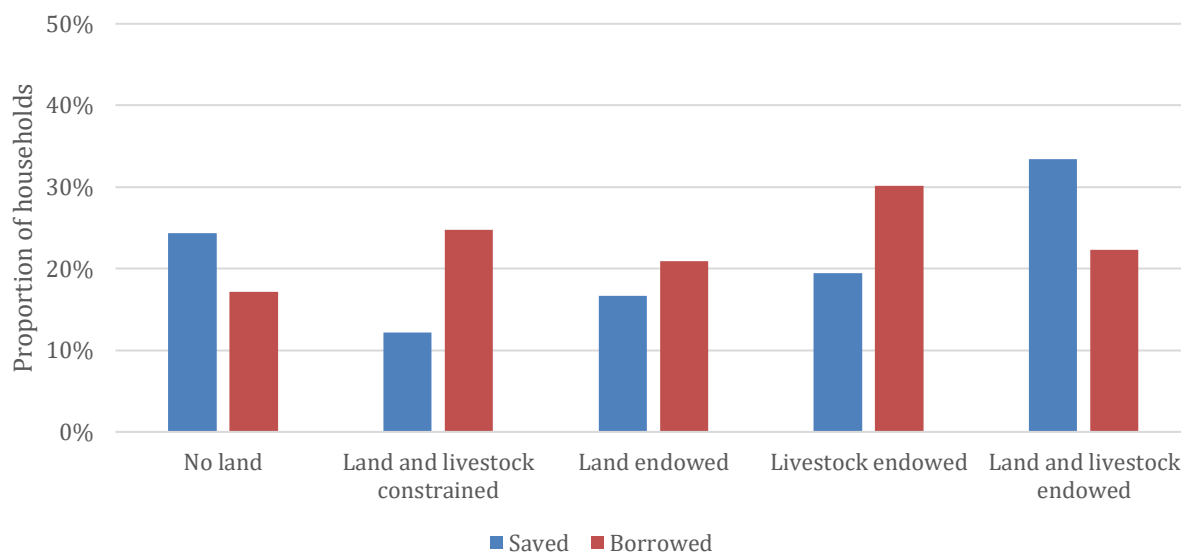
Household financial capital is limited, with fewer than 30 percent of households reporting saved or borrowed in the previous year. Poor households report incidence of having borrowed as non-poor households; however, savings is much less prevalent among poor households in Bulbula. The capacity to save is closely aligned with the resource profile of households, with the land and livestock constrained the least likely to have saved in the previous year, indicative of strong liquidity constraints faced by such households.

Figure 40. Proportion of households borrowing or savings in the previous year

a. By Agrocommodity Procurement Zone and poverty status



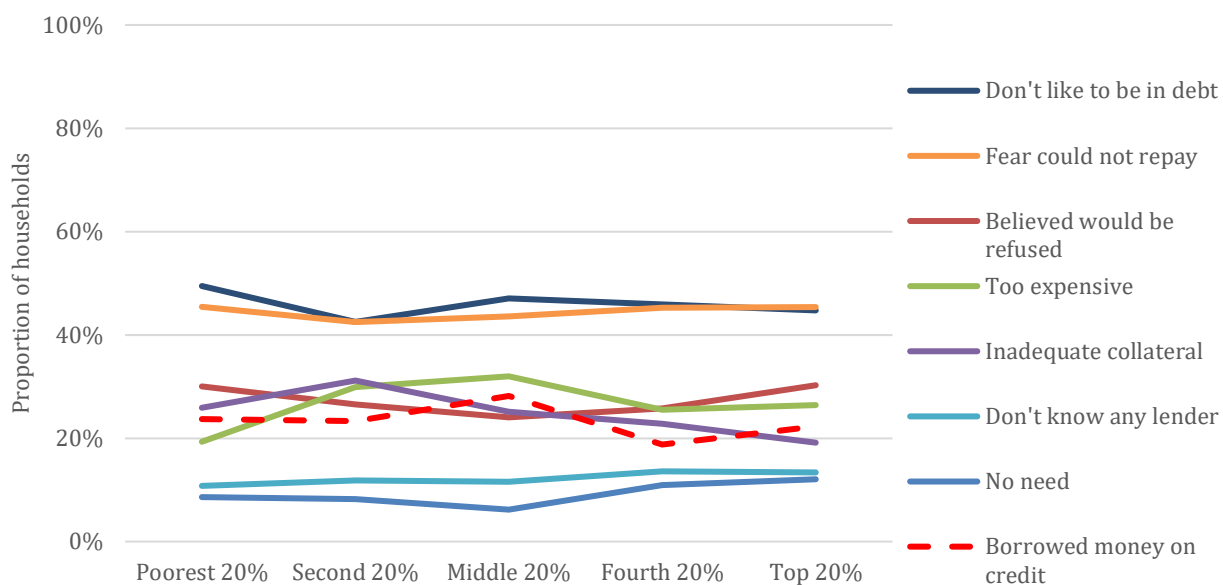
b. By livelihoods resources typology



Source: Authors' own elaboration.

The share of households that borrowed money on credit is not correlated with the poverty level, as poorer households are not more or less likely to borrow than wealthier households. Even the reasons for not borrowing are similar across the poverty distribution, with most households reporting a lack of collateral and a preference against accumulating debt.

Figure 41. Reasons for not taking any loan in the previous 12 months, by poverty quintiles



Source: Authors' own elaboration.

Credit is primarily taken to finance household consumption needs – a reason that is eight to 15 percentage points more prevalent among poor households. Non-poor households are more likely to borrow to invest in a new enterprise or to purchase farm inputs such as fertilizer.

Table 36. Purpose of loans taken among households taking credit, by Agrocommodity Procurement Zone and poverty status

		Farm inputs and labour	Farm investment	Non-farm enterprise	Household consumption	Large payments
Bulbula	Non-poor	0.60	0.04	0.19	0.50	0.08
	Poor	0.48	0.02	0.15	0.58	0.05
Yirgalem	Non-poor	0.22	0.00	0.17	0.69	0.07
	Poor	0.17	0.01	0.11	0.85	0.11

Source: Authors' own elaboration.

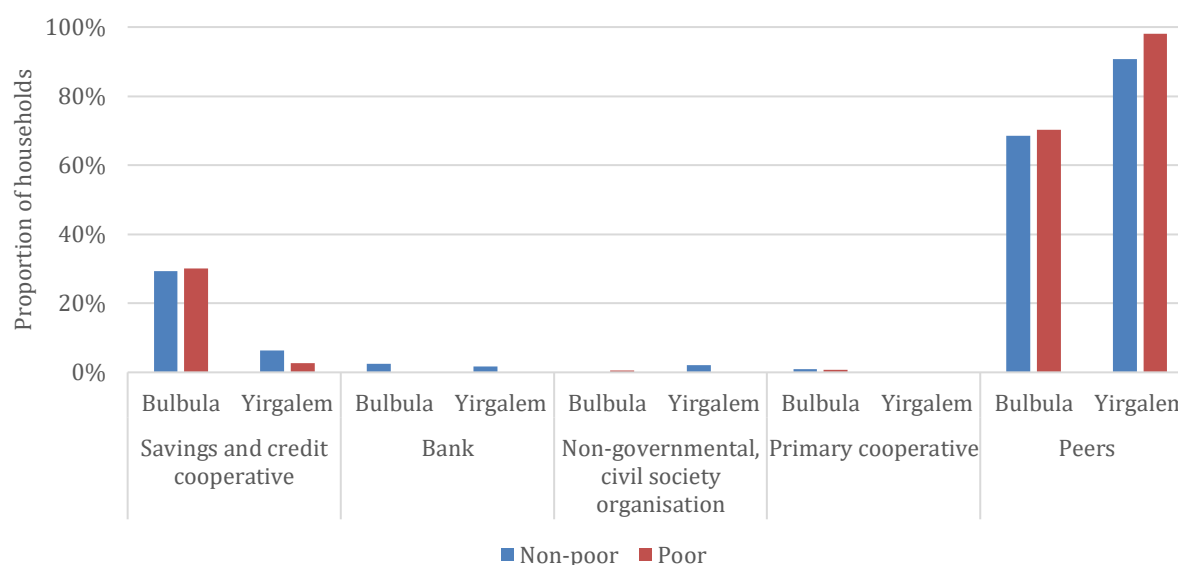
On the supply side, the most important source of credit for borrowers are peers, representing 94 percent of the source of credit in Yirgalem and 69 percent in Bulbula. In terms of formal entities, the main providers of credit to households in Bulbula are savings associations such as SACCOs and VSLAs, accounting for 30 percent of loans. In Yirgalem institutional sources of credit are accessed by few households. Differences across poverty or gender lines are not observed.

Table 37. Main source of loan among borrowing households, by Agrocommodity Procurement Zone

	Savings associations (SACCOS, VSLA)	Bank (public/private)	Peers	Primary cooperative/union	Non-governmental/civil society organization
Bulbula	0.30	0.01	0.69	0.01	0.00
Yirgalem	0.05	0.01	0.94	0.00	0.01

Source: Authors' own elaboration.

Figure 42. Main source of credit among households that borrowed, by Agrocommodity Procurement Zone and poverty status



Source: Authors' own elaboration.

4.6 Availability of services and infrastructure in the Agrocommodity Procurement Zone areas

This section takes advantage of the household level reporting on different providers of inputs, services and commercialization outlets to describe the panorama of actors present in local value chains, based on their take up among poor and non-poor in each of the ACPZ areas. This panorama serves to map the network of Agrocommodity Procurement Zone-relevant actors identified in the study areas.

A total of 27 types of actors, infrastructure and interventions were catalogued as existing throughout the ACPZs (listed in Table A3); however, only a few reaches rural households broadly. In terms of the agricultural value chain, very few households indicate engaging with agricultural processors, SMEs/traders, companies, or participating in a contract farming arrangement. While membership in groups, notably *iddir*, is commonplace, those that provide functions such related to the value chain report more limited coverage. This is the case for primary cooperatives/unions, Non-Governmental Organizations (NGOs) and civil society organizations (CSOs). Agro-industry-park infrastructure is identified by households in the ACPZ. More than 60 percent indicate awareness of an industrial park. Awareness and use of agricultural infrastructure such as RTCs, primary collection centres and milk collection centres is also quite limited, reported by no more than 10 percent of the population.

The rest of this subsection describes the different functions of the main agricultural actors related to value chains in the ACPZ areas.

4.6.1 INPUT PROVISION

The main sources of inputs in Bulbula for poor and non-poor households alike are reported to be own production (for traditional seeds and organic fertilizers), the Agricultural One Stop Shop (AOSS) market (improved seeds, agrochemicals and inorganic chemicals), non-AOSS market for commercial feed, and community sources for commercial feeds and mechanization. Cooperatives/unions are also important providers of modern inputs to poor and non-poor households.

Among households in Yirgalem, cooperatives/unions have only a marginal role as input providers, whereas Development Agents are more often cited as a source of traditional and modern agricultural inputs. Few differences are observed across poverty lines in terms of the main source of agricultural input.

Table 38. Proportion of households accessing crop inputs, by Agrocommodity Procurement Zone, source of input, and poverty status

a. Bulbula

Bulbula		Traditional seeds	Improved seeds	Agrochemicals	Organic fertilizers	Inorganic fertilizers	Mechanization	Commercial feeds
Own production	Non-poor	0.76	0.09	0.02	0.82	0.05	0.09	0.00
	Poor	0.78	0.12	0.04	0.85	0.04	0.00	0.00
Community	Non-poor	0.37	0.12	0.09	0.12	0.06	0.68	0.52
	Poor	0.42	0.10	0.13	0.15	0.11	0.30	0.51
Market: Agricultural One Stop Shop	Non-poor	0.19	0.29	0.45	0.01	0.25	0.16	0.00
	Poor	0.18	0.30	0.47	0.04	0.24	0.62	0.00
Market: others	Non-poor	0.14	0.06	0.26	0.03	0.03	0.00	0.83
	Poor	0.14	0.08	0.20	0.03	0.04	0.00	0.66
Primary cooperative/ union	Non-poor	0.00	0.49	0.30	0.02	0.53	0.06	0.15
	Poor	0.03	0.50	0.22	0.06	0.51	0.00	0.16
Non-governmental, civil society organization	Non-poor	0.00	0.02	0.01	0.00	0.02	0.02	0.02
	Poor	0.00	0.05	0.06	0.01	0.04	0.08	0.02
Small and medium enterprise	Non-poor	0.01	0.02	0.04	0.00	0.04	0.09	0.01
	Poor	0.01	0.01	0.04	0.01	0.02	0.00	0.02
Companies	Non-poor	0.00	0.01	0.01	0.00	0.00	0.00	0.02
	Poor	0.00	0.00	0.00	0.01	0.00	0.00	0.02
Development agent	Non-poor	0.02	0.07	0.08	0.03	0.15	0.09	0.01
	Poor	0.01	0.07	0.07	0.00	0.12	0.00	0.01
Government	Non-poor	0.04	0.17	0.09	0.12	0.28	0.04	0.02
	Poor	0.01	0.17	0.05	0.06	0.34	0.00	0.01

b. Yirgalem

Yirgalem		Traditional seeds	Improved seeds	Grafted seedlings	Agrochemicals	Organic fertilizers	Inorganic fertilizers	Commercial feeds
Own production	Non-poor	0.71	0.22	0.26	0.00	0.86	0.22	0.00
	Poor	0.71	0.22	0.07	0.13	0.88	0.21	0.00
Community	Non-poor	0.45	0.24	0.45	0.07	0.31	0.19	0.49
	Poor	0.46	0.24	0.40	0.03	0.29	0.16	0.54
Market: Agricultural One Stop Shop	Non-poor	0.22	0.21	0.22	0.58	0.02	0.38	0.00
	Poor	0.18	0.23	0.30	0.52	0.00	0.41	0.00
Market: others	Non-poor	0.03	0.05	0.04	0.00	0.00	0.05	0.58
	Poor	0.03	0.02	0.00	0.00	0.00	0.04	0.56
Primary cooperative/ union	Non-poor	0.00	0.07	0.06	0.03	0.01	0.09	0.11
	Poor	0.00	0.06	0.00	0.00	0.01	0.06	0.03
Non-governmental, civil society organization	Non-poor	0.01	0.00	0.03	0.03	0.00	0.00	0.00
	Poor	0.00	0.00	0.03	0.00	0.00	0.00	0.00
Small and medium enterprise	Non-poor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	Poor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Companies	Non-poor	0.00	0.01	0.00	0.00	0.00	0.00	0.00
	Poor	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Development agent	Non-poor	0.05	0.50	0.41	0.59	0.06	0.27	0.03
	Poor	0.06	0.53	0.57	0.75	0.04	0.34	0.03
Government	Non-poor	0.02	0.30	0.12	0.03	0.03	0.33	0.06
	Poor	0.03	0.32	0.10	0.06	0.03	0.32	0.00

Notes: Low  High

Source: Authors' own elaboration.

4.6.2 COMMERCIALIZATION OUTLETS

The commercialization of wheat and dairy products in Bulbula is primarily on the local market without intermediaries, direct to consumers, and in around 10 percent of cases, to SMEs or traders, but mostly among non-poor households. The main outlets for these primary commodities are not very different than for other widely produced crops, except for barley for which poor and non-poor households alike sell to SMEs or traders.

Table 39. Proportion of households using sales outlets among households commercializing main crops, by Agrocommodity Procurement Zone, and poverty status

a. Bulbula

Bulbula		Teff	Wheat	Maize	Sorghum	Barley	Haricot bean	Potato	Khat	Dairy products
Direct	Non-poor	0.17	0.18	0.16	0.59	0.14		0.19		0.45
	Poor	0.06	0.06	0.17		0.09		0.21		0.21
Market	Non-poor	0.93	0.90	0.96	1.00	0.86	0.97	0.79	0.48	0.58
	Poor	0.94	0.93	0.96	1.00	0.91	0.96	0.92		0.79
Cooperative/union	Non-poor			0.08		0.07		0.05		
	Poor	0.01	0.02	0.02		0.02	0.05	0.02		
Small and medium enterprises	Non-poor	0.09	0.11	0.01		0.19	0.03	0.20	0.52	0.07
	Poor	0.08	0.04	0.02		0.15	0.16	0.09		
Rural transformation centre	Non-poor									
	Poor	0.01								
Processors	Non-poor									
	Poor	0.01								
Public procurement	Non-poor									
	Poor	0.01								
Contract farming	Non-poor									
	Poor	0.01								

a. Yirgalem

Yirgalem		Wheat	Maize	Barley	Haricot bean	Potato	Coffee	Avocado	Khat	Dairy products
Direct	Non-poor		0.07	0.29	0.18	0.16	0.12	0.13	0.10	0.31
	Poor	0.20	0.12	0.22		0.21	0.12	0.20	0.05	0.35
Market	Non-poor	1.00	0.98	0.95	1.00	0.93	0.61	0.99	0.83	0.81
	Poor	0.80	0.96	0.96	1.00	1.00	0.61	0.94	0.86	0.80
Cooperative/union	Non-poor		0.01	0.04			0.35	0.04		
	Poor						0.27	0.03		
Small and medium enterprises	Non-poor						0.02	0.02	0.01	
	Poor			0.01			0.03			
Rural transformation centre	Non-poor							0.01		
	Poor									
Processors	Non-poor						0.20			
	Poor						0.24			
Public procurement	Non-poor		0.01				0.01			
	Poor								0.00	
Contract farming	Non-poor								0.15	
	Poor								0.13	

Notes: Low  High

Source: Authors' own elaboration.

The set of market outlets is similarly concentrated among market-oriented households in Yirgalem. Producers of coffee and avocado sell primarily on the market, as do those producing dairy products. Unlike for other commodities, coffee is also commercialized to cooperatives/unions by 35 percent of non-poor producers and

27 percent of poor producers. Moreover, 20 percent of non-poor and 24 percent of poor households sell coffee output to agricultural processors.

In terms of gender, female-headed households are significantly less likely to commercialize across all types of outlets.

Table 40. Proportion of households using sales outlets among households commercializing main crops, by head gender

	Sales outlets		
	Male	Female	Difference
Contract farming	0.01	0.01	*
Cooperative/union	0.06	0.03	***
Market	0.62	0.49	***
Processors	0.03	0.02	**
Public procurement	0.00	0.00	**
Rural transformation centre	0.00	0.00	
Small and medium enterprises/traders	0.05	0.05	
Observations	1 631	515	

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

4.6.3 AGROCLUSTER INTERVENTIONS

The main agrocluster interventions implemented by the Agricultural Transformation Institute are accessed by limited shares of households in Bulbula and Yirgalem. The most prevalent intervention is the Agricultural One Stop Shop, which is the source of inputs for 35 percent of rural households.

Table 41. Proportion of households accessing agrocluster interventions, by Agrocommodity Procurement Zone, poverty status and head gender

	Bulbula	Yirgalem	Non-poor	Poor	Male	Female
8028 Farmer Hotline	0.02	0.00	0.01	0.01	0.01	0.01
Agricultural Commercialization Clusters (ACC) Help Desk	0.01	0.01	0.01	0.01	0.01	0.00
Cooperative-based seed production	0.01	0.01	0.01	0.01	0.01	0.01
Input voucher system	0.05	0.03	0.05	0.04	0.05	0.04
Agricultural One Stop Shop	0.35	0.35	0.36	0.34	0.36	0.32

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

4.6.4 SERVICES PROVIDED BY COOPERATIVES

Although membership in primary cooperatives and cooperative unions was indicated in Section 4.5.2 to be relatively limited across households, the mapping of actors reveals cooperatives as providers of different services in the ACPZ areas, taken up by a notable proportion of rural households. This section summarizes the different resources and services reported to be obtained from these entities by households in the ACPZ.

Primary cooperatives and cooperative unions are largely providers of inputs to poor and non-poor households in the Bulbula Agrocommodity Procurement Zone area. The main inputs provided are improved seeds, agrochemicals and inorganic fertilizers, to households using those inputs in the Bulbula area. They are not

providing commercialization outlets for producers, unlike primary cooperatives and unions in the Yirgalem Agrocommodity Procurement Zone area, where they are a significant commercialization outlet for coffee production. In neither area are cooperatives/unions relevant for accessing financial services such as credit or insurance. Furthermore, no cooperatives/unions are reported to provide storage services, given the lack of use in general of these services among households in the ACPZ areas.

Table 42. Proportion of households accessing credit, inputs, services and sales outlets from primary cooperatives and cooperative unions, by Agrocommodity Procurement Zone and poverty status

	Bulbula				Yirgalem			
	Non-poor	Poor	Difference	N	Non-poor	Poor	Difference	N
Credit	0.01	0.01		225	0.00	0.00		165
Inputs								
Traditional seeds	0.00	0.03	***	681	0.00	0.00		483
Improved seeds	0.49	0.50		353	0.07	0.06		225
Grafted seedlings	0.00			1	0.06	0.00		27
Agrochemicals	0.30	0.22	*	561	0.03	0.00		28
Organic fertilizers	0.02	0.06	**	425	0.01	0.01		409
Inorganic fertilizers	0.53	0.51		704	0.09	0.06		234
Mechanization	0.06	0.00		42				0
Commercial feed	0.15	0.16		179	0.11	0.03		49
Services								
Digital market information	0.31			5				0
Digital extension services	0.34	0.36		9	0.00	0.00		3
Extension services (not digital)	0.08	0.04		143	0.00	0.00		1
Transport services	0.70	0.00	**	7	1.00	0.00		1
Storage services				0	0.00			0
Crop insurance				0				0
Commercialization								
Teff	0.00	0.01		228	0.00	0.00		9
Wheat	0.00	0.02		217	0.00	0.00		6
Maize	0.08	0.02		136	0.01	0.00		33
Sorghum	0.00	0.00		19				0
Barley	0.07	0.02		155	0.04	0.00		72
Haricot bean	0.00	0.05		37	0.00	0.00		10
Tomato		0.00		1		0.00		2
Potato	0.05	0.02		118	0.00	0.00		45
Coffee				0	0.35	0.27	*	199
Avocado	0.00	0.00		3	0.04	0.03		58
Khat	0.00			4	0.00	0.00		109

	Bulbula				Yirgalem			
	Non-poor	Poor	Difference	N	Non-poor	Poor	Difference	N
Dairy products	0.00	0.00		21	0.00	0.00		18

Note: Asterisks indicate the level of significance of the t-test of difference in means: *** p<0.01, ** p<0.05, * p<0.1.

Source: Authors' own elaboration.

4.6.5 AGRICULTURAL EXTENSION SERVICES

Extension services are accessed by relatively few households in the ACPZ areas. Sixteen percent of non-poor households and 13 percent of poor households in the Bulbula Agrocommodity Procurement Zone accessed digital or non-digital crop extension services. In the same Agrocommodity Procurement Zone, digital and non-digital livestock extension services were accessed by 10 percent and 8 percent of non-poor and poor households, respectively. Among households in the Yirgalem Agrocommodity Procurement Zone, fewer than 2 percent of poor and non-poor households accessed crop or livestock extension services of any kind. Female-headed households in both ACPZ are slightly less likely to access extension services.

Table 43. Access to crop and livestock extension, by Agrocommodity Procurement Zone, poverty status and head gender

		Crop	Livestock
Bulbula	Overall	0.15	0.09
	Non-poor	0.16	0.10
	Poor	0.13	0.08
	Male headed	0.16	0.09
	Female headed	0.11	0.09
Yirgalem	Overall	0.01	0.02
	Non-poor	0.01	0.02
	Poor	0.01	0.01
	Male headed	0.01	0.02
	Female headed	0.00	0.00

Source: Authors' own elaboration.

Among those accessing extension, the main providers of digital extension were Development agents (DAs) (49 percent), government sources (44 percent), primary cooperatives and unions (35 percent), and NGOs (20 percent). Traditional, non-digital extension was primarily provided by DAs to 91 percent of households with access to extension in Bulbula. In Yirgalem, DAs were reported as the only source of extension among the few households with access.

Table 44. Main source of crop and livestock extension, Bulbula Agrocommodity Procurement Zone

	Digital market information	Digital extension services	Extension services (not digital)
Primary cooperative/union	0.31	0.35	0.06
Non-governmental, civil society organization	0.00	0.20	0.03
Small and medium enterprises	0.00	0.00	0.00
Companies	0.00	0.00	0.00

	Digital market information	Digital extension services	Extension services (not digital)
Development agent	0.27	0.49	0.91
Government	0.40	0.44	0.22

Source: Authors' own elaboration.

5 Discussion and conclusions

The purpose of conducting this territorial poverty, exclusion and food and nutrition security assessment was that of providing timely territorial information to guide the development of recommendations for inclusive and sustainable investments in the integrated agro-industrial parks and Agrocommodity Procurement Zones.

The baseline study provided a recent characterization of the ACPZ that largely confirm national-level findings reported in Covarrubias, de la O Campos and Cordonnier (2021), which highlight a series of agricultural sector bottlenecks that are constraining agricultural outcomes among smallholders, but that may also be affecting the development of the rural economy and the overall agricultural transformation process. Among the constraints noted in the ACPZ territory, the limited use of improved inputs, the poor diffusion of technology and machinery, and the scant access to storage and transport services each present constraints to production, commercialization and the development of the value chain. The underlying problem observed is a combination of demand and supply factors related to strong liquidity constraints and availability of such goods and services affecting both the crop and livestock production sectors.

The Government of Ethiopia has identified these constraints, especially those with implications for achieving the ambitious production targets laid out in its agricultural sector policy strategies, such as the Growth and Transformation Plans and the current Ten in Ten programme, which is guiding investments in the agricultural sector. However, given the broad base of rural smallholders that comprise Ethiopia's agricultural sector – and could well be the backbone of the rural economy – the mechanisms through which those bottlenecks are overcome necessitates inclusive strategies when developing and guiding investments.

Section 1 presents a set of questions for this study to structure the collection and analysis of information for guiding inclusivity recommendations in the ACPZ context. The following discussion revisits those questions drawing on the findings of Section 4 to elaborate a set of conclusions about inclusive investments in the ACPZ.

Inclusion of agricultural investments for who?

The capacities and levels of asset holdings highlight the important differences across poverty and gender lines in terms of constraints of productive resources such as land, livestock and assets. Female-headed households have higher rates of poverty and food insecurity and are less engaged in the commodities prioritized by the IAIP, which may reflect their greater constraints in terms of land, livestock and assets, affecting not only the characteristics of their agricultural livelihood, but also underlying their disproportionate participation in casual/temporary labour as a diversification strategy.

Indeed, the poorest households overall have much lower human capital, a more limited non-agricultural asset endowment – for mobile phones and motor vehicles – and they are less likely to report access to electricity and solar panels. They are also more likely to be land and livestock constrained, which indicates their disproportionate on-farm specialization profile is based on limited resource holdings. Among those with smaller quantities of land and livestock, production of ACPZ commodities is less prevalent. So, while on-farm specialization is largely the norm (more than 60 percent) across Bulbula and Yirgalem, it is more prevalent among poor households who are, given their resource constraints, less likely to participate in the commodities that characterize ACPZ.

Diversification strategies into non-farm enterprises and salaried-wage work are not related to land and livestock holdings; however, the differences in education and assets do affect the ability of households to participate in these off-farm activities. Those with less education, fewer skills and/or fewer assets – essentially the poor and female-headed households – are thus less likely to diversify into “opportunity-led” off farm activities. Households that do

manage such enterprises or are employed under salaried work are less likely to be poor, more likely to access electricity, mobile phones, motor vehicles and to hold higher levels of educational attainment.

As such, the limited educational attainment among older adults, presents constraints to their participation in such activities. However, young adults hold twice the level of education as the older generation, suggesting they may hold the necessary skills and capacities for these sectors.

What are the barriers to inclusion into agricultural investments and agricultural growth and transformation? Several structural constraints affect the agricultural and off-farm sector in terms of resources, infrastructure, institutions and societal norms.

In the crop sector, the access to land is affected by longstanding trends of land fragmentation that have led plot sizes to be very small, averaging less than one hectare per household. These average sizes are even smaller among female-headed households. Production on these small plots is affected by very low access to irrigation among smallholders to the extent that most production is single season, concentrated during the meher season. Improved inputs and post-harvest services are also limited, especially in terms of access to storage facilities, extension services and transport services. Most agricultural households do not report access to any of such complementary infrastructure or services, which points to their engagement in agriculture nearly only as primary producers of output. Among the poor, the average access is even more constrained, such that while the overall agricultural sector in the ACPZ is characterized by challenges in the factors that could enhance production, those challenges are even more acute among the most vulnerable groups. An overarching constraint in the access to agricultural services is the lack of availability of such services in the rural space, as reported by households, which may be compounded by the apparently limited reach of agricultural interventions such as the Farmer Hotline and Input Voucher System in the ACPZ areas.

In the livestock sector, the reliance on grazing land and the lack of take up of commercial feed imply that animal productivity is subject to seasonal patterns of rainfall that affect the supply of feed for animals. As a result, dairy livestock are unlikely exploited to their potential and milk yields have room for growth, especially as over 40 percent of dairy producers indicate that insufficient production affects their ability to commercialize milk output.

Commercialization of agricultural output is characterized by the dominance of the local market as the main sales outlet. Very few households sell through cooperatives or to entities along the value chain, in large part because the entry barriers to cooperatives are high, favouring asset endowments and access to liquidity, and thus constraining the inclusive potential of agricultural cooperatives and unions. However, few households sell to any other entity along the value chain, which implies that the aggregation of output cannot necessarily rely on cooperatives or other outlets for commercialization, except in the case of commodities like coffee for which it is already more established. If supply aggregation for the Parks is to come from smallholders, it must consider systems to which the average smallholder producer can relate, trust and rely on, such as the local market, but also investing in programmes that can reach and build relationships with smallholder such as public procurement programmes and contract farming arrangements that protect both ends of the agreement. The development of infrastructure and institutions that can interact with the parks – such as collection centres and RTCs – may form part of that strategy but as few producers engage with them, they may not necessarily be the main pivotal element in an inclusive strategy. However, improving the commercialization of output requires overcoming the principal obstacle of insufficient supply as most farmers that do not sell cite a lack of output.

An important consideration is the gendered division of labour, which presents a structural impediment to women's participation in off-farm work, especially among female youth, despite being as likely as male youth to be engaged in study programmes, are more likely to be charged with domestic tasks than male youth, do not cite such tasks as an obstacle to their participation in economic activities. The inclusion of female youth in off-farm economic activities must consider this reality in the targeting of interventions to different gender and age groups.

The resilience of the livelihoods of poor and vulnerable households is marked by three major constraints. The first is the **limited scope of social safety nets** beyond the PSNP, which does not operate universally. This implies that households are not protected in case of shocks, which nearly all households report facing (e.g., loss of non-farm work; illness/accident; drought). As a result, detrimental coping strategies are employed more often than productive coping strategies, resulting in the selling of assets and livestock. Formal agricultural insurance does

not exist and while traditional insurance networks such as *iddir* are commonplace, they are accessed by those with liquidity – representing an important obstacle for the poor.

The issue of liquidity is a fundamental challenge for the most vulnerable in various dimensions. Many households do not borrow because of collateral constraints and the level of interest rates. However, many are also unwilling to borrow because of concerns about repayment. Among those that do borrow, the purpose is for consumption rather than investment, reflecting the role of credit as a coping rather than livelihoods strengthening strategy. Furthermore, those that do borrow, do so from their peers rather than from channels such as banks, savings associations or cooperatives, in part because of the lack of availability of such formal entities.

The limited engagement with organizations such as savings associations and cooperatives reflects that while groups have the potential to support household livelihoods, **membership groups are inaccessible to the most vulnerable**. The inaccessibility is due to high entry barriers / eligibility criteria – as in the case of agricultural cooperatives – but also given the lack of groups at a community level, especially CIGs, NGOs, CSOs, savings associations and primary cooperatives. The formation of such groups could be beneficial for building strong social networks, and supporting rural development; however, they are unlikely to serve as an immediate axis upon which to build inclusive pathways for the poor.

What are the existing organizations and business support services in the ACPZ territories and their level of inclusion? Few organizations and support services are available in the ACPZ areas, the main entities present being *iddir*, accessed by over 80 percent of households, agricultural cooperatives, reaching over 40 percent and DAs, who reach over one-quarter of households. Instead, informal networks such as exchange labour groups provide supply labour input for nearly half of households. Even CIGs, which are slightly more prevalent in Bulbula and have strong inclusion potential given their access includes land and livestock constrained households, are not widespread in the ACPZ territories.

Although better endowed households typically access agricultural cooperatives, it is worth noting the dual role they have the potential of playing in the provision of inputs and services. In Bulbula, primary cooperatives are largely providers of inputs for smallholders. To the poor, they largely provide traditional inputs (seeds; organic fertilizer) and to the non-poor, they are providers as well of modern inputs (agrochemicals). Whether the lack of access by the poor to modern inputs from cooperatives is a demand constraint (traditional inputs are less expensive than modern inputs) or a supply constraint (cooperatives to which the poor have access are unable to access modern inputs) is unclear. In the Yirgalem area, primary cooperatives are not important input providers, but are instead a sales outlet for producers of coffee, which may reflect the importance of aggregation for selling coffee on the Ethiopian commodity exchange. However poor households are less likely to commercialize through cooperatives, which may reflect the entry barriers to cooperative membership in terms of liquidity, scale of production, or risk aversion.

The potential agricultural infrastructure and services that could support enhancements in the Agrocommodity Procurement Zone value chains, such as primary collection centres, milk collection centres, RTCs, processors or traders, are reportedly accessed only by a minority of households, and even less by poor or female-headed households. This does not imply that such infrastructure or services are not relevant for nor active in the aggregation chain, but rather that individual smallholders do not directly interact with them as their main point of disposition for agricultural output, apart from household consumption, is the local market.

What opportunities exist for the social and economic inclusion of the poorest and vulnerable households to participate or maximize their contribution to the ACPZ activities? In order for the ACPZ areas to prioritize social and economic inclusion, consideration must be given to the fact that the many of the constraints experienced by households in the ACPZ are common across all households and not just concentrated among the poor. The production of prioritized commodities is not widespread, production levels and intensity are low, access to storage facilities is not prevalent, and access to complementary services, skills development and off farm employment is limited. Government policies and initiatives to enhance and transform the agricultural sector such as the National agricultural investment plans and the Ten in Ten, seek to overcome many of these obstacles to create a competitive and modern agricultural sector. The challenge thus lies in ensuring that no-one is left behind, and hence that the investments and interventions directed towards the IAIP and ACPZ must consider the specific constraints faced

by the most vulnerable groups when identifying the appropriate opportunities for their social and economic inclusion.

The principle of “do no harm” is fundamental for ensuring social and economic inclusion in this project context. Interventions to promote aggregation and commercialization among poor and vulnerable households need to consider their production profiles, the importance of their output for consumption and thus food security purposes, and the role that seasonality plays in this respect.

For example, supporting inclusion in the ACPZ areas can come from agriculturally oriented interventions that seek to address the vulnerability generated by subpar yields and the limited agricultural services available for poor households to access. While over three-fifths of poor households in Bulbula report storing some share of their production, only two-fifths report access to storage bags or facilities, which implies that at least among 20 percent of poor households, output is likely stored in poor conditions that affect quality and improve the likelihood of post-harvest losses. By improving the storage of output, households can not only enhance their food security, but also increase their commercialization prospects throughout the year. Rather than selling most of their produce shortly after the harvest, which often leads to low prices and reduced economic returns, better storage practices can enable farmers to stagger sales and access better prices over time.

The lean season affects an important proportion of the population and disproportionately affects the poor and most vulnerable given the series of constraints identified by the baseline: they lack irrigation, affecting output levels; they are more likely to lack storage bags to ensure their supply of grains; and among those that access credit, they do so for consumption purposes, indicating their own lack of liquidity to finance food purchases. The lean season is also the period of the year of the greatest economic inactivity, which underlies the limited liquidity of households in that period, and points to a clear opportunity for promoting lean-season (agriculturally counter-cyclical) off-farm employment opportunities targeted to the available supply of labour in that period. Social protection programmes such as PSNP approximately time their public works to dampen the effects of that period; however, scope exists to support the development of lean season employment opportunities in non-PSNP districts to strengthen the annual livelihood and support productive strategies for consumption smoothing.

In order to promote inclusive off-farm opportunities, the formation of associations or common interest groups among those unable to gain access to other sorts of organizations could be promoted among the poor and vulnerable. With appropriate seed money, these could be organized to develop non-farm enterprises, which could benefit from the aggregation of skills for developing business plans, and through which credit access could be improved through the pooling of resources, as in the case of the PSNP-5 Big Push Plus strategy. The success of such groups relies not only on some start-up capital, but also on the strengthening of social capital within rural communities, and on the provision of skills-enhancing technical assistance, which is accessed by few business holders, and cited as a major constraint to the formation of enterprises among non-participating households.

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Annex

Table A1. Poverty incidence, by livelihood resources endowment

	No land	Land and livestock constrained	Land endowed	Livestock endowed	Land and livestock endowed
Poverty					
Poor	0.38	0.46	0.49	0.44	0.49
Poverty Probability Index (PPI) score	56.90	39.97	37.35	42.16	37.96
Asset index	0.33	0.21	0.22	0.27	0.30
Observations	90	479	384	275	918

Source: Authors' own elaboration.

Table A2. Types of enterprises operated by households with non-farm enterprises, by region and poverty status

	Bulbula			Yirgalem		
	Poor	Non-poor	p-value	Poor	Non-poor	p-value
Agroprocessing	0.21	0.37	0.01	0.16	0.23	0.26
Food processing	0.07	0.07	0.98	0.00	0.04	0.10
Manufacturing	0.05	0.10	0.21	0.18	0.08	0.04
Aggregation	0.16	0.07	0.05	0.08	0.10	0.73
Trading	0.51	0.26	0.00	0.47	0.48	0.90
Transport	0.13	0.20	0.23	0.07	0.02	0.11
Other services	0.12	0.17	0.27	0.20	0.16	0.51

Notes: P-value reports the outcome of the test of significance across poor and non-poor for participation in the type of industry listed in the corresponding row.

Source: Authors' own elaboration.

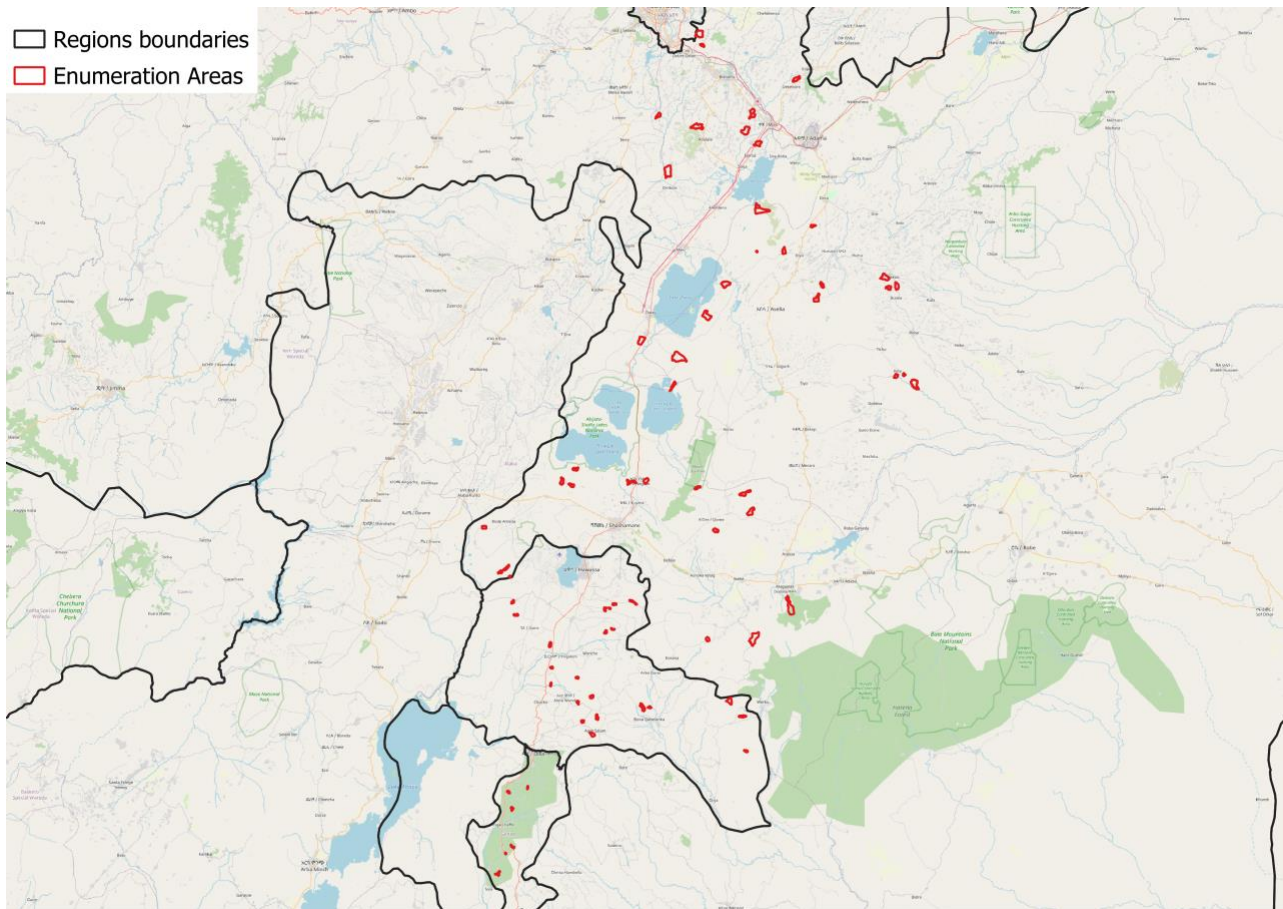
Table A3. Proportion of households affiliated with local groups, services and institutions

	Provider of				
	Associated/connected	Inputs and services	Sales outlets	Interventions and infrastructure	Credit
Value chain actor					
Companies	0.01	0.01			
Development agent	0.27	0.27			
Market (non AOSS)	0.69	0.23	0.59		
Market (AOSS)	0.35	0.35		0.01	
Processors	0.03		0.03		
Small and medium enterprises/traders	0.07	0.02	0.05		
Public bank	0.00				0.00
Private bank	0.00				0.00
Contract farming group	0.01		0.01		

	Associated/ connected	Provider of			
		Inputs and services	Sales outlets	Interventions and infrastructure	Credit
Common interest groups	0.14				
Cooperative/union	0.42	0.30	0.06		0.00
Exchange labour groups	0.46				
<i>Iddir</i>	0.81				
<i>Iqqub</i>	0.17				
Non-governmental, civil society organization	0.15	0.03			0.00
Saving association	0.10				0.04
Village savings and loan association	0.01				0.01
Infrastructure					
Agro-industrial park	0.62			0.62	
Milk collection centre	0.05			0.05	
Primary collection centre	0.10			0.10	
Rural transformation centre	0.10		0.00	0.10	
Intervention					
8028 Farmer Hotline	0.01			0.01	
ACC Help Desk	0.01			0.01	
Cooperative based seed production	0.01			0.01	
Input voucher system	0.04			0.01	0.03
Public procurement	0.00		0.00		

Source: Authors' own elaboration.

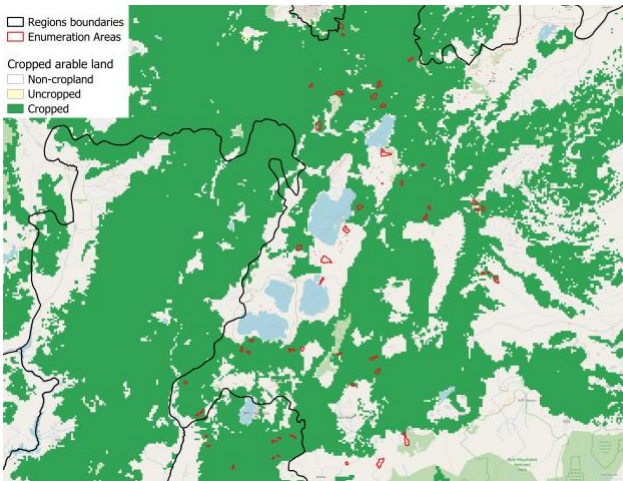
Figure A1. Enumeration areas selected for the baseline survey



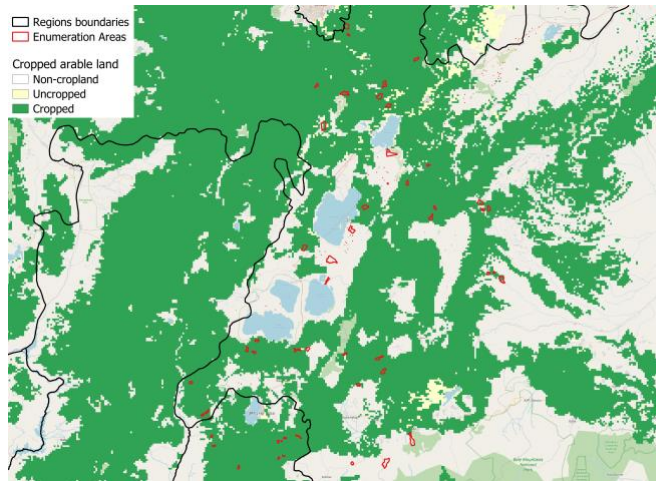
Sources: Authors' own elaboration using OCHA. 2022. Ethiopia. United Nations. Cited 16 September 2022. <https://data.humdata.org/dataset/cod-ab-eth>. OpenStreetMap. 2022. Ethiopia. Cited 16 September 2022. <https://www.openstreetmap.org>, modified by the authors

Figure A2. Trimestral imagery of cropped land cover in Bulbula study area

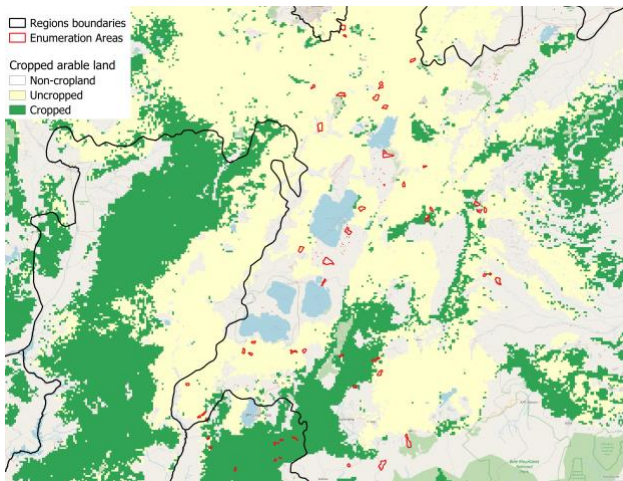
a. July–October 2021



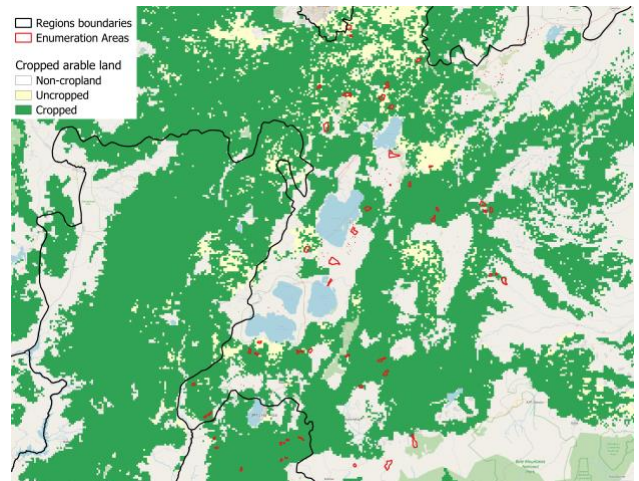
b. October 2021–January 2022



c. January–April 2022



d. April–July 2022



Source: Authors' own elaboration using CropWatch: Cropped arable land fraction - CALF (Global - 3 months - 1 Km), OCHA shapefile and OpenStreetMap background.

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