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# ACCESS AND UTILIZATION OF DIGITAL FINANCIAL SERVICES AND DIGITAL INFORMATION SERVICES AMONG SMALLHOLDER FARMERS, PASTORALISTS AND AGRO-PASTORALISTS IN ETHIOPIA

SUMMARY FINDINGS

JUNE 2023



This material has been funded by  
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- 2) STUDY BACKGROUND & OBJECTIVES
- 3) SMALLHOLDER, AGROPASTORALIST AND PASTORALIST PROFILES
- 4) DFS
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- 6) CHALLENGES AND OPPORTUNITIES
- 7) GAP ANALYSIS



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# BACKGROUND & OBJECTIVES



# Study Methodology & Objectives

This study employed purely secondary research by triangulating publications, journals, white papers and other credible literatures from credible agriculture stakeholders and research organizations.

The findings were supported by analysis of proprietary datasets from different Public, Private and Non-governmental institutions.

The objective to this study was to:

1) Conduct in-depth profiling of smallholder farmers, agropastoralist and pastoralists, through studying the value chains they participate in and how they access and use Digital Financial Services (DFS) and/or Digital Information services (DIS)

2) Interrogate existing information on access and utilization of DFS and/or DIS, exploring opportunities to enhance information sharing and adoption by producers



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Source:

Note: The literature considered to generate insights in this study was seven years old as opposed to five years required due to effect of COVID 19 which hampered data collection efforts.

# Definition of terms

**Digital Financial Services (DFS)** refers to the use of digital technologies such as mobile phones, the internet, and other electronic devices to deliver financial services. DFS includes services such as mobile banking, mobile money transfers, online payments, and other electronic financial transactions. These services are aimed at increasing financial inclusion by providing affordable, convenient, and secure financial services to individuals who have limited access to traditional banking services<sup>1</sup>

**Digital  
Financial  
Services (DFS)**



**Digital Information Services (DIS)** refers to the delivery of information and knowledge to individuals or organizations through digital channels, such as mobile phones and the internet. DIS can include weather updates, market prices, agricultural advice, and other relevant content that can improve decision-making processes and livelihoods, particularly for those living in remote or underserved areas<sup>2</sup>

**Digital  
Information  
Services (DIS)**



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Source:

<sup>1</sup>Digital Financial Services (DFS) | Alliance for Financial Inclusion (afi-global.org);

<sup>2</sup>How digital technologies can help Africa's smallholder farmers | E-Agriculture (fao.org)



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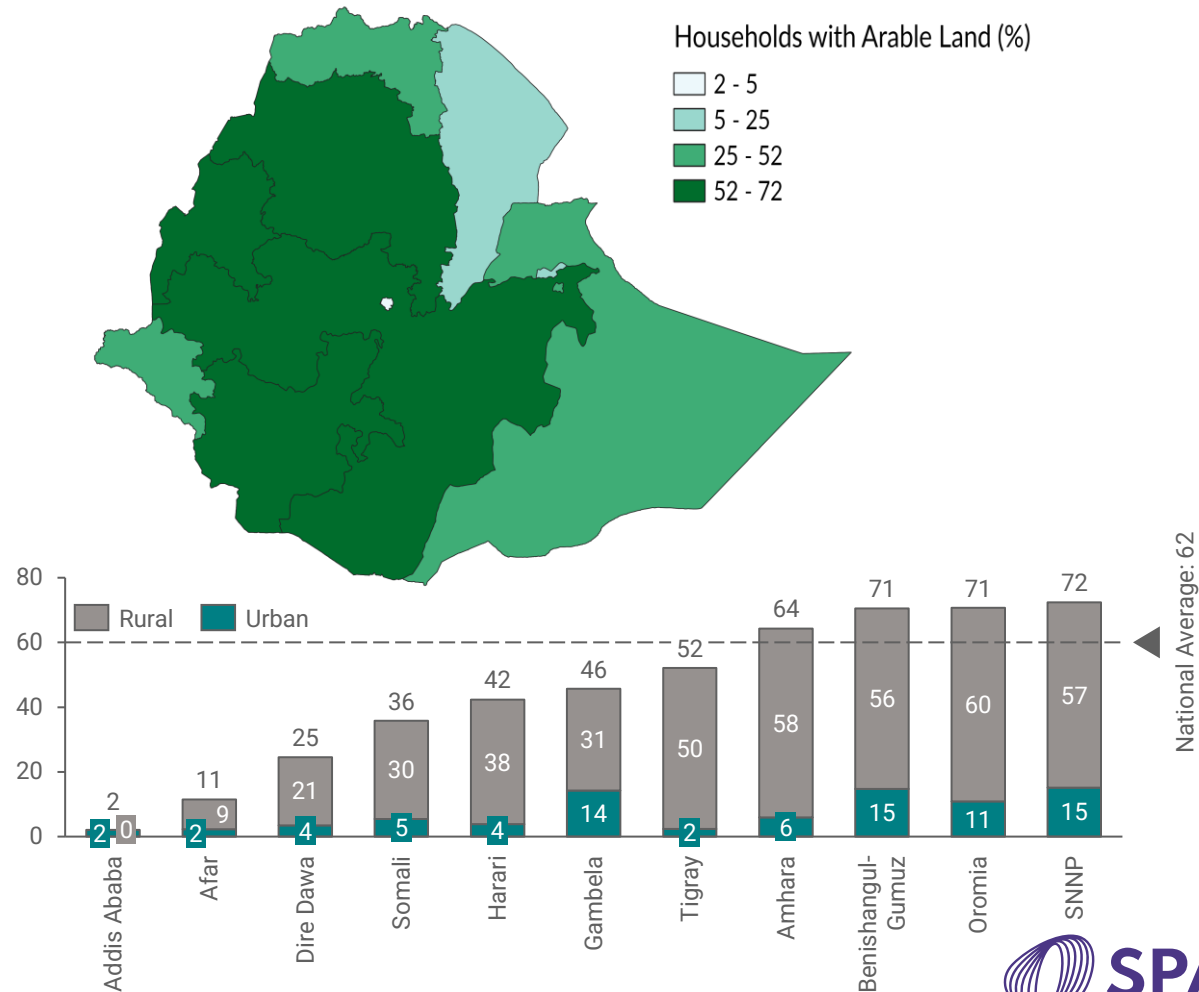
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# SMALLHOLDER, AGROPASTORALIST AND PASTORALIST PROFILES

# Ethiopia's Western and Central regions have higher number of households with arable land; dominantly present in the rural areas

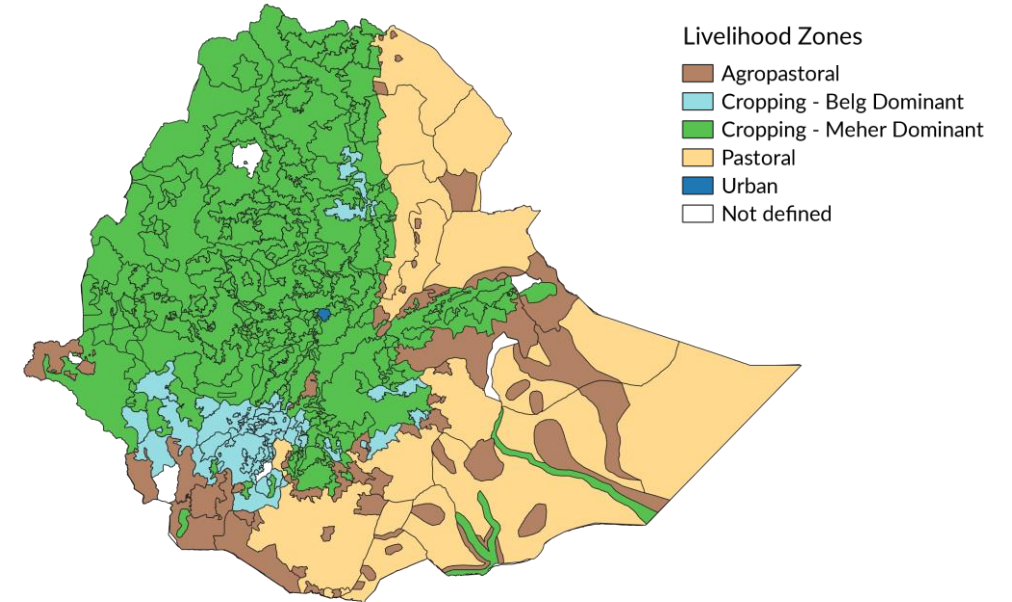
## Share of Households Owning Usable Land for Crop Agriculture

% of households owning agricultural land per region and residence type



## Livelihood Zone Map

Showing livelihood description across the country



Ethiopia's main cropping zones are in the western and central parts of the country. Pastoralists and agro-pastoralists are dominant on the eastern and south eastern zones of the country.

Source: DHS Ethiopia 2019 and LOCAN Analysis; [Few's.net-livelihood zones](#)

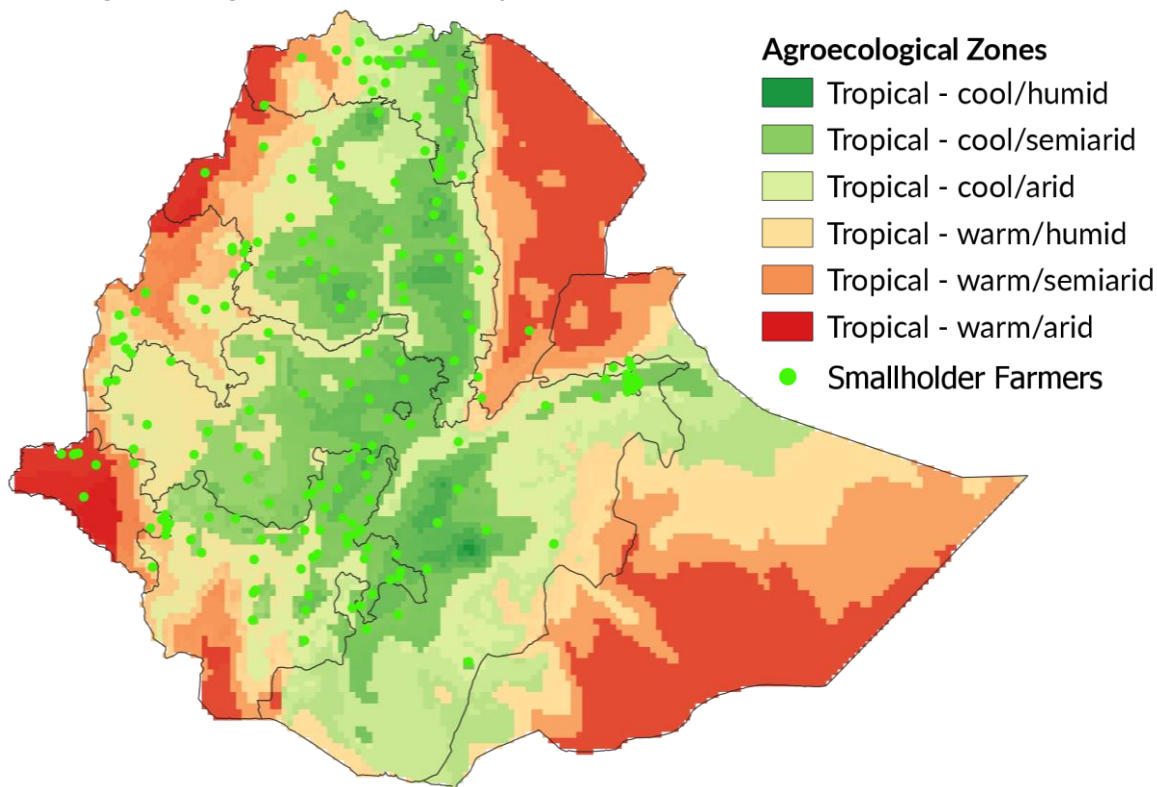
Note: As there was a lack of data that was categorized according to the newly established regions of Sidama and Southwest, we had to use data from the older regions in Ethiopia to represent the information on this report; Livelihood zone maps define geographic areas of a country where people generally share similar options for obtaining food and income and similar access to markets. Factors considered include agro-climatology, elevation, land-cover, market accessibility, sources of food, and major economic activities.



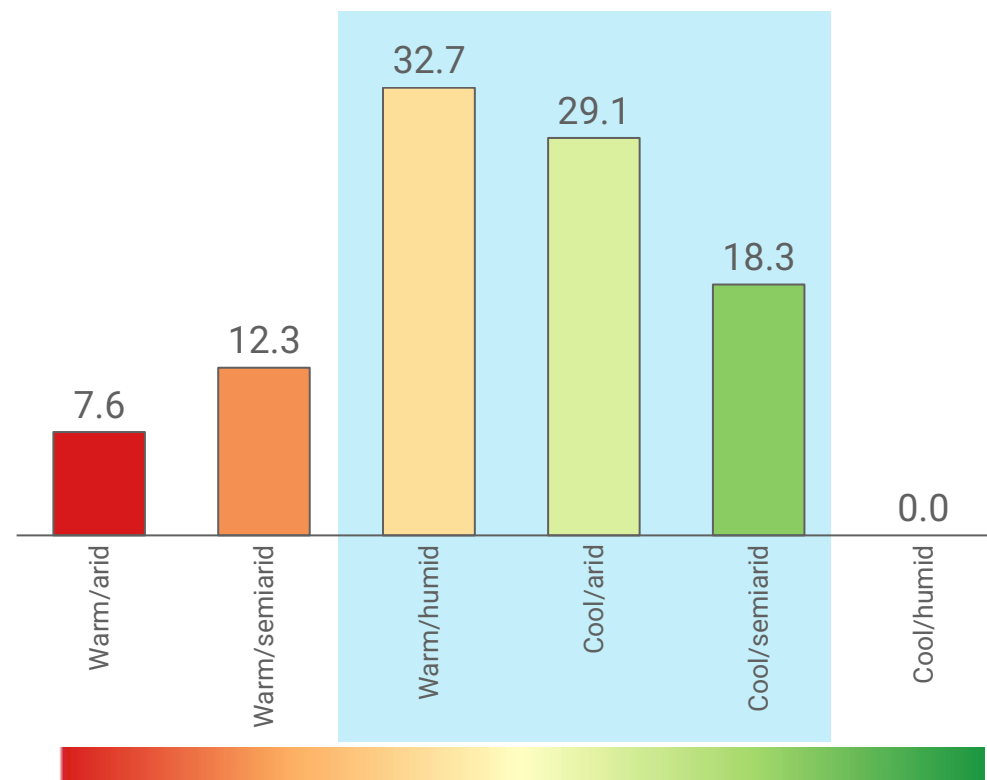
# Majority of SHFs in Ethiopia are located within suitable agroclimatic zones in Ethiopia; pastoral communities are to the eastern and southeastern regions

## Agroecological Zones in Ethiopia

The agroecological zones in Ethiopia



## Proportion of SHFs in each agro climatic zone category (%)



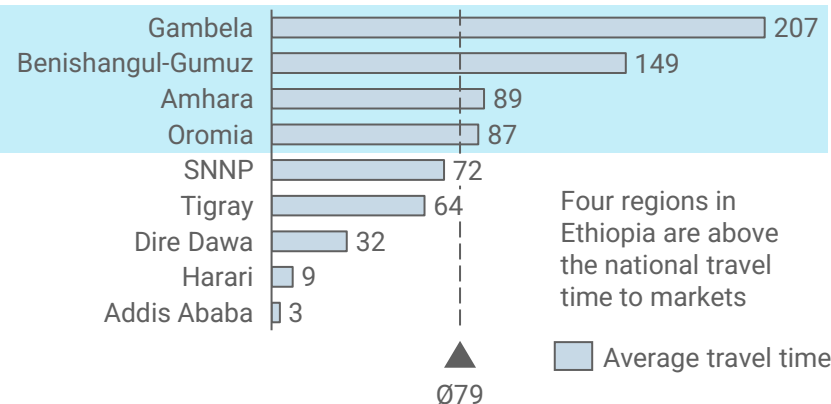
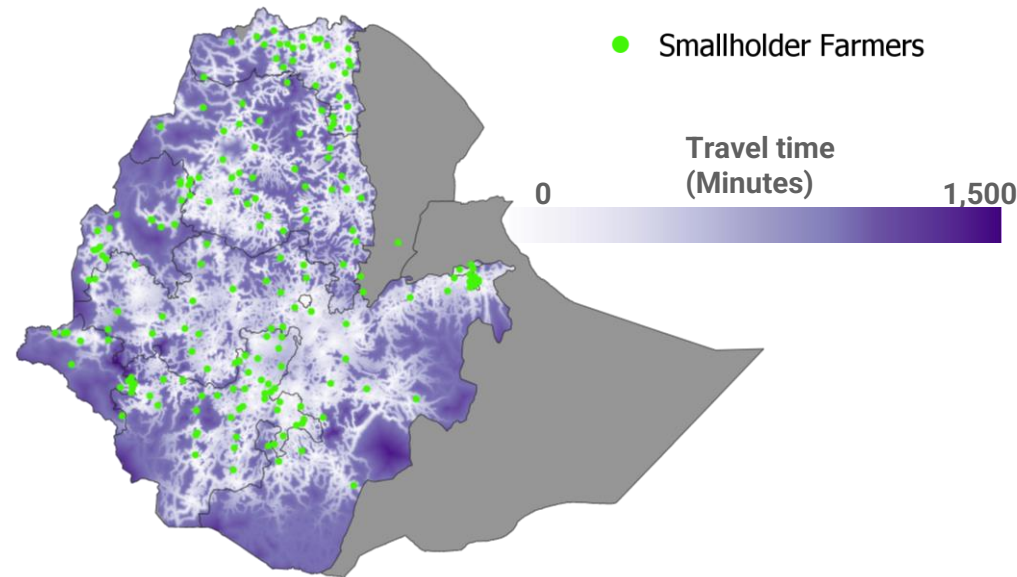
The agro-climatic zones of Ethiopia are based on climate (temperature and precipitation ranges within which the main crops of Ethiopia can flourish) and the main zones (probability of meeting the temperature and water requirements of the leading crops). These zones give an estimate of the climatic yield potential.



# SHFs function in regions characterized by superior market accessibility when compared to the pastoral communities

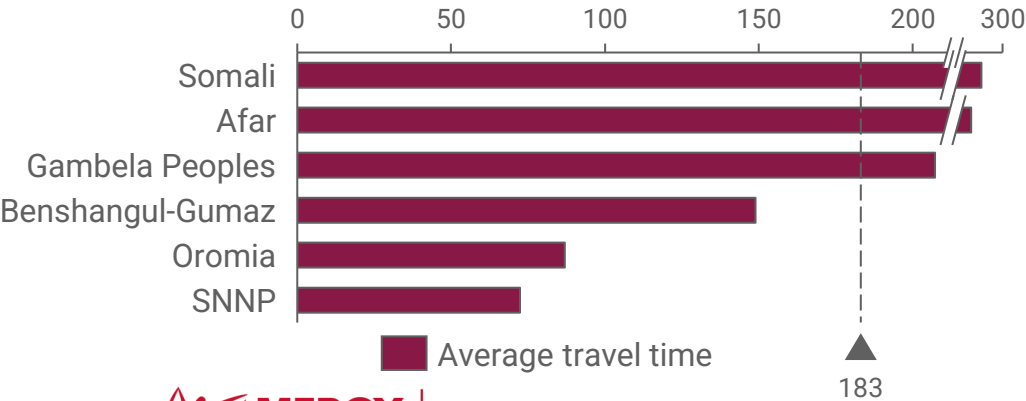
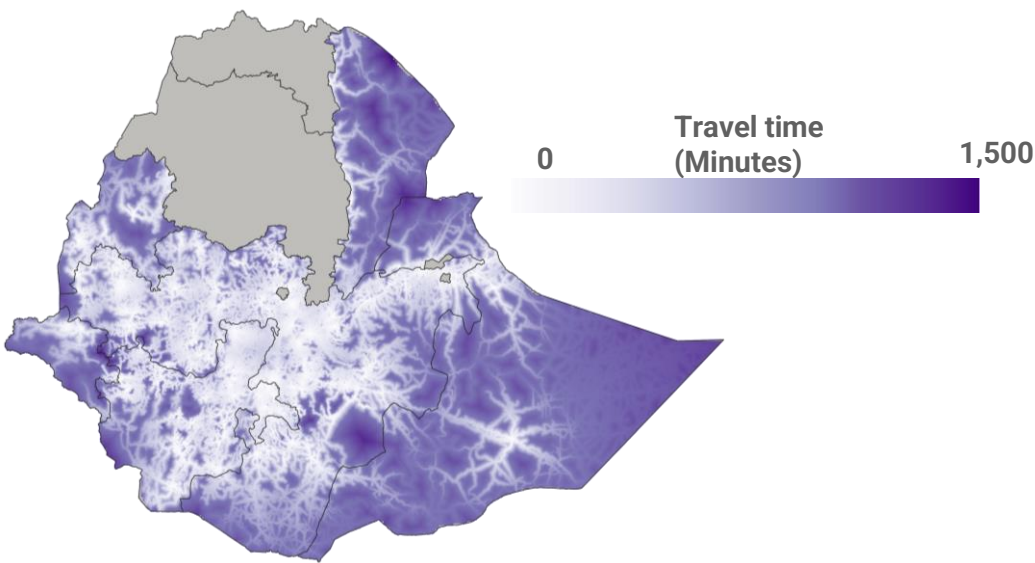
## Travel time to markets in Ethiopia

Travel time in minutes



## Travel time to markets in ASAL Regions

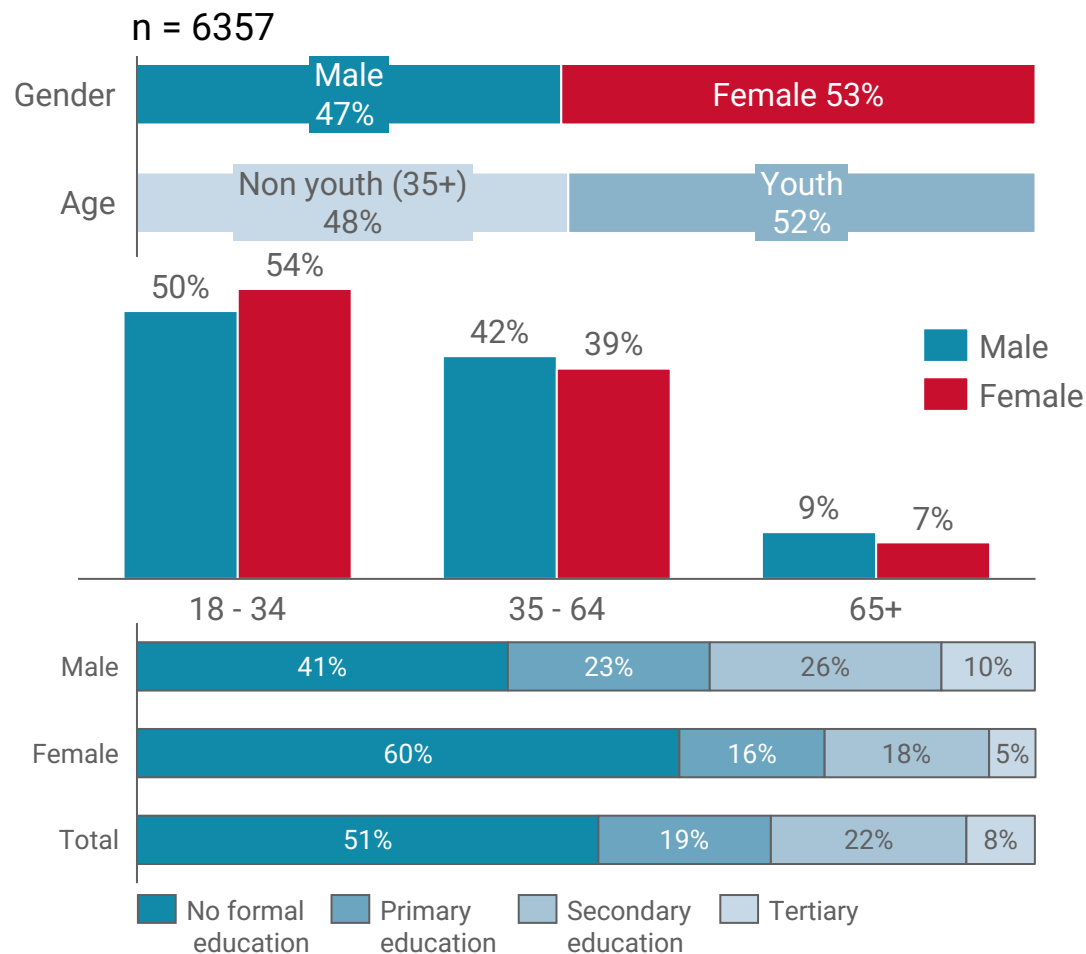
Time in minutes



Source: Malaria Atlas Project, 2019 and LOCAN Analysis

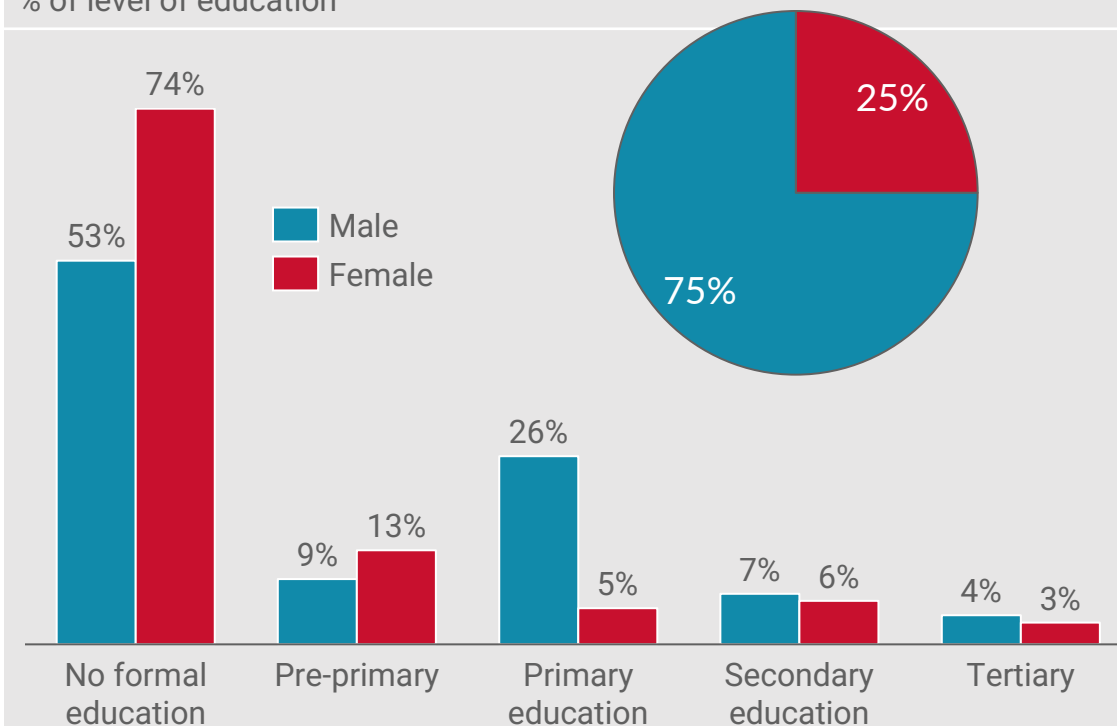
# More female and youth are involved in smallholder farming whilst pastoral practice is male dominated; the producers have low education levels

Distribution of SHFs profiles across Agrarian Regions



Education of household head by gender

% of level of education

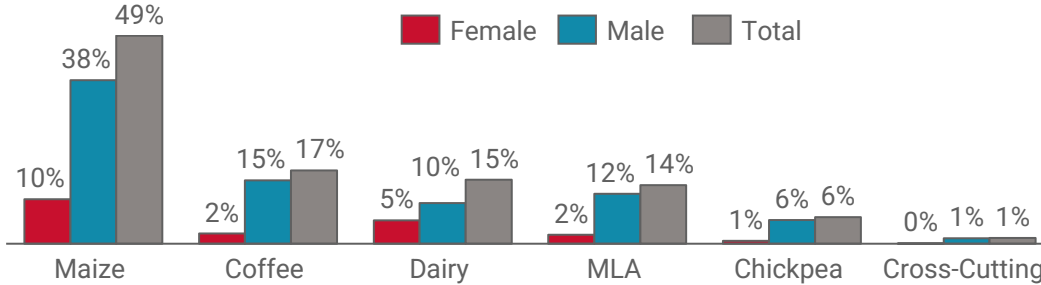


- ❖ In Ethiopia, most of the household heads have a low level of education. Specifically, 61% of household heads have no formal education, 7% have completed primary education, and only 2% have completed secondary education.
- ❖ There is disparity in education levels of household heads by gender; about three quarters of female household heads lack formal education

# The SHFs practice a mixed farming system as their source of income and livelihood; pastoral communities contribute a considerable share of the country's livestock count

## Usage of land owned by SHFs (n = 71,676)

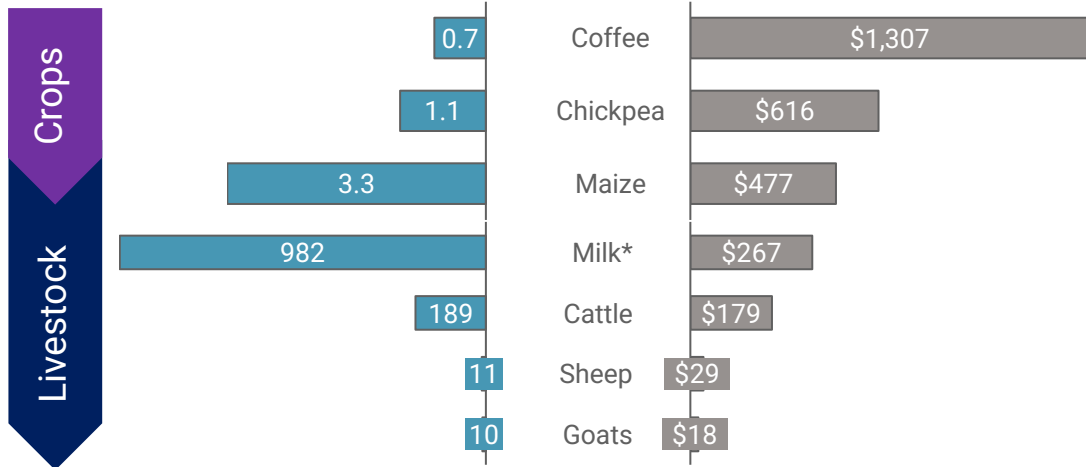
% usage of land used by the SHFs



## Annual Yield and Gross Margin for crop and livestock

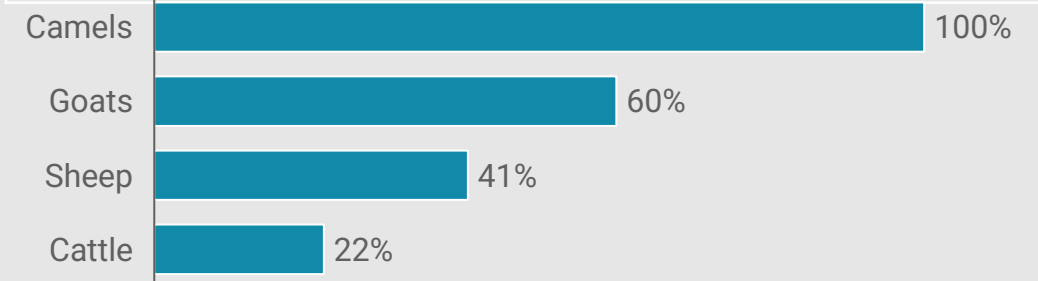
Yield (MT/ha or kg/animal)

Gross margin (USD/ha)



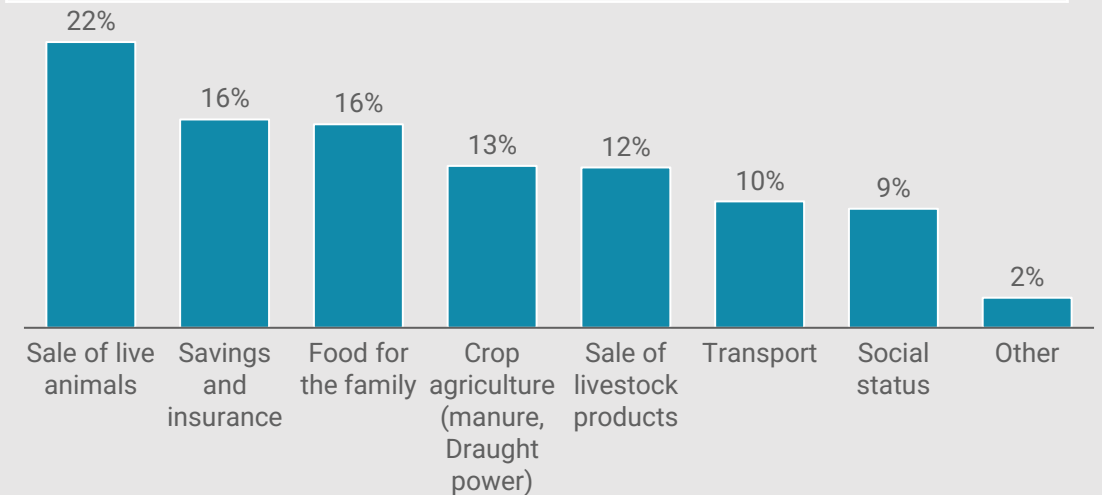
## Proportion of national livestock kept by pastoral households<sup>1</sup>

% of livestock



## Reasons for keeping livestock<sup>2</sup>

% of reasons for keeping livestock





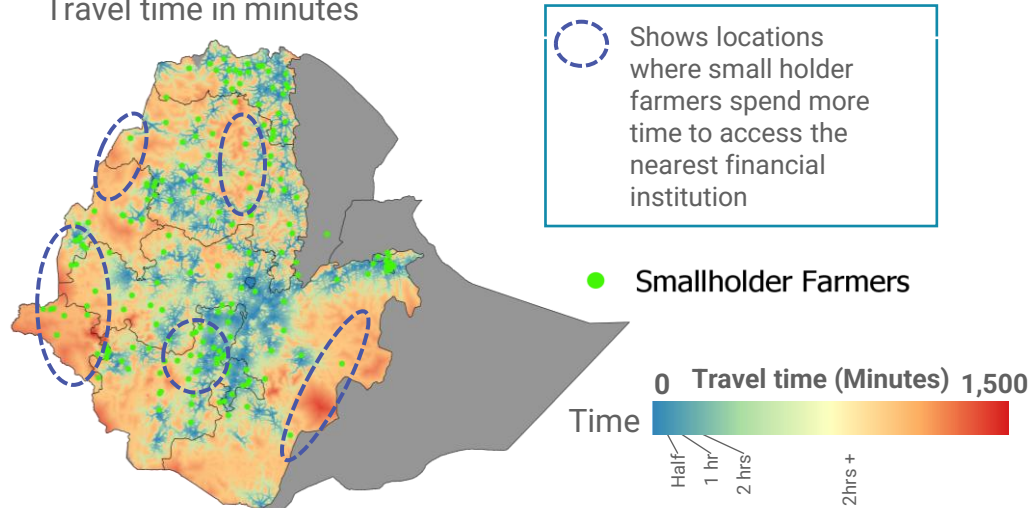
# DIGITAL FINANCIAL SERVICES



# Generally, Northern and Central regions of Ethiopia have close proximity to financial institutions; Eastern regions have the longest travel times

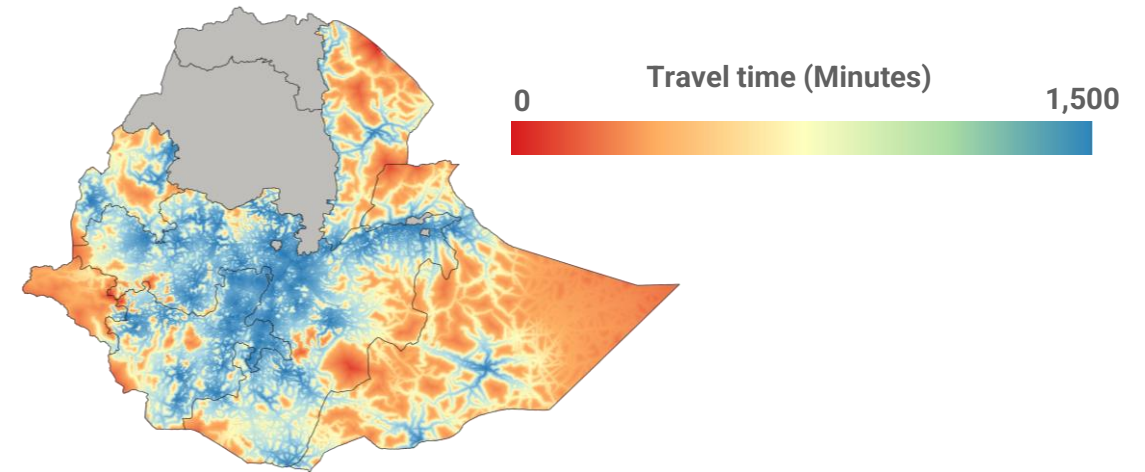
## Travel time to financial institutions in Ethiopia

Travel time in minutes

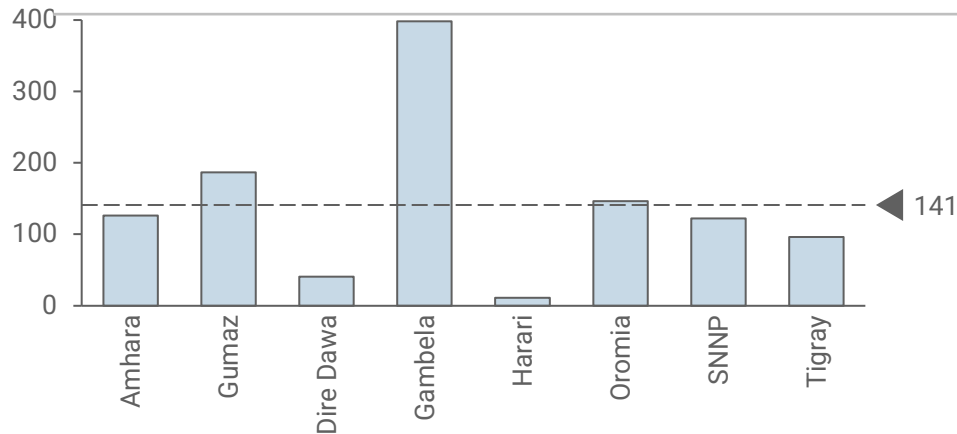


## Travel time to financial institutions across ASAL

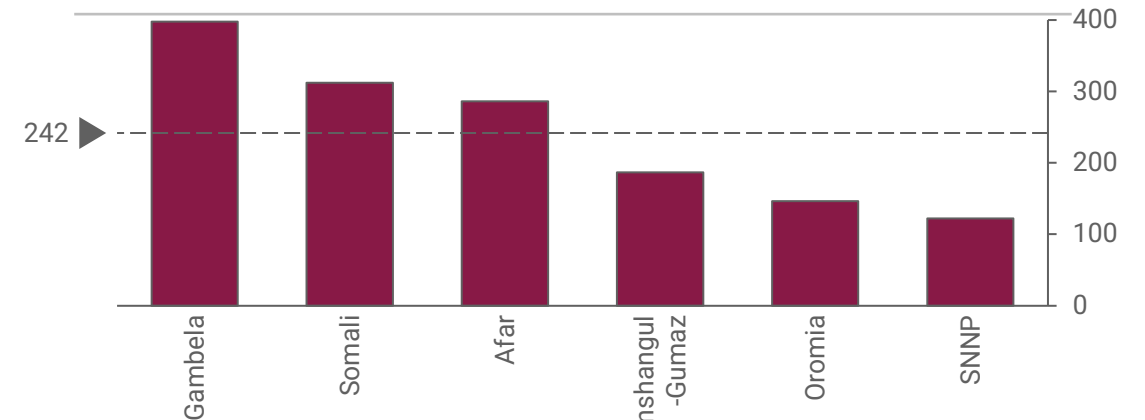
Time in minutes



## Average travel time to financial institutions by SHFs

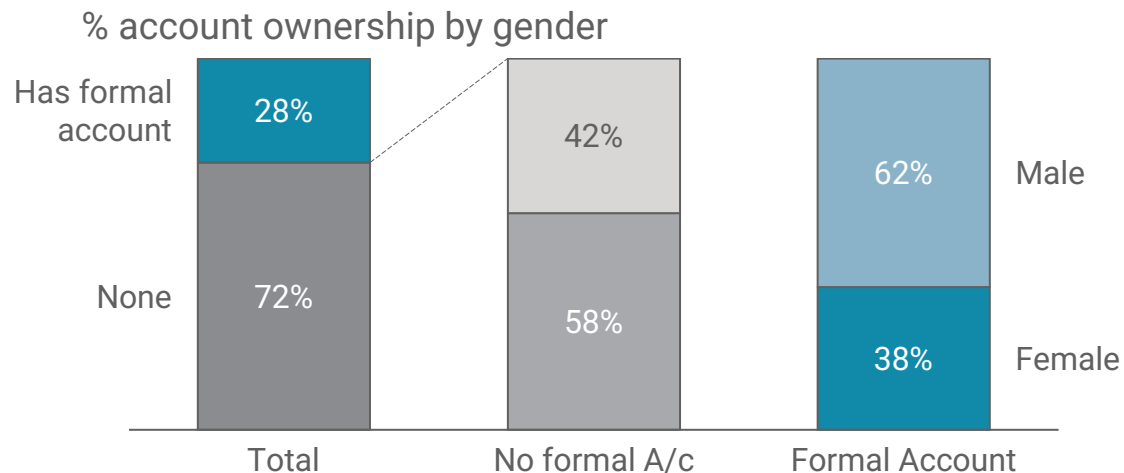


## Average travel time to financial institutions across ASAL

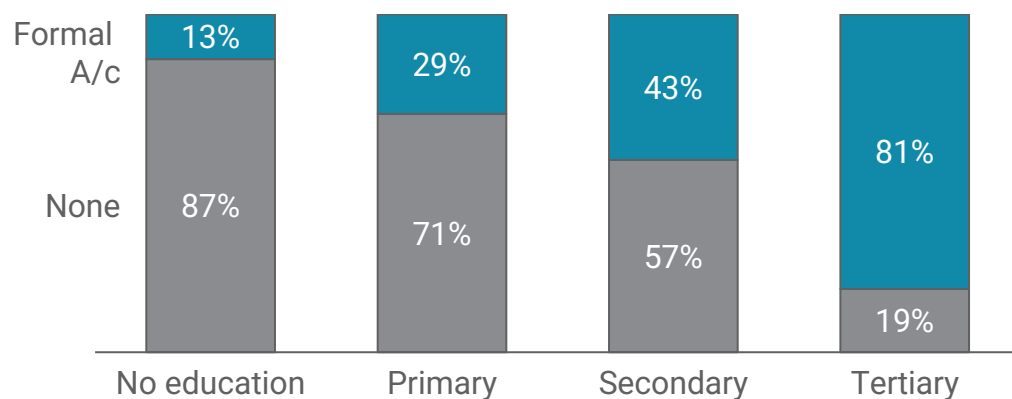


# The uptake of formal financing among producers is low; Education is seen as a key promoter to formal financing

## SHF formal account ownership by gender (n=6357)

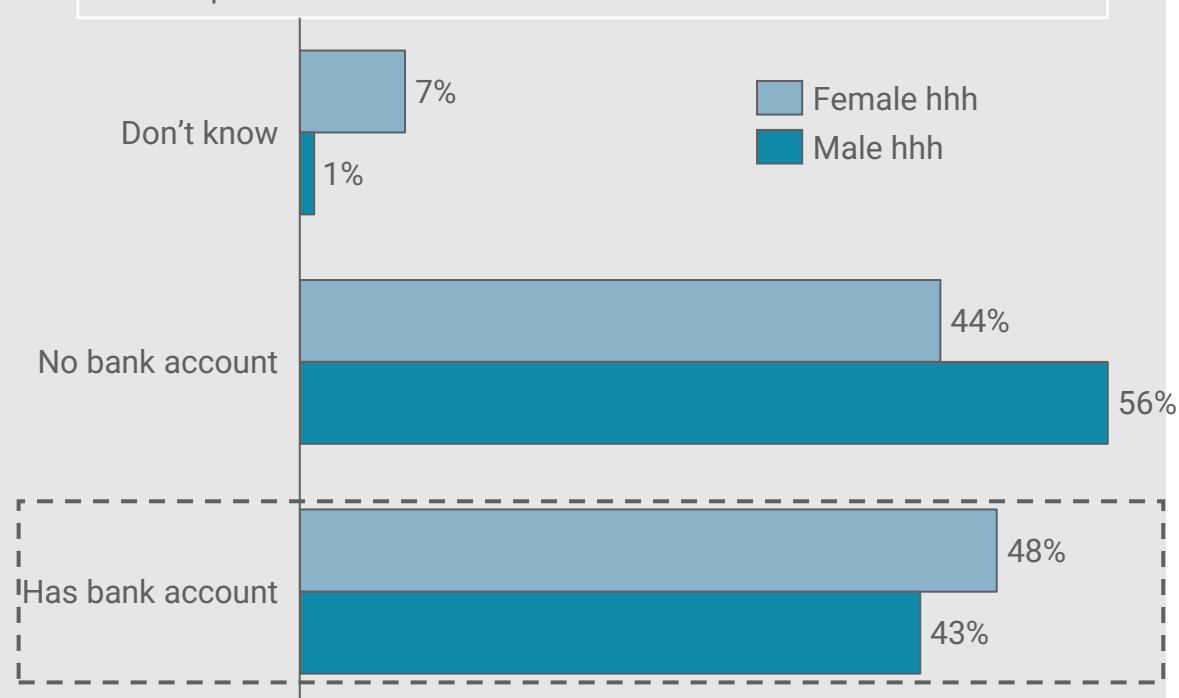


## SHF formal account ownership by education



## Bank account ownership by gender of the household head

% of respondents who own a bank account



- ❖ The 2018/19 Ethiopian Socioeconomic Survey (ESS) found out that the main reasons for not having a bank account among individuals without formal accounts were the perception of low income, distance to financial institutions, and lack of understanding of the benefits.
- ❖ Lack of trust and documentation were not significant obstacles



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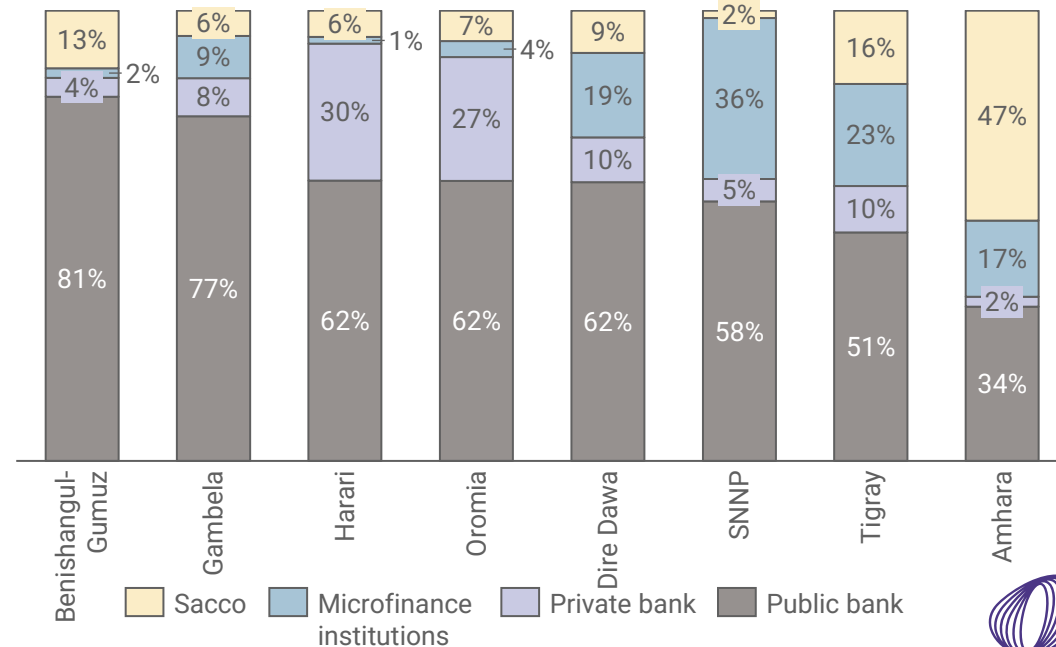
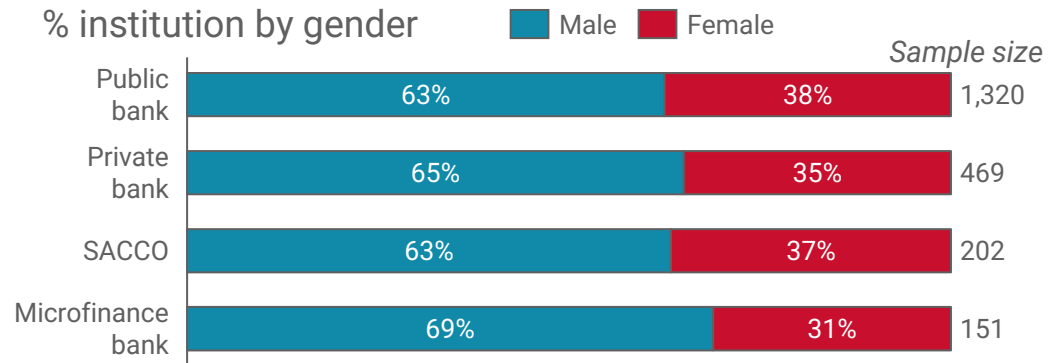
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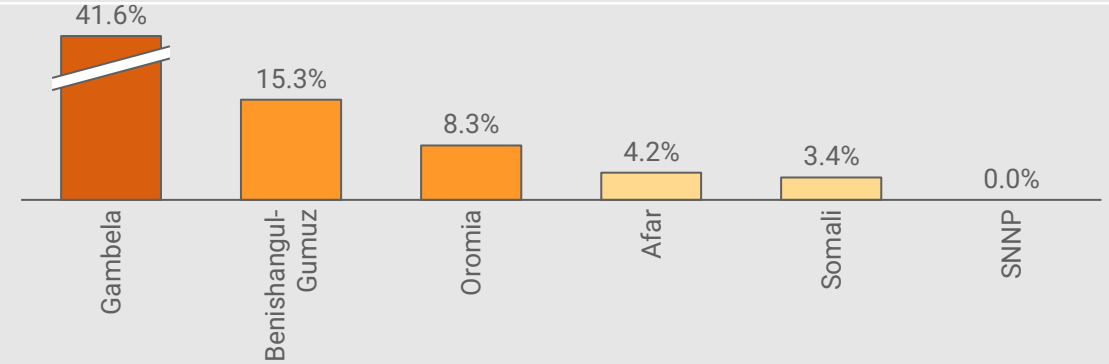
# Most SHFs prefer public banks to other financial institutions whereas pastoral households generally prefer informal financial services

## SHFs financial institution by gender

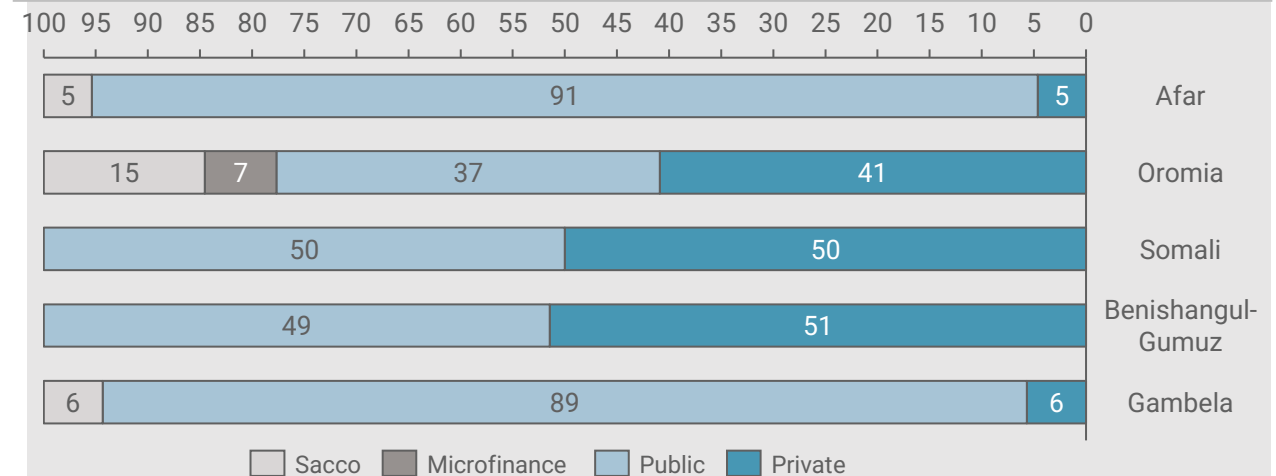


## Formal account ownership among the pastoral households

% pastoral households with a formal bank account



## Pastoralists with formal account types (%)



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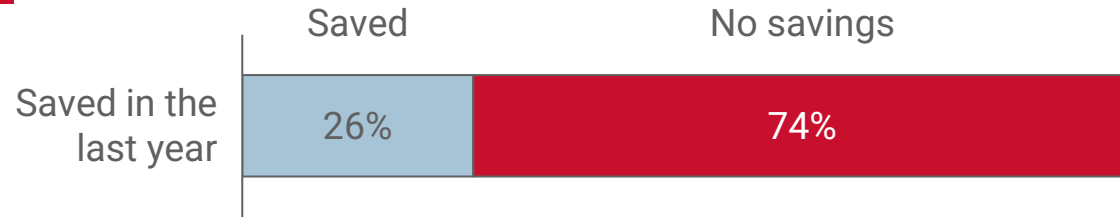


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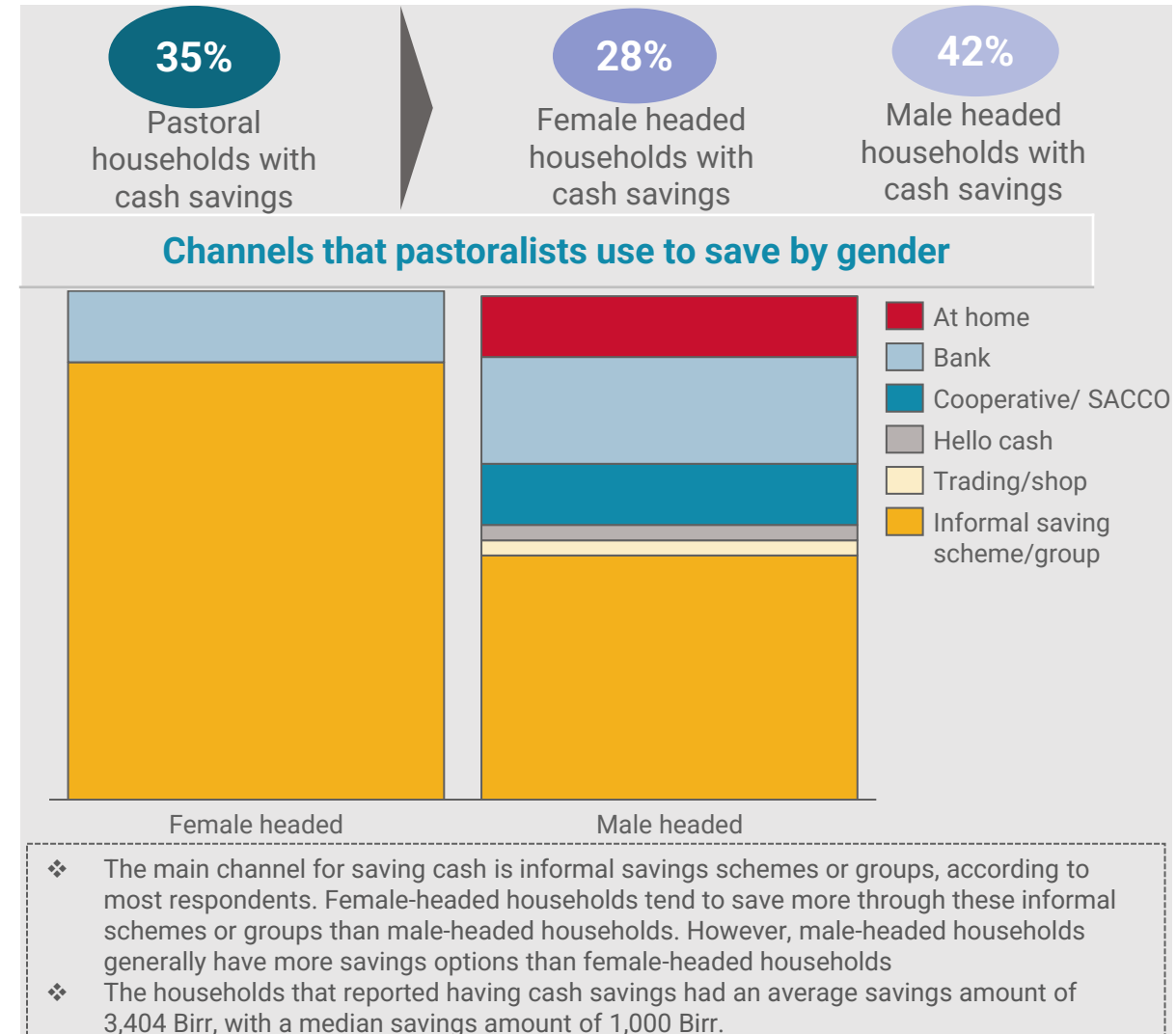
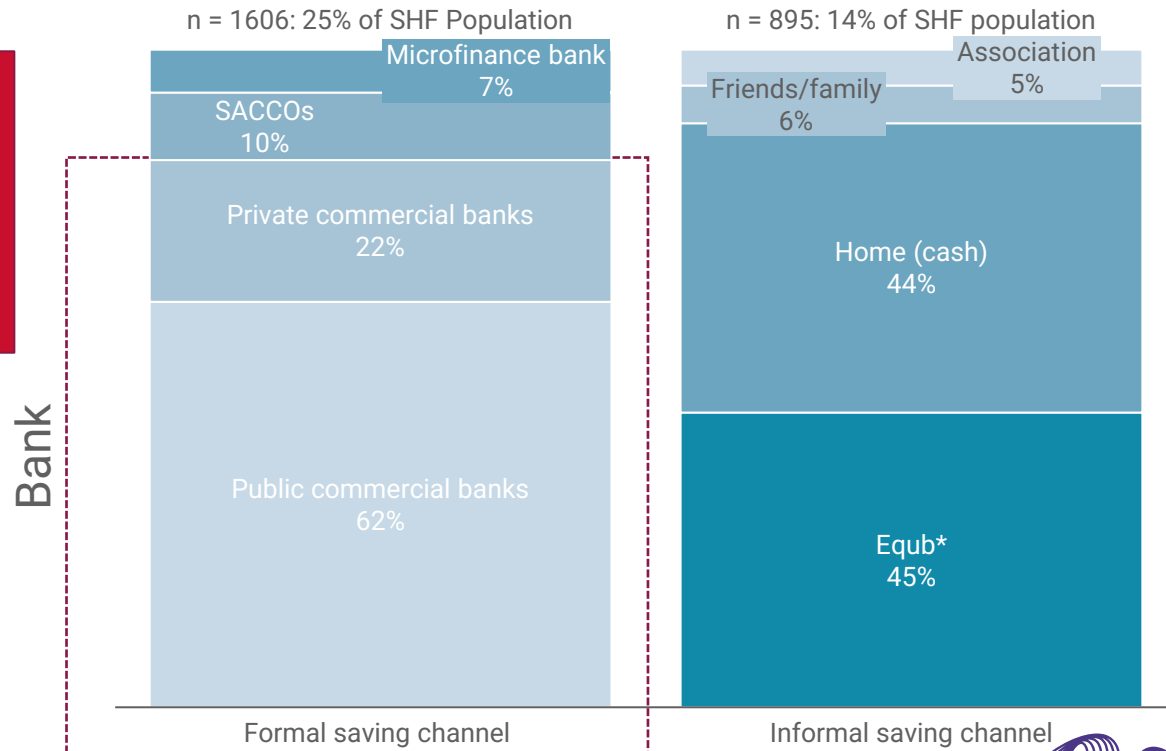
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Source: 1) World Bank and CSA, Ethiopia Socioeconomic Survey Wave 4 data, 2018/2019; 2) Ethiopia Socioeconomic Survey Wave 4 data, 2018/2019 and LOCAN Analysis: Addis Ababa and Somali regions had no entry points on SHFs financial situations, hence the exclusion

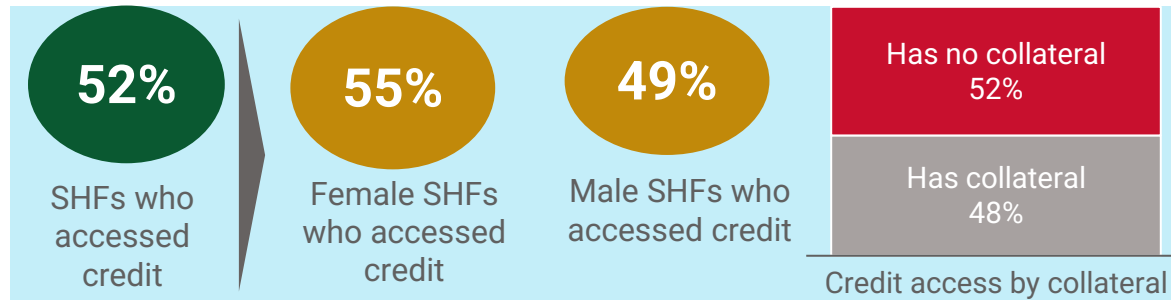
# The proportion of producers with cash savings is low; informal saving is still preferred especially among female producers



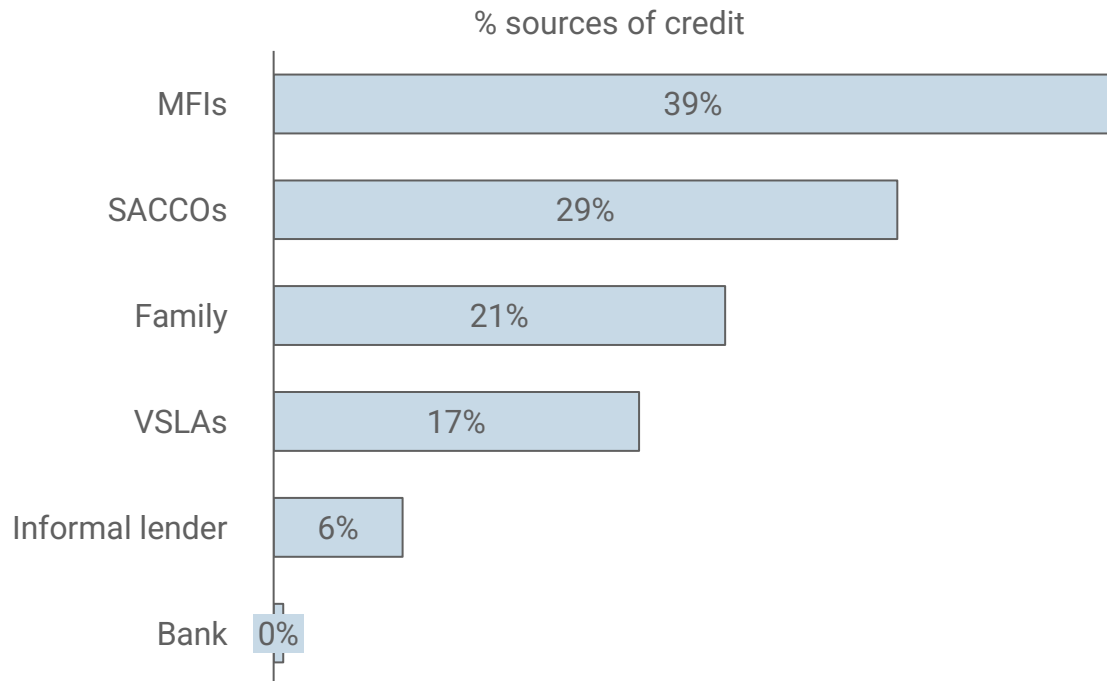
## Channels used for saving by SHFs in the last 12 months



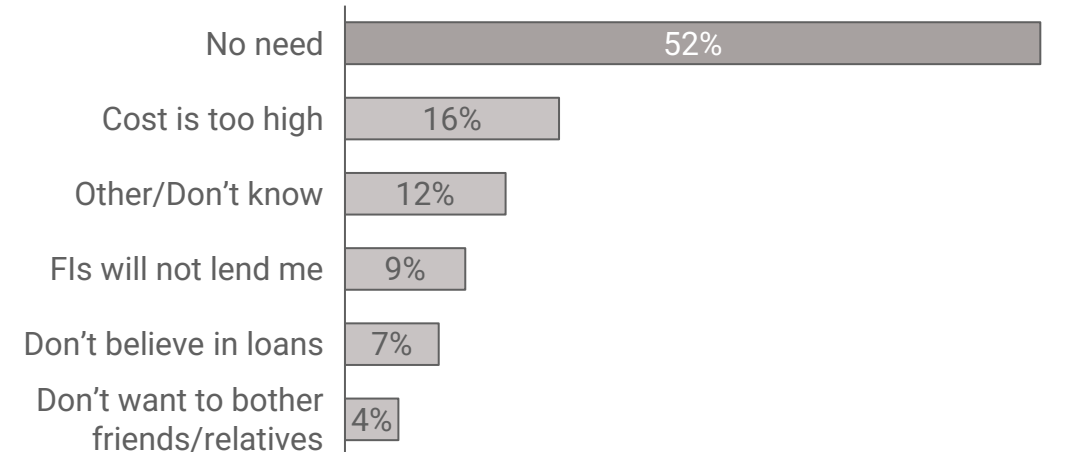
# Producers resort to borrowing funds to finance their operations, citing the high cost of borrowing and other factors as reasons for their reluctance



## Sources of credit by SHFs



## Reasons for not borrowing (%)



## Comparison between MFI loan and trader loan by farmers

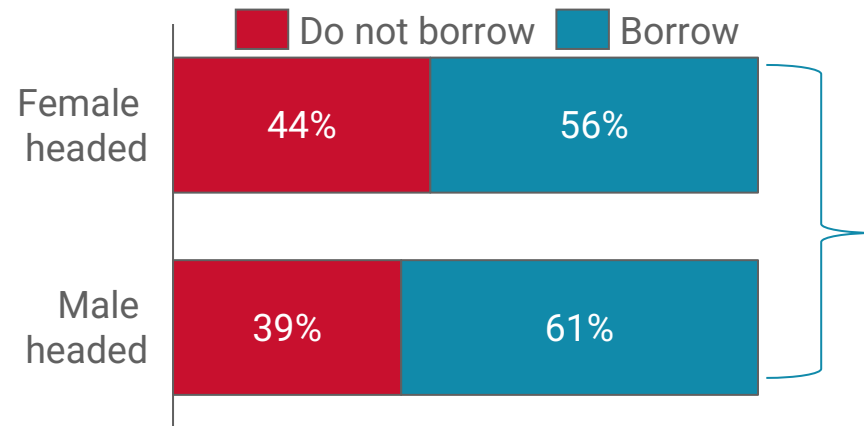
MFI AGRI-LOAN	INFORMAL TRADER LOAN
<b>Attractive features</b>	<b>Attractive features</b>
<ul style="list-style-type: none"> <li>Low Interest rates (18-24% p.a.) and a high profit margin for the farmer</li> <li>Freedom to run your own farm as you wish</li> </ul>	<ul style="list-style-type: none"> <li>Cash is accessible in adequate amounts</li> <li>No collateral requirement</li> <li>No monthly payments, flexible conditions</li> <li>Loan is rescheduled in case of default</li> </ul>
<b>Unattractive features</b>	<b>Unattractive features</b>
<ul style="list-style-type: none"> <li>Inadequate loan size</li> <li>High collateral requirement</li> <li>Fixed repayment period, no flexible conditions</li> </ul>	<ul style="list-style-type: none"> <li>High costs (50% profit sharing) and low profit margin for the farmer</li> <li>Lack of freedom to run your farm as you wish</li> <li>Trust issues between the farmer and the trader around the selling price received by the trader</li> </ul>



# More than half of the pastoral households borrow money; MFIs or saving associations are their main sources of credit alongside traders

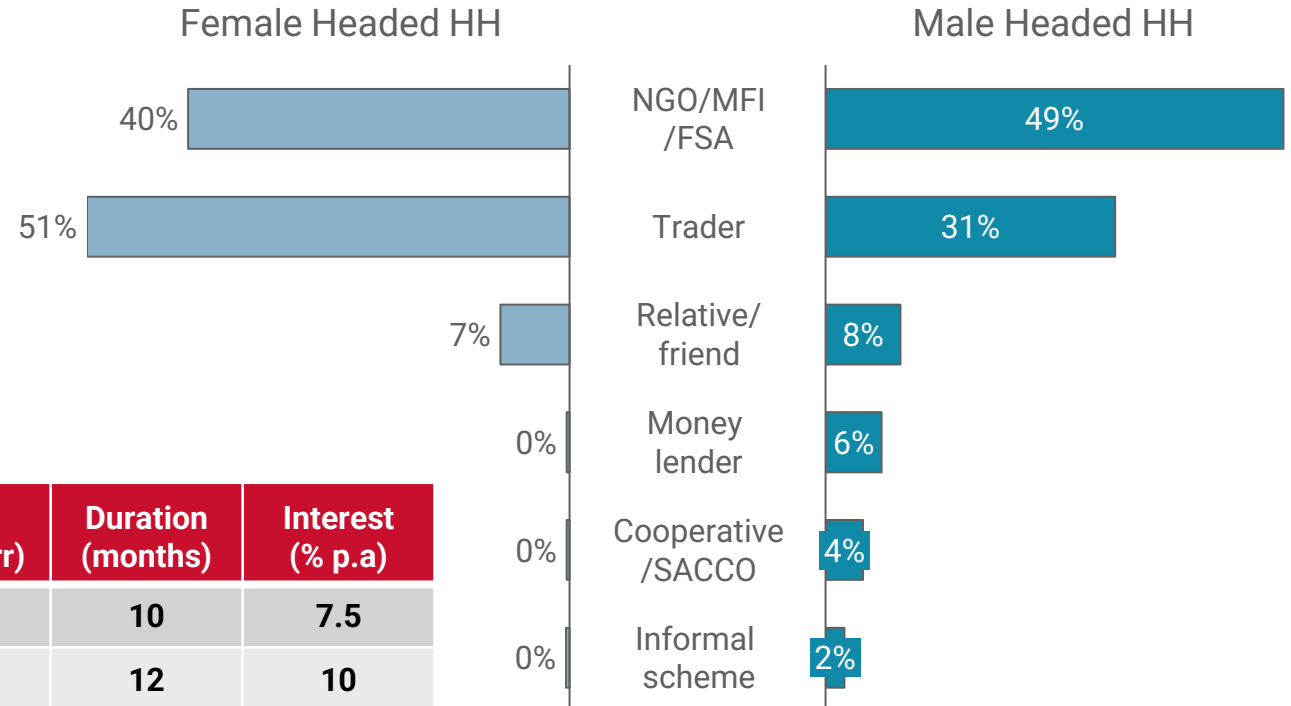
## Access to credit by pastoralist households

% pastoralists who borrow by gender



Credit	# times HH borrowed	Amount borrowed (Birr)	Amount received (Birr)	Duration (months)	Interest (% p.a)
Average	2.9	17,920	17,077	10	7.5
Median	2.0	11,000	10,350	12	10

## Sources of credit by pastoralist head of households

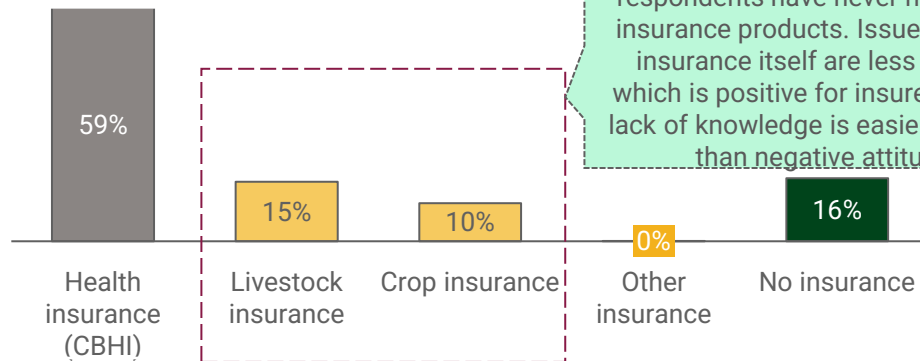


- The main sources of credit were microfinance institutions or savings associations for male-headed households, while traders were the main source of credit for female-headed households.
- On average, households borrow money 2.9 times per year, with a median amount borrowed of 11,000 Birr per year. The average amount borrowed (17,077 Birr) is similar to the average amount requested by pastoralists (17,920 Birr). The average loan term is 10 months, and the average interest rate is 7.5%.

# The uptake of insurance (agricultural or non-agricultural) is very low; this can be attributed to low awareness levels especially among SHFs

## Access to insurance services<sup>1</sup>

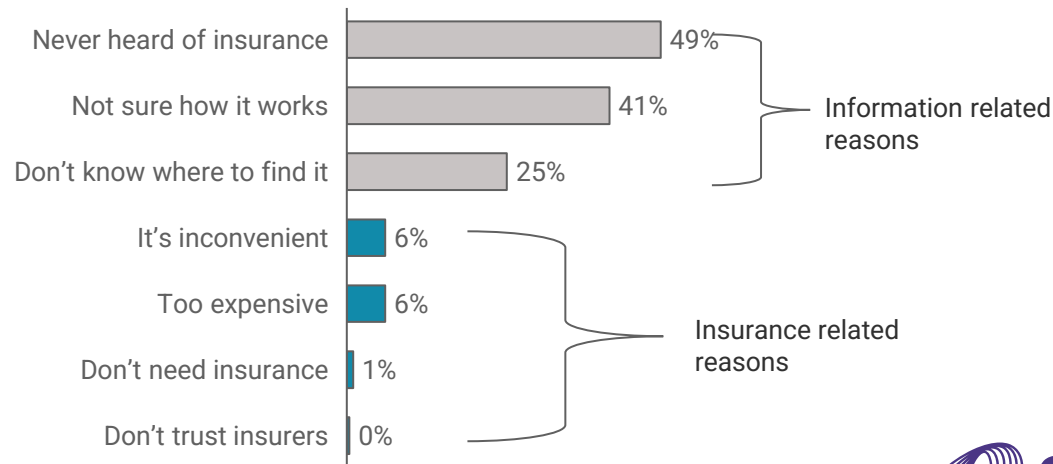
% of SHFs with Insurance



The main barrier to households getting insurance is a lack of information, particularly in rural areas where 62% of respondents have never heard of any insurance products. Issues related to insurance itself are less common, which is positive for insurers because lack of knowledge is easier to address than negative attitudes.

## Reasons for not having insurance<sup>2</sup>

% reasons



## Awareness of livestock insurance by HH

% household awareness

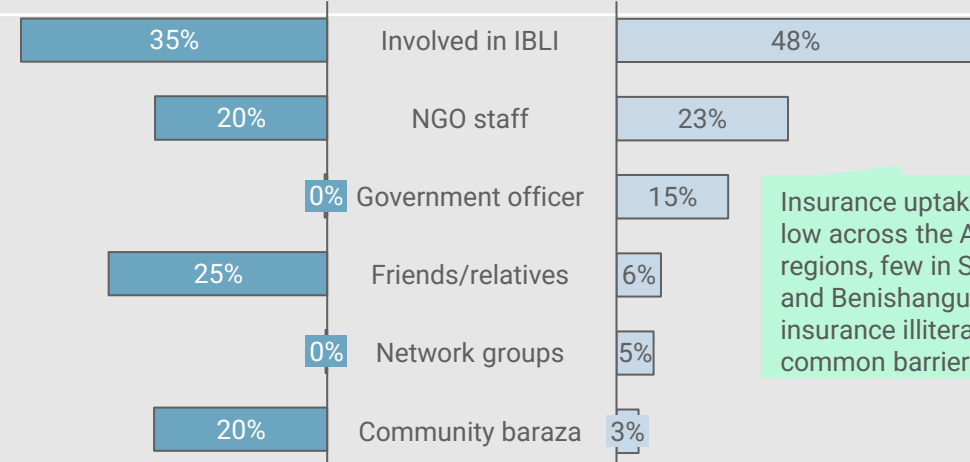
Not aware Aware



## Sources of livestock insurance information by gender

% sources- Female

% sources- Male



Insurance uptake is still low across the ASAL regions, few in Somali and Benishangul-Gumuz; insurance illiteracy is a common barrier

- ❖ The IBLI project is the main source of information on livestock insurance for pastoral households. Female-headed households rely on social learning from friends, relatives, and neighbors and community barazas.
- ❖ Other sources include community barazas and NGO interactions. Male-headed households also use NGO and government staff and involvement in IBLI introduction for information.

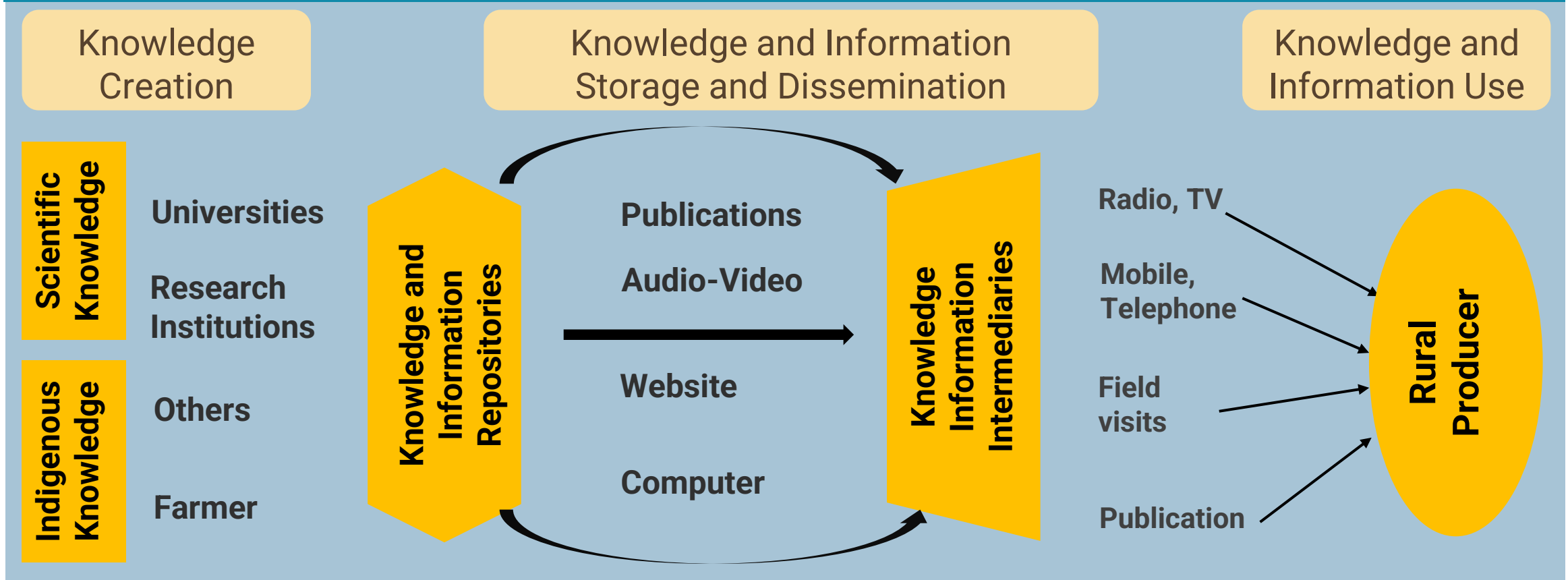
# DIGITAL INFORMATION SERVICES





# Producers have a distinct DIS and DFS knowledge and information dissemination patterns in Ethiopia

- Access to education and knowledge is crucial in agriculture as it enables farmers to acquire and effectively use information for decision making, leading to the adoption of technology and modern inputs. This knowledge can be disseminated to rural farmers through various intermediaries, including traditional and modern forms of ICT.

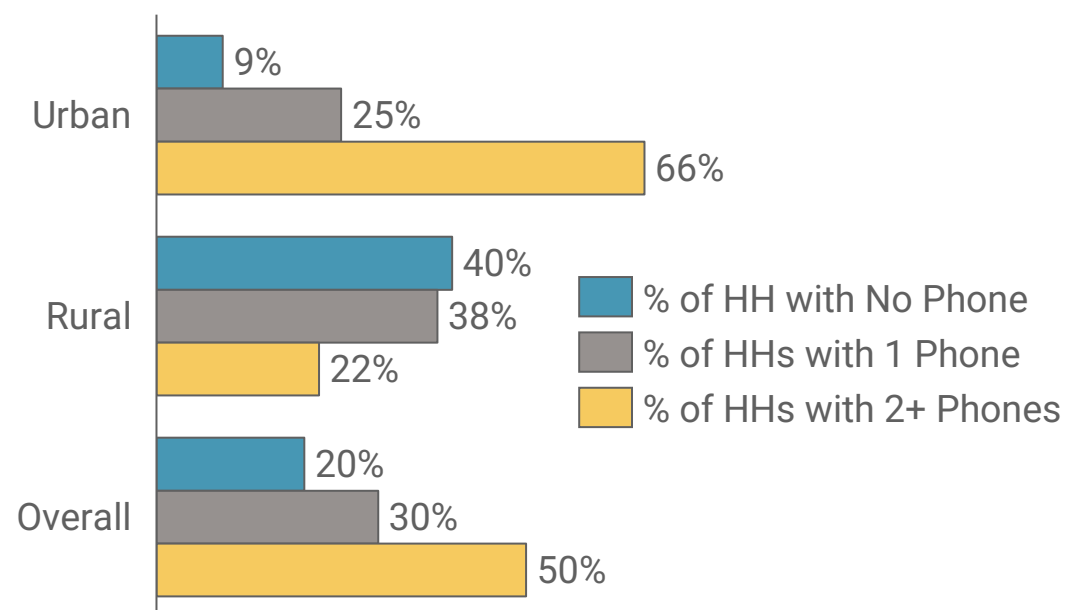


# Compared to other emerging markets, mobile phone ownership in Ethiopia is relatively low, especially in rural areas

- Ethiopia has a lower mobile phone ownership, particularly in rural areas, compared to other emerging markets. GSMA data shows that Ethiopia's mobile penetration rate is 42%, while Kenya, Sudan, Uganda, and Tanzania have higher rates. In rural areas, 40% of households report not having a mobile phone, indicating that mobile distribution is not a quick or complete solution for expanding inclusive insurance in Ethiopia.

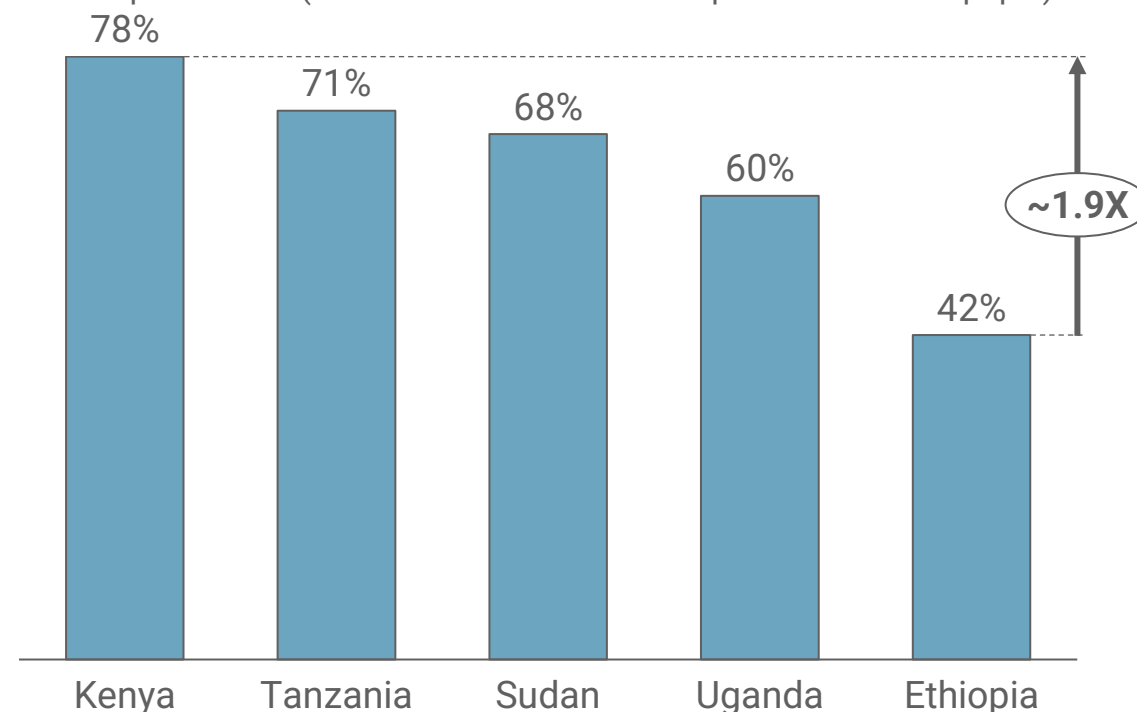
## Household phone ownership<sup>1</sup>

% of households by phone ownership



## Comparison of mobile penetration<sup>2</sup>

% sim penetration (number of connections compared to the total popn.)



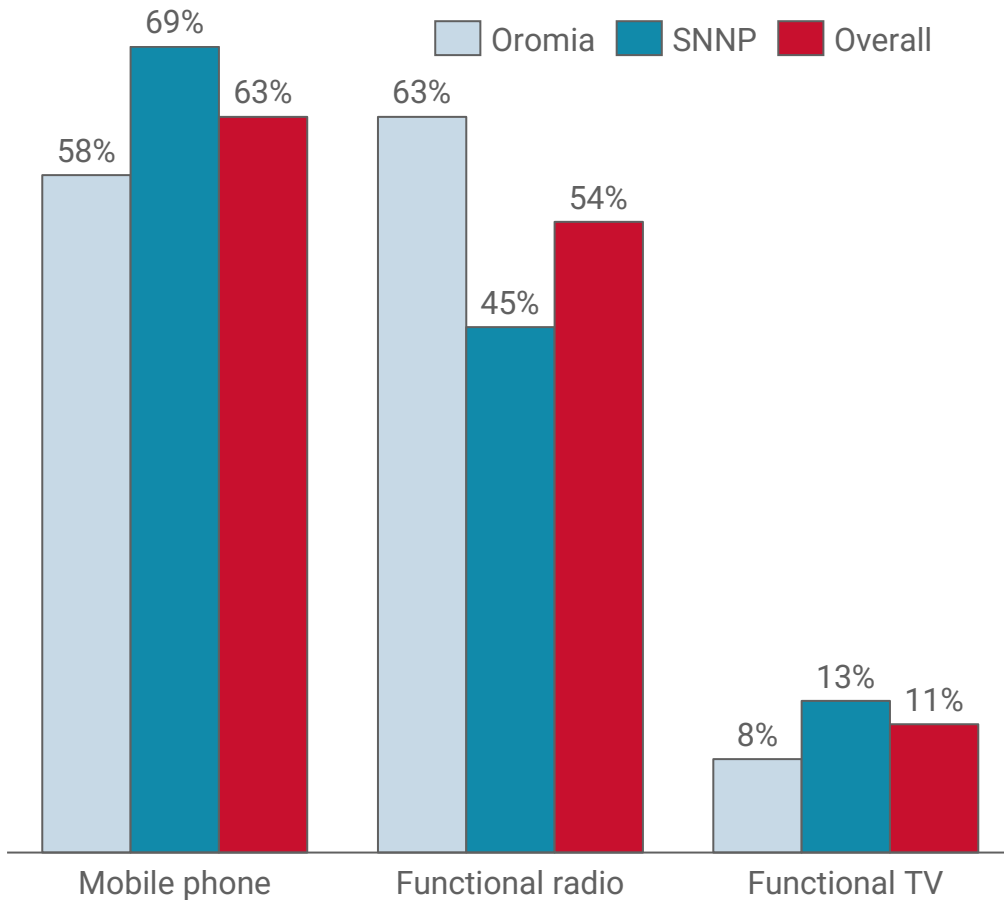
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# Producers have access to both digital and conventional communication assets, with about two-thirds of them owning a mobile phone

## Communication asset ownership across the regions

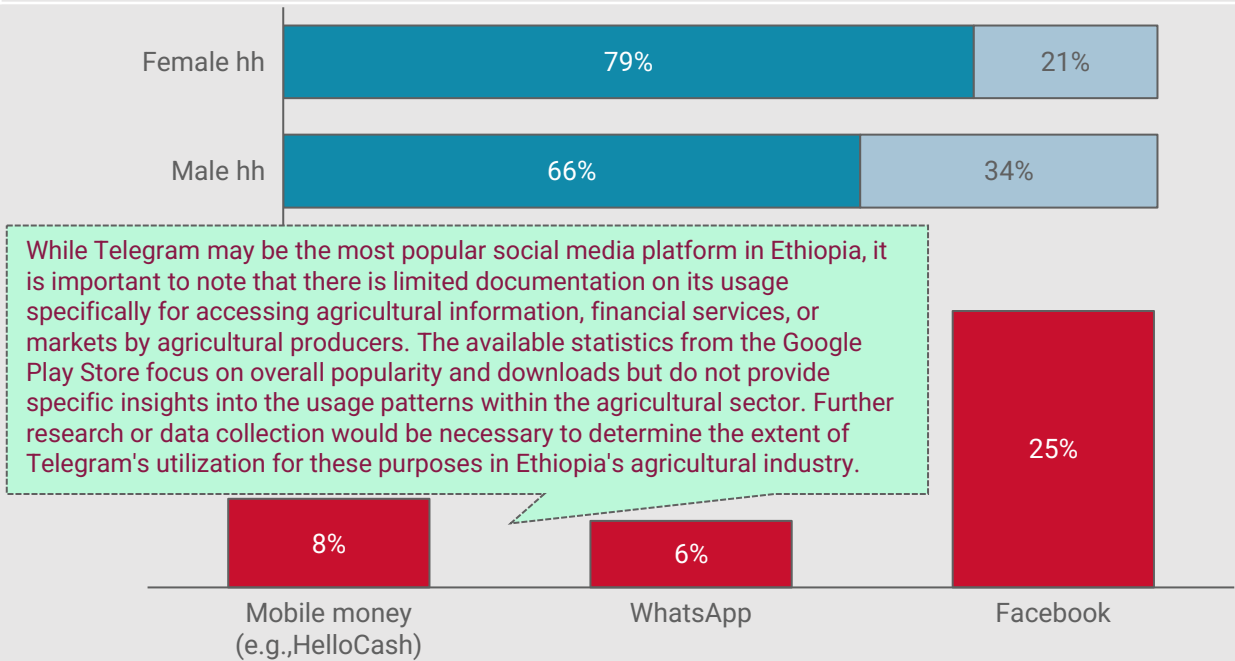
% SHFs owning communication asset



## Household phone ownership and phone features

% household phone ownership and features

Own phone Do not own phone



While Telegram may be the most popular social media platform in Ethiopia, it is important to note that there is limited documentation on its usage specifically for accessing agricultural information, financial services, or markets by agricultural producers. The available statistics from the Google Play Store focus on overall popularity and downloads but do not provide specific insights into the usage patterns within the agricultural sector. Further research or data collection would be necessary to determine the extent of Telegram's utilization for these purposes in Ethiopia's agricultural industry.

- ❖ On average, phone owners in Ethiopia spend 109 Birr per week (with a median of 50 Birr), mainly on airtime (67%). A smaller portion of the expenses goes towards both airtime and internet bundles (14%) or internet only (8%). The majority (65%) of phone owners do not face connectivity issues, according to the data.
- ❖ Female-headed households have lower access to phones with WhatsApp and Facebook compared to male-headed households. Only 27% of female-headed households have phones with WhatsApp compared to 50% of male-headed households. Likewise, only 23% of female-headed households have access to Facebook, while 41% of male-headed households have access.



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Source; Diro, S., Tesfaye, A. & Erko, B., Determinants of adoption of climate-smart agricultural technologies and practices in the coffee-based farming system of Ethiopia, 2022;

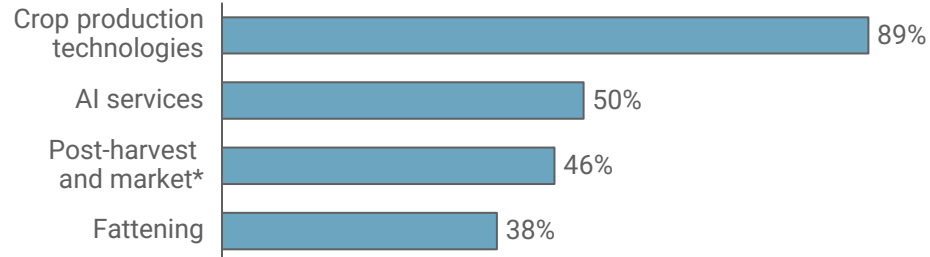
ILRI- De-Risking, Inclusion, And Value Enhancement of Pastoral Economies in the Horn of Africa (DRIVE) Report; n = 182

Note; The DRIVE project was based on CATI which means all respondents had a phone hence the proportions cannot be used to measure penetration

# Agricultural extension network plays a pivot role in disseminating production information within agricultural communities

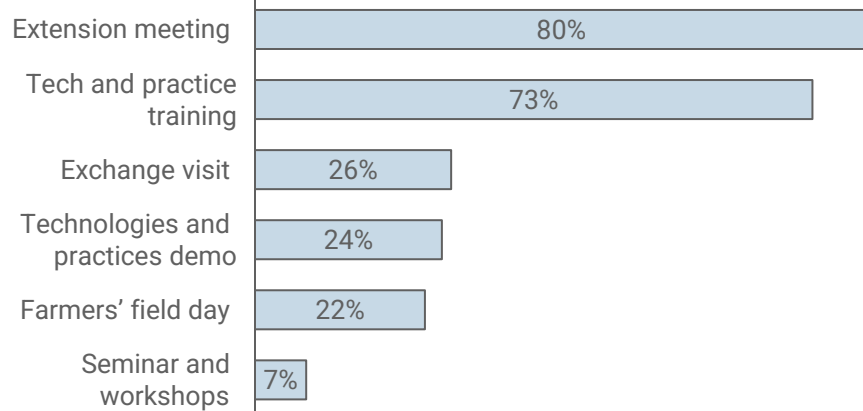
## Type of information farmers seek

% of information sought



## Participation in extension services

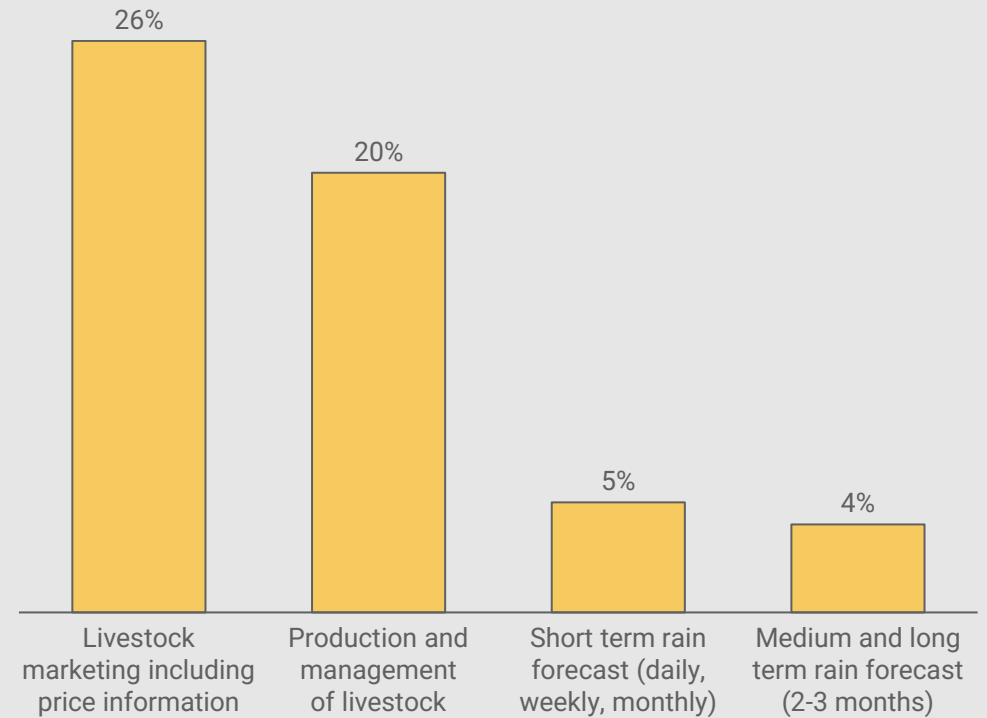
% SHFs who participated in extension events



Formal access to agricultural information is primarily through the **national extension system** –the largest in Africa with over 50k extension agents (~3 per kebele, or ~21 per 10k farmers)

## Pastoral household access to information

% household by type of information



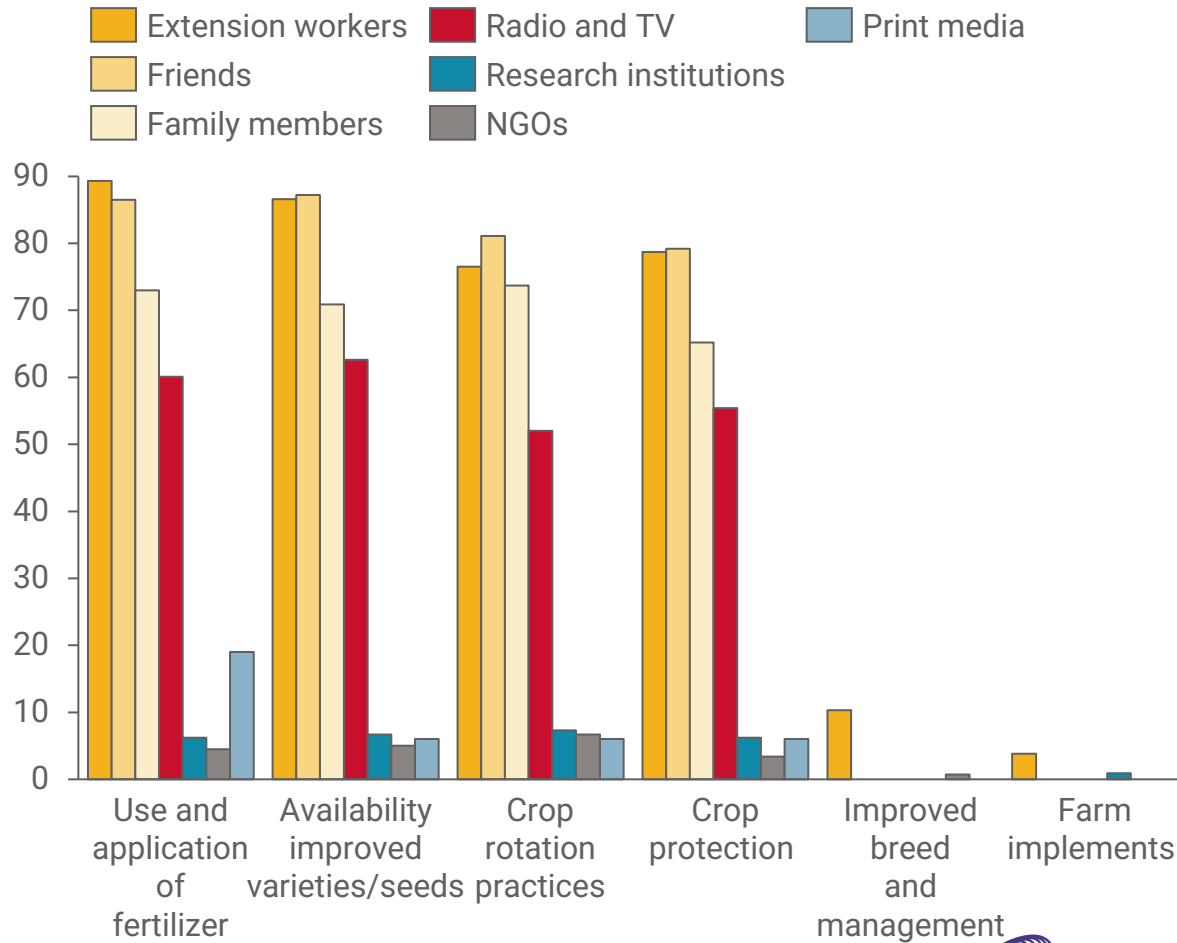
One-fifth of the households have access to information about livestock production and management. However, access to weather-related information is low; only 5% of the households have access to short-term weather forecast, and the proportion receiving medium-term and long-term forecasts is only 4%



# Producers also access agricultural information from other varied sources for instance extension workers, friends/family members or mass media

## Information type and their sources

% of type of information and their sources

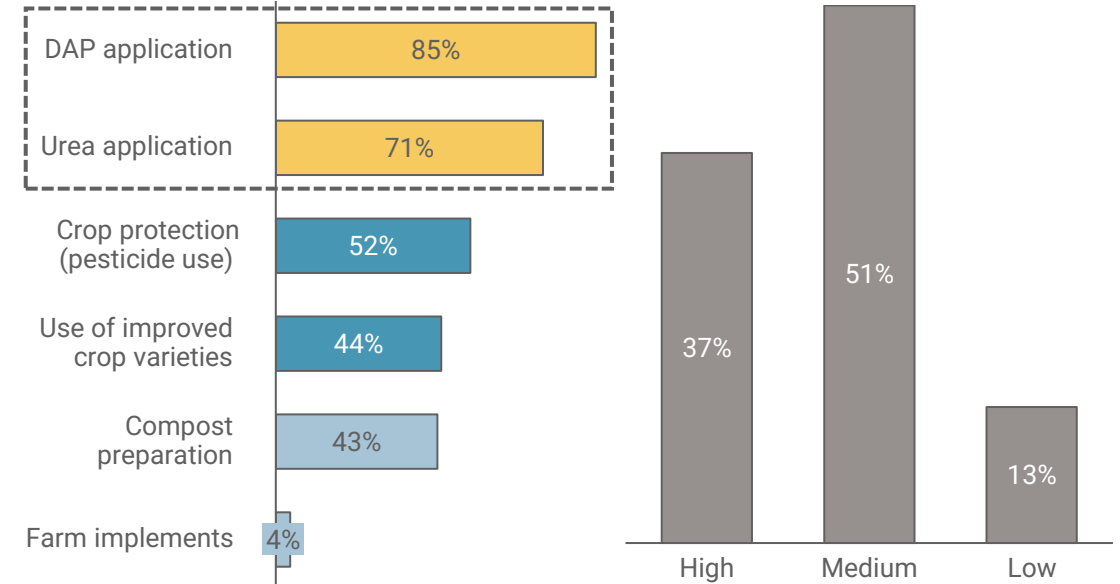


## Utilization of information

% of how SHFs by information sought

## and level of access

% level of access



- ❖ Generally, SHFs use the acquired information on fertilizer application to a large extent. ~98% of the SHFs understand the importance of agricultural information in increasing crop production and productivity.
- ❖ More than 80% have medium to high level of access to agricultural information based on the number of sources of information they have or the frequency of their participation in different extension events.



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# CHALLENGES AND OPPORTUNITIES IN DFS AND DIS ADOPTION

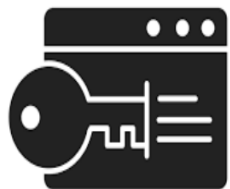
# Factors ranging from limited access to agricultural inputs to inadequate and untimely market information impede producers from achieving optimal productivity



**Limited access to credit:** The producers have limited access to credit, which limits their ability to invest in inputs such as improved seeds, fertilizers, and equipment. This can result in low yields and reduced productivity.



**Climate change:** Climate change is affecting producers in Ethiopia, with changes in rainfall patterns and increasing temperatures having a negative impact on crop yields



**Limited access to information:** Many producers have limited access to information on best agricultural practices, market prices, and weather forecasts. This can limit their ability to make informed decisions and improve their productivity.



**Soil fertility and land degradation:** Adoption of sustainable land management practices is low, and land degradation is increasing.



**Low tech skills:** The producers still struggle with low tech adoption (still use rudimentary farm equipment) and poor post-harvest handling, leading to low quality output



**Political instability:** Political instability and conflicts in some parts of Ethiopia can disrupt agricultural activities and limit the productivity of the producers.



**Limited access to markets:** Producers often face challenges in accessing markets, especially for crops that are perishable. This can result in low prices for their crops and reduced income.



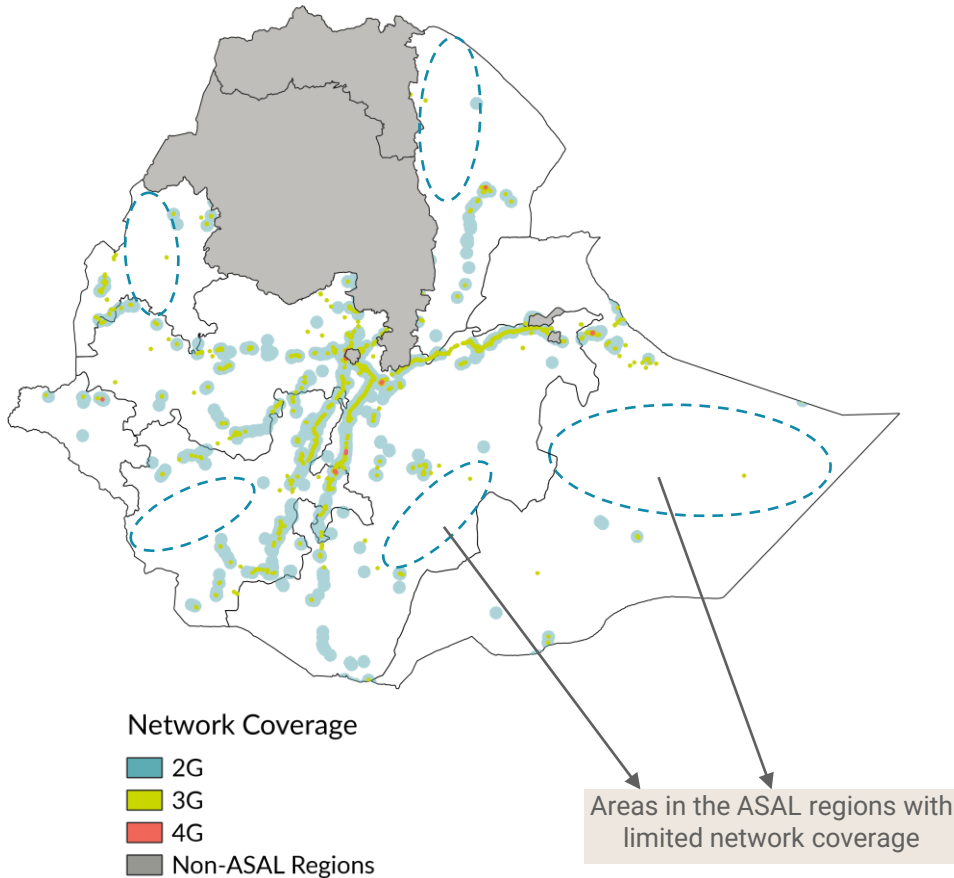
**Land tenure issues:** Many producers lack formal land titles or have insecure land tenure, which can limit their ability to invest in their land and improve their productivity



# The limited network coverage in most parts of the ASAL regions like Somali & SNNP limits pastoralists from accessing digital information

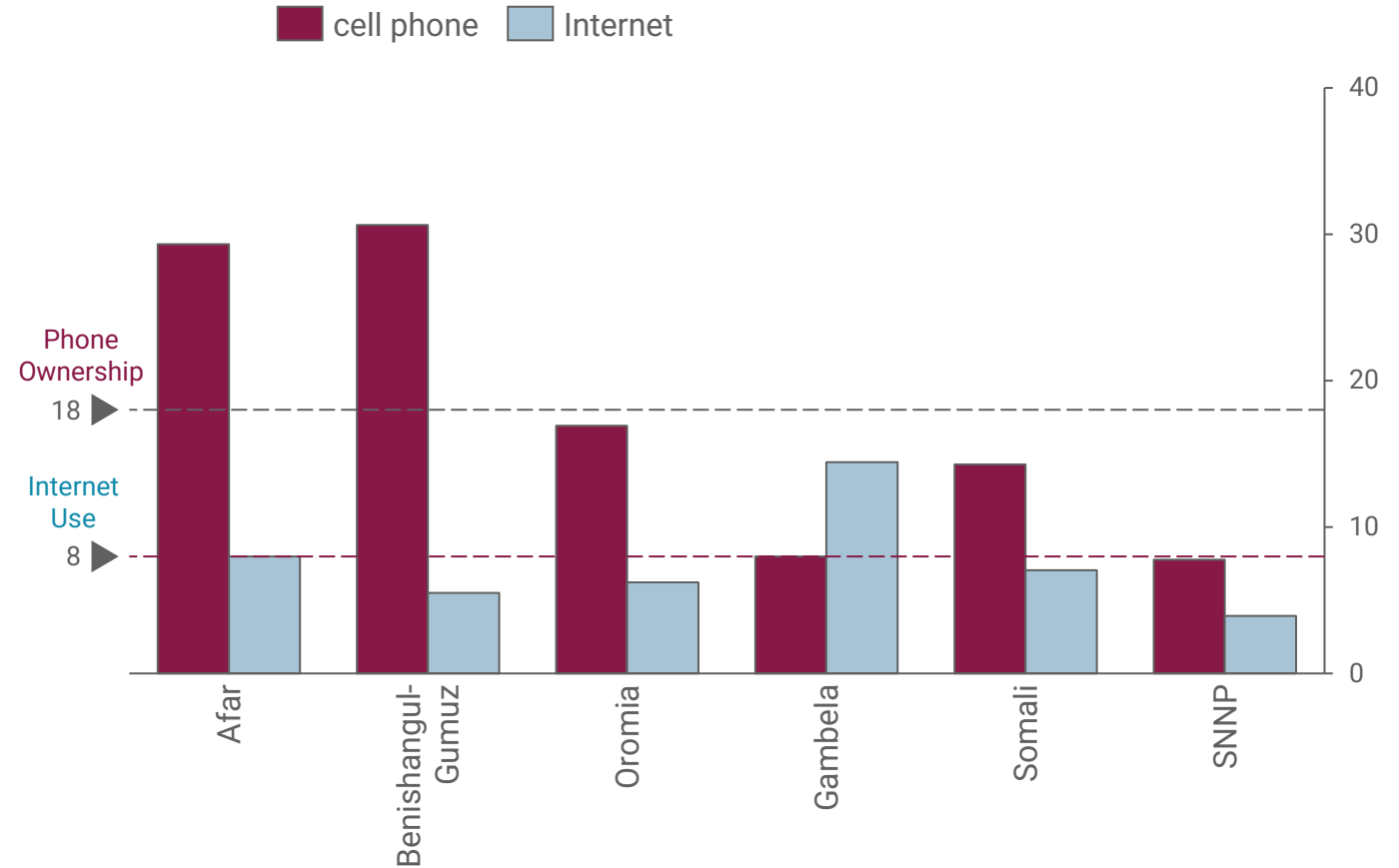
## Network coverage

Coverage by type network



## Digital penetration in Pastoralist households

Proportion of internet use and mobile ownership among livestock keeping households

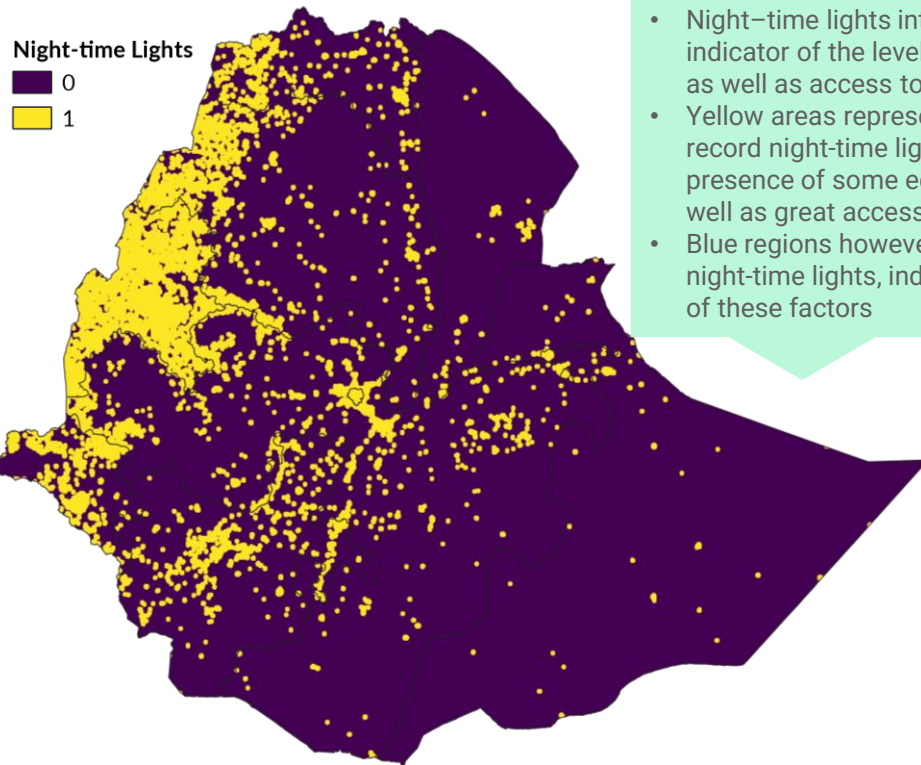




# Parts of eastern Ethiopia lack electricity access with most regions falling below the national average this contributes to low adoption rates of DFS/DIS

## Access to Electricity (Night-time Lights)

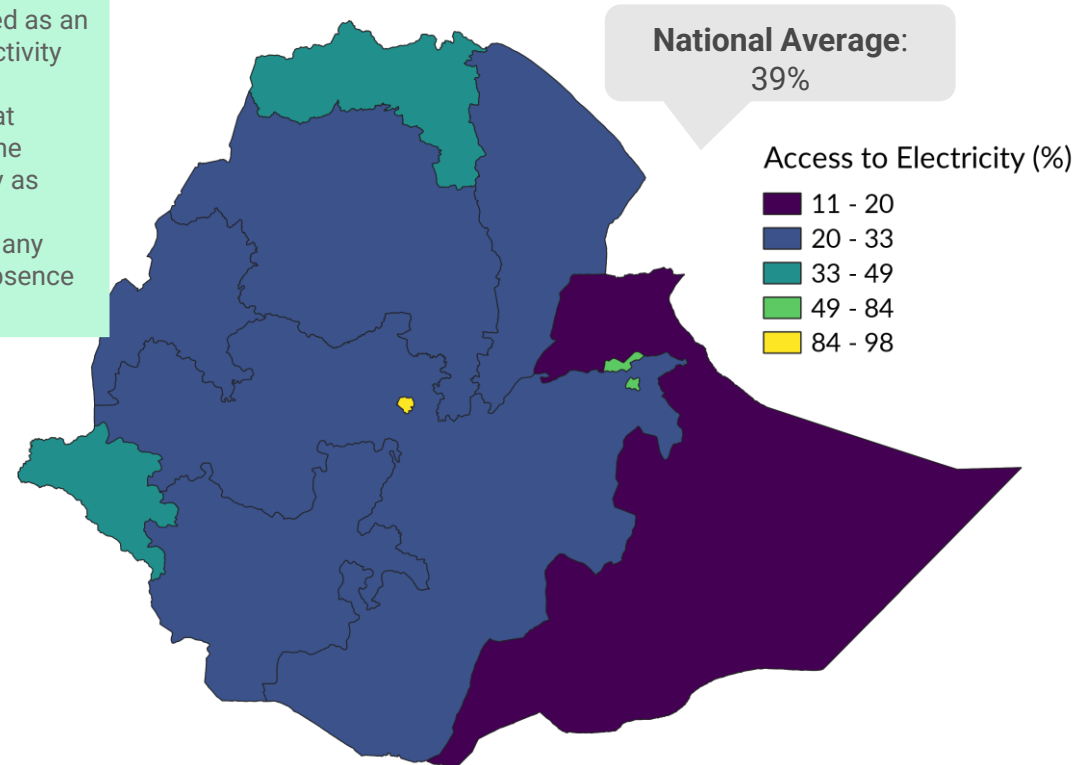
Proportion of population with access to electricity



- Night-time lights intensities are used as an indicator of the level of economic activity as well as access to electricity.
- Yellow areas represent locations that record night-time lights, indicating the presence of some economic activity as well as great access to electricity.
- Blue regions however do not record any night-time lights, indicative of the absence of these factors

## Access to Electricity

Proportion of households with access to electricity

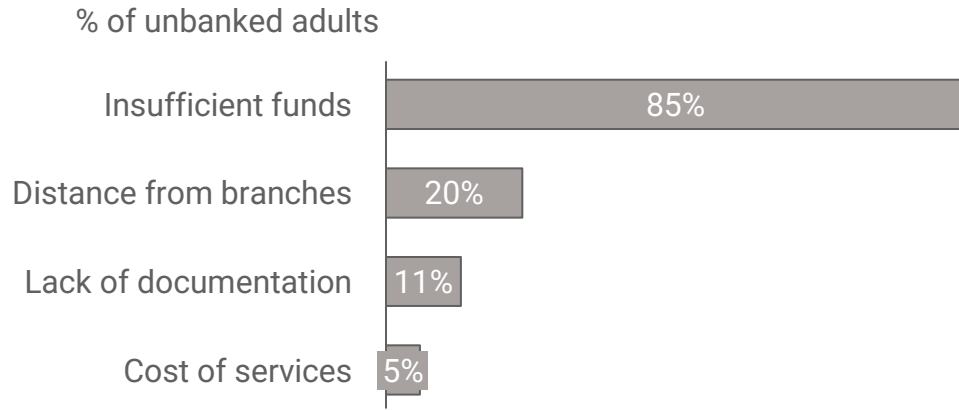


Solar and wind energy (20GWh and 848GWh respectively) contributes to 6% of the national power production in Ethiopia<sup>1</sup>. Given that solar and wind have a higher potential to increase off-grid power coverage, especially in south-eastern Ethiopia's arid and remote Somali region, there is potential in advancing digital information sharing in regions where solar interventions are being championed.

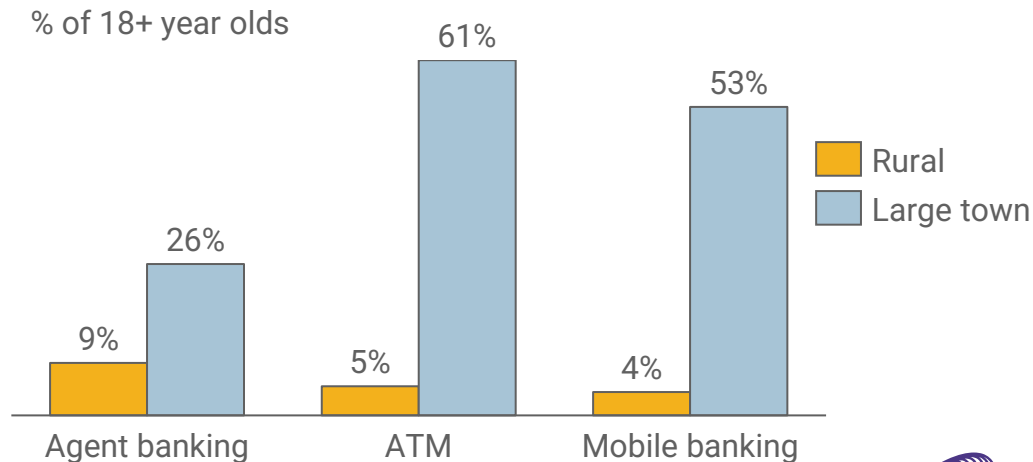


# Moreover, the main barriers to uptake of formal financial products are insufficient funds, accessibility, familiarity and trust

## Stated barriers to uptake of financial services



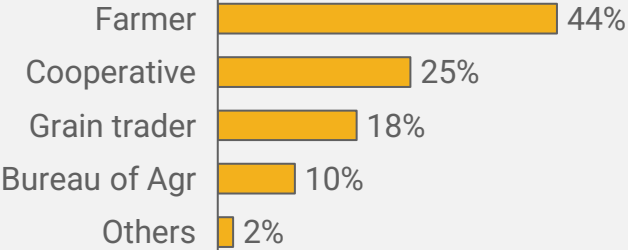
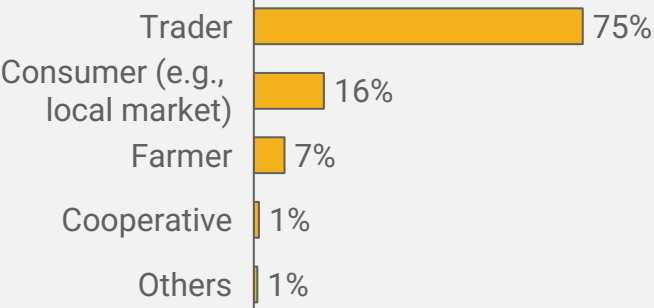
## Familiarity with financial services



## Key highlights

- ❖ The key barriers for financial inclusion include the perception of having insufficient funds (distinct from unwillingness to pay), distance from financial institution branches and agents (due to low penetration in rural areas), and lack of required documentation.
- ❖ Rural populations are also significantly less likely to be familiar with financial services than urban populations. For instance, only 4% of rural people are familiar with mobile banking, compared to 53% of urban people
- ❖ In addition, many people lack trust in financial services and perceive them as unreliable – 62% of rural people reported being worried about unexpected expenses linked to their accounts.
- ❖ Other challenges include low literacy and digital literacy, whilst the cost of services is a much less significant barrier.

# Even though the farmers access inputs, information and markets through a range of sources, physical barriers and personnel gaps remain pertinent

	Input Purchase	Information Access	Market Access
Current needs and access	<ul style="list-style-type: none"> <li><b>Improved seeds</b> usage is relatively low (~31% of fields with maize, ~8% of wheat ~3% of teff, as of 2015/16) while <b>fertilizer</b> application is well below other countries (~20kg per hectare vs. ~80 per hectare in Kenya)</li> <li><b>Other farmers</b> and <b>cooperatives</b> are the primary sources of seed purchase:</li> <li><b>Sources of purchased seed in Ethiopia</b> (% of sales, n=2,087)  </li> </ul>	<ul style="list-style-type: none"> <li><b>90%</b> of farmers rely primarily on <b>informal social learning</b> (from other farmers, friends and relatives) as opposed to public extension services</li> <li>Formal access to agricultural information is primarily through the <b>national extension system</b> –the largest in Africa with over 50k extension agents (~3 per kebele, or ~21 per 10k farmers)</li> <li><b>Participatory extension system</b> introduced by MoA in 2010 – underpinned by farmer groups (e.g., model farmers showing techniques to groups of five other farmers)</li> <li>Other sources include supplementary services e.g., 8028 hotline</li> </ul>	<ul style="list-style-type: none"> <li>Only 21% of SHF production is <b>marketed surplus</b> (vs. ~23% in Kenya, ~38% in Vietnam)</li> <li>Market transactions are primarily <b>through traders</b>, given long travel times to markets and cooperatives (~1 hour avg.)</li> <li>Amongst farmers overall, &lt;2% of sales transactions are <b>under contract</b> (2012)</li> <li><b>Main buyers of crop</b> (% of sales. n=5,451)  </li> </ul>
Key barriers	<ul style="list-style-type: none"> <li>Limited <b>distribution networks</b> – all planning &amp; supply via government and co-op networks</li> <li><b>High tariffs</b> on improved inputs</li> <li>SHFs' ability to afford inputs at the times they are needed given <b>seasonal incomes</b>, compounded by <b>limited access to finance</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Low ICT</b> capacity and usage</li> <li><b>Insufficient consideration for SHFs' needs</b> in extension design – complex stakeholder environment</li> <li>Low motivation and high churn of <b>development agents</b> (given low pay, high workload) limiting ability to <b>improve training</b></li> </ul>	<ul style="list-style-type: none"> <li><b>Physical infrastructure</b> – long distances to travel to roads, marketplaces or agricultural coops</li> <li><b>Limited pricing power</b>, due to power imbalance vs. brokers and aggregators as well as limited information</li> </ul>



AGRIFIN

Dalberg Research

# Although challenges exist, there are opportunities for stakeholders to grow digital services within the dynamic ecosystem in Ethiopia

## Constraints

### Enabling Environment

- ❖ Limited digital capacity in key agricultural networks (cooperatives, extension)
- ❖ High fragmentation and low coordination
- ❖ Physical and network infrastructure has improved but remains a barrier to digital services uptake

## Opportunities and Success Factors

- ✓ Digital services could help overcome physical barriers to reach Ethiopia's dispersed population
- ✓ Longer-term engagement of government stakeholders is required for success
- ✓ Focus and coordination is required

### Producer Needs

- ❖ Low access to digitally-enabled services, and low availability of pastoral-tailored financial products
- ❖ Barriers to using digital services in Ethiopia include low literacy and awareness levels, lack of trust, and the need for services to cater to various languages and contexts.

- ✓ Tech applications need to be relatively basic given current technical capability
- ✓ Delivery channels and tech service providers for pastoralists should be trusted entities with high rural reach, such as co-operative unions.

### Solutions




- ❖ DFS relatively limited beyond G2C transactions
- ❖ Non-financial services have grown well – primarily information services, with no market access and supply chain services at scale
- ❖ Last-mile delivery channels are critical to unlock

- ✓ Solving for last-mile delivery channels' reach and capacity is critical
- ✓ Better tailoring/bundling for SHFs is required
- ✓ Critical to avoid duplication of effort especially given high cost of local tailoring





# A few success stories can be told on the implementation of Ethiopia's digital strategy 2025 as an enabling environment for DFS and DIS

Participating Companies	Elevator pitch	2022 Results	Progress				
			1	2	3	4	5
<b>Hello Tractor</b> 	Has HT app that allows farmers to rent tractors and use them as and when needed and connects tractor owners with farmers that need the tractors, helping to make tractors more profitable.	50 tractors fitted with HT App	<div></div>				
<b>M-pesa Africa/Safaricom</b> 	DigiFarm Farm provides one-stop shop financial services to unbanked individuals, offering quality farm inputs and access to credit providers, resellers, and insurers.	Specialty coffee pilot and agricultural extension pilot discussed	<div></div>				
<b>CGIAR</b> 	CGIAR science, known for its role in the Green Revolution, now focuses on sustainable and climate-resistant agriculture to benefit the impoverished.	Beta National Agricultural Data Hub	<div></div>				
<b>Precision Development</b> 	CGIAR science supported the Green Revolution and today it can help find solutions to achieve a sustainable and climate-resistance agriculture to benefit the poorest.	Increase in digital advisory services to 40,000 dairy farmers	<div></div>				
<b>Digital Green</b> 	PxD provides accessible advice to small scale farmers via low-cost mobile information systems, aiming to improve their lives through actionable knowledge.	120 self-help group leaders (women farmers) use digital financial book	<div></div>				
<b>Amazon Web Services</b> 	DG helps risk-averse small farmers embrace innovations through relatable videos of neighboring farmers successfully adopting new technologies.	Cloud Policy executive training programme requested for 2023	<div></div>				
<b>Africa 118 for Google</b> 	Africa 118 implements Google training programs in Ethiopia, supporting digital education for financial inclusion and digital marketing for SMEs in Africa.	New programme	<div></div>				
<b>Simprints</b> 	Simprints provides biometrics for the world's poorest, allowing over 1 billion people without reliable IDs to access digital identities, financial services, and public resources.	New programme	<div></div>				

# GAP ANALYSIS



# The literature research and data analysis surfaces the following gaps for the SHFs

Theme	Identified Gaps
Digital Financial Access	<ul style="list-style-type: none"><li>• While there have been some studies on the use of digital financial services by smallholder farmers in Ethiopia, there is a need for more research that examines the barriers to digital financial inclusion, particularly for women and marginalized groups.</li><li>• There is also a need to understand the impact of digital financial services on smallholder farmers' access to credit, savings, and insurance.</li><li>• National pastoralists population with mobile money accounts, bank accounts, those who save/ borrow and how much, channels used to save and borrow by gender, age, income, education</li><li>• National pastoralists population with access to phones/ smart phones, with mobile money/ bank, levels accounts, digital literacy by age, gender, education and income</li><li>• Literature has not fully covered cultural, gender, and language barriers in factors hindering the usage and access of DIS/DFS among agropastoralists and pastoralists in Ethiopia.</li><li>• More research is needed to better understand the impact of these gaps on the adoption and usage of DIS/DFS services in these communities.</li></ul>

# The literature research and data analysis surfaces the following gaps for the pastoralists and agropastoralists

Theme	Identified Gaps
Digital Information Access	<ul style="list-style-type: none"><li>• There is a need for research that explores the different channels through which smallholder farmers in Ethiopia access information, including digital and non-digital platforms.</li><li>• There is also a need to understand the impact of information access on farmers' decision-making processes and their adoption of new agricultural technologies and practices.</li><li>• National pastoralists population that access information by type and channels used, preferred information and effective channels, challenges experienced in accessing the information; by age, gender, education and income</li><li>• While there has been some research on the potential of digital financial and information services to increase smallholder farmers' incomes in Ethiopia, there is a need for more comprehensive studies that examine the different models and approaches that have been used to promote these services and their effectiveness.</li></ul>