



Pre-feasibility study for an index-based livestock insurance product in Meyumuluke woreda, East Hararghe, Ethiopia

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Acronyms

ASALS	Arid and semi-arid lands
BOKU	Universität Für Bodenkultur Wien (Boku), University of Natural Resources and Life Sciences, Vienna
CAWHs	Community animal health workers
CCI	Climate Change Initiative
CHIRPS	Climate Hazards Group InfraRed Precipitation with Station data
DAs	Development agents
EcoSec	Economic Security Unit (ICRC)
EHI	Emergency household items
eMODIS	Enhanced Moderated Resolution Imaging Spectroradiometer
EOS	End of season
ERCS	Ethiopian Red Cross Society
ESA	European Space Agency
FGDs	Focus group discussions
IBLI	Index-Based Livestock Insurance
ICRC	International Committee of the Red Cross
ICT	Information communication technology
ILRI	International Livestock Research Institute
JRC	Joint Research Center
LEGS	Livestock Emergency Guidelines and Standards
Masl	Metres above sea level
MODIS	Moderate Resolution Imaging Spectroradiometer
M-Pesa	Mobile Pesa (mobile money platform)

NDVI	Normalized Difference Vegetation Index
NGO	Nongovernmental organization
NGS	Number of growing seasons
OCHA	United Nations Office for The Coordination of Humanitarian Affairs
ODRM	Office of Disaster Risk Management
OIC (SC)	Oromia Insurance Company (Share Company)
OPAD	Office of Pastoral Area Development
PSNP	Productive Safety Net Program
RUSACCOs	Rural savings and credit cooperatives
SOS	Start of season
TLUs	Tropical livestock units
UAs	Unit areas of insurance
UN	United Nations
UNICEF	United Nations International Children's Emergency Fund
USD	United States dollar
USGS	United States Geological Survey
WB	World Bank
WFP	World Food Programme

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Executive summary

The International Livestock Research Institute (ILRI) is a thought leader in index-based livestock insurance (IBLI), a disaster risk financing instrument that cushions pastoralists against drought adversities. IBLI uses a satellite-based forage monitoring platform to inform the timing and extent of insurance payouts to individual pastoralist policy holders before the underlying risk, usually drought, happens. Insurance payment is made when the estimated forage condition in an area falls below a pre-determined level of triggering threshold. This makes the insurance product unique as it avails resources to policy-holding pastoralists before drought strikes. For this reason, the product is also referred to as “asset protection contract”. Since 2012, ILRI has been guiding and supporting IBLI in Ethiopia in the Borana Zone of Oromia region in close collaboration with Oromia Insurance Share Company (OIC), the insurance underwriter for the product.

Since 2018, the International Committee of the Red Cross (ICRC) has been implementing a livelihood program in the lowland areas of Meyumuluke woreda¹ of East Hararghe Zone with the aim of protecting/restoring animal health and production capacity of conflict affected pastoralist communities. ICRC targets about 8,000 pastoralist households who rely on livestock as their main source of livelihood. In order to reinforce the livelihood support scheme for the targeted population of Meyumuluke woreda and as part of a broader resilience building agenda, the ICRC is considering to include a livestock insurance component as an instrument of reducing drought-related livestock mortality.

This document presents findings of a pre-feasibility study aimed at exploring opportunities for initiating IBLI among conflict affected pastoralist communities in Meyumuluke woreda in partnership with the ICRC. The study was conducted with the following objectives.

- i. Assess the presence of necessary preconditions to introduce IBLI and provide critical insights on the degree of favorability of the intervention.
- ii. Evaluate the key areas requiring major investment to support the intervention.
- iii. Propose a preliminary design of the implementation plan and estimate the financial requirements for implementing the intervention.

The study involved literature review, use of various social survey tools (including key informant interviews and focus group discussions) and biophysical analysis using geospatial data. In addition, the study consulted pertinent government agencies at zonal and woreda levels. Consultations were also held with key staff members of OIC to gauge their interest in implementing IBLI in Meyumuluke. The bulk of the information used to prepare this report was gathered from community-level consultations and discussions conducted in July and August 2019 in three of the eight kebeles² of Meyumuluke woreda where pastoralists live.

The study synthesized the different strands of information under biophysical analysis, risk and vulnerability analysis, and socioeconomic/institutional analysis. The extent of favorability of the area for initiating an IBLI scheme was assessed from the perspective of the degree to which pastoralists view the product as a viable tool of mitigating the effects of drought and forage scarcity on livestock; suitability of the biophysical environment within which pastoralism is practiced for initiating

¹ Woreda is the third-level administrative division of Ethiopia below Region and Zone.

² Kebele is the smallest unit of local government in Ethiopia.

IBLI; the extent to which the market system and associated organizational and institutional settings would be able to support/facilitate the objectives of establishing IBLI.

The biophysical analysis indicates IBLI's suitability in Meyumuluke as the IBLI conditions on rangeland, forage availability and seasonality are met with a possibility of two insurance coverage windows for the wet seasons—approximately March–June and August–December. Considering the similarity of drought impacts and risk profiles across the eight kebeles, the study concluded that all the kebeles could be treated as one unit area of insurance (UAI) sub divided into three operational units, where insurance sales promotion, premium collection, capacity building efforts, etc. could be meaningfully organised.

The risk and vulnerability analyses established that the pastoral livestock production system in the woreda is under considerable stress due to frequent drought, conflict and incidence of livestock diseases impacting livelihood resources. Between 2007 and 2017, the community suffered three severe drought shocks that resulted in large scale livestock deaths and migration to neighboring woredas. Other forms of coping with drought include using tree branches as feed supplements for their livestock and harvesting palatable grasses scattered around mountain tops/cliffs. Unlike in other pastoralist contexts, such as in Borana, Meyumuluke has no secular community-wide mechanisms of intra-household assistance in times of severe drought. For instance, responses to drought mitigation by the government have been either absent or unsatisfactory. Government-funded attempts to address livestock mortality in one of the recent drought episodes were considered too little, too late by the community. Community members ascribe the limited effort of government in addressing their livelihood challenges as neglect.

Following extensive discussions with a range of community representatives around the concept of insurance and IBLI by using context-specific terminologies and examples from the Borana experience of IBLI, community members expressed interest in the intervention. In addition, there seems to be considerable interest among government officials at zonal and at woreda levels to implement a livestock insurance product in Meyumuluke. OIC is also ready to play its usual role of underwriting the insurance. On the other hand, Meyumuluke does not have strong local structures that would facilitate the uptake of a livestock insurance product and incentivize the unreserved engagement of insurance underwriting companies, such as insurance promoters, premium collectors and claim distributors. However, the study pointed to the existence of local organizational experience that can serve as a basis for the purpose at hand. These include the system of community animal health workers (CAHWs) and rural saving associations and cooperative in different pastoral kebeles. A factor that could constrain the operation and efficacy of IBLI is the absence of a feed/fodder market in the woreda.

The findings of the study supported the possibility of introducing IBLI as a commercial product. However, the study noted the necessity of considering premium subsidy regimes, especially to poorer sections of local communities who may not afford to pay the full premium cost. To this end, this report provides an indicative cost estimate of the premium subsidy for which budgetary resources need to be allocated. Furthermore, the report underlines several areas where technical support is needed, including product design, capacity development and baseline survey, to help implement IBLI in a systematic manner.

Whilst concluding the feasibility of initiating IBLI in Meyumuluke, the report also underlines the importance of working towards developing a livestock feed value chain and organizing a series of tailored trainings for frontline insurance promoters/extension agents, woreda administration bodies and staff members from relevant woreda and zonal line/technical departments. The report further notes that community mobilization and value chain development activities should be pursued as standalone and budgeted work packages, possibly by institutions with a track record of community engagement and marketplace development.

I Introduction

Pastoralists rely on livestock resources for their livelihoods and welfare and livestock represents a large portion of the wealth of households. Although traditional practices of extensive grazing and migration effectively sustain pastoral herds in arid and semi-arid regions where other forms of low-input agriculture are all but impossible, the animals, and thus the wealth and income of households, are vulnerable to shocks. Drought is the single largest cause of livestock mortality for pastoralists across Africa (Mude et al. 2011) whose livelihoods rely solely or largely on livestock. The resulting high livestock mortality rate has devastating effects on asset levels, rendering pastoralists among the most vulnerable populations. As the drought precipitated humanitarian crises in the Horn of Africa illustrate (e.g., 2009, 2011, 2012 and 2017) pastoralists are often hit the hardest (Grunewald et al. 2019). Increased population pressure and loss of open rangelands due to changing land use (e.g., urbanization and cropping) and government policies that overlook pastoral livelihoods exacerbate such vulnerability to climate shocks. Moreover, scarcity of pasture and rangeland increase the exposure of pastoralists to frequent conflicts. These factors make typical herding strategies such as migration and other traditional coping mechanisms less effective, pushing already marginalized and vulnerable pastoralist communities further into poverty (Adger et al. 2003; Dror et al. 2015; Tacoli 2009). These considerations inspired the initiation of Index-Based Livestock Insurance (IBLI) in Kenyan drylands, and later in Southern Ethiopia, to protect pastoralists against the adverse impacts of drought.

Since 2008, ILRI and its partners in the public, private and nonprofit sectors have pursued a comprehensive research program aimed at designing, developing and implementing a market-mediated index-based insurance product to protect livestock keepers from drought related asset losses, particularly in the drought-prone arid and semi-arid lands (ASALs). The resulting IBLI product relies on low cost, accessible and reliable satellite indicators of drought called Normalized Difference Vegetation Index (NDVI) to protect pastoralists from drought-related livestock losses by assessing forage availability during the rainy season. Insurance payouts are made when the estimated forage conditions at the end of the rainy season fall below a pre-determined and area-specific level. Areas with common biophysical/agroclimatic characteristics, similar pastoral experiences and risk profiles are grouped together to form unit areas of insurance (UAIs). Under IBLI, forage, not livestock mortality per se, is the insured product. Therefore, the payouts are not designed to compensate for a loss, but to facilitate implementation of early coping strategies such as purchasing fodder, water and veterinary services; destocking before emergencies; and migration planning. This makes the insurance product unique as it avails resources to policy holding pastoralists before drought strikes and not after. For this reason, the product is also referred to as “asset protection contract”.

The IBLI product was first sold in 2010 in Marsabit county, Kenya. It was then expanded to seven other counties and to the Borana Zone in the Oromia region of Ethiopia. In Ethiopia, the Oromia Insurance Share Company (OIC) is the commercial partner and underwriter of the IBLI product. As of late 2019, OIC engaged about 80 cooperatives and microfinance institutions for extension, increasing financial literacy and delivery of the IBLI product to over 15,000 pastoralist clients in the Borana area.

IBLI has increasingly been conceived as an important tool in supporting drought risk financing efforts, and several donors and international NGOs have started exploring its potential in reducing drought-related livestock mortality.

The International Committee of the Red Cross (ICRC) has ensured humanitarian protection and assistance for victims of war and armed violence for decades. The Economic Security (EcoSec) Unit engages in relief assistance (food and emergency household items (EHI)) during acute crises and provides livelihood support during protracted conflicts and chronic emergency. In several African contexts where the ICRC works and where the population experiences complex emergencies such that armed conflict and climate risks expose people to a double vulnerability (Peters 2019), livestock interventions aimed at achieving broader livelihood-based objectives are implemented based on the Livestock Emergency Guidelines and Standards (LEGS) approach.

In 2018, the ICRC started a livelihood program in the lowland areas of Oromia region with the aim of protecting/restoring animal health and production capacity of pastoralist communities affected by conflict. The target population consists of about 8,000 pastoralist households (48,000 individuals), formerly assisted with EHI, who rely on livestock as their main livelihood. These people live in Meyumulukeya woreda in the semi-arid pastoral lowlands of East Hararghe Zone. A major activity undertaken in this regard is identification and training of community animal health workers (CAHWs) by the ICRC staff jointly with representatives of the affected community. CAHWs were selected through community-based targeting (e.g., proximity and acceptance by the community)¹. ICRC is highly considering the value of providing a livestock insurance component in order to reinforce the livelihood support scheme that the organisation has been providing for the target population in Meyumulukeya woreda and the broader resilience building agenda being advanced by the ICRC.

Against this background, a joint pre-feasibility study was conducted by ILRI and the ICRC in Meyumulukeya woreda, spanning a period of two weeks through July–August 2019. The specific objectives of the study were to:

- i. assess the presence of necessary preconditions to introduce IBLI and provide critical insights on the degree of favourability of the intervention;
- ii. evaluate the key areas requiring major investments to support the intervention; and
- iii. propose a preliminary design of the implementation plan and estimate the financial requirements for implementing the intervention.

¹ Similar activities have recently commenced in the adjacent Kumbi woreda of East Hararghe Zone in Oromia and Erer zone in the Somali Regional State.

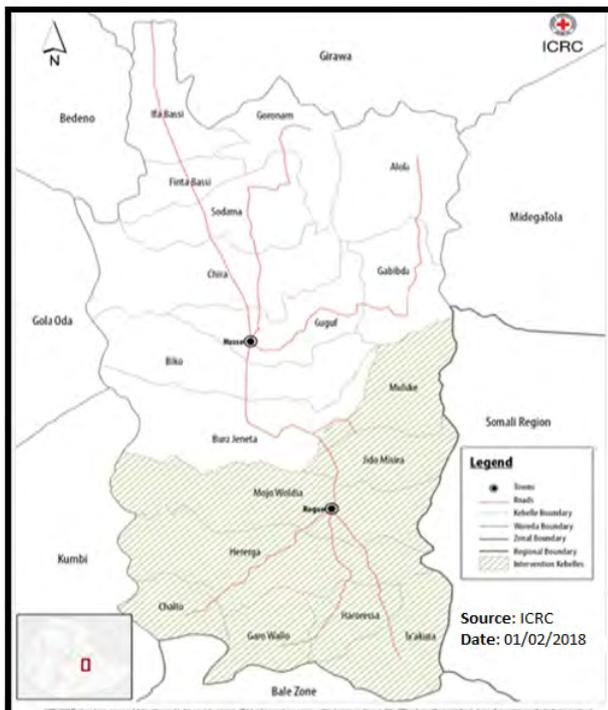
2 The study site

Meyumuluke is one of the 20 woredas (districts) in the East Hararghe Zone of Oromia National Regional State. The zone is one of the few major administrative tiers housing pastoralist populations in Oromia after Bale, Borana, East Shewa, Guji, West Guji and West Hararghe zones. In Oromia, a total of 43 woredas are categorised as pastoral and semi-pastoral, occupying about 40% of the landmass in Oromia region. East Hararghe has five woredas where pastoralism and agropastoralism are practiced—Chinaksen, Gola Oda, Kumbi, Meyumuluke and Midhaga Tola. Meyumuluke is the second largest woreda after Kumbi in terms of livestock population.

Meyumuluke has a land area of 4500–5,000 km² accounting for about 20% of the land area of East Hararghe. Meyumuluke lies between 7° 32' and 8° 54' N latitude and 41° 39' and 42° 11' E longitude. It is bordered by Girawa and Bedeno woredas in the North, Gola Oda and Kumbi woredas in the West, Midhaga Tola woreda and Somali regional state in the East and Bale zone in the South. Prior to 2001, Meyumuluke was part of Gola Oda woreda.

Huse, Meyumuluke's capital, is located 150 km west of Harar, the capital of East Hararghe Zone. It is one of the most underdeveloped administrative capitals in the region. It has limited roads; there is only one gravel all-weather road that connects Huse and its environs with Harar traversing through the northern borders of the woreda. However, the woreda has good mobile connectivity with several telephone masts aiding penetration of cellular technology.

Figure 1. Pastoral and agropastoral areas in Meyumuluke



Meyumuluke is characterized by an altitude that varies from 900–1400 masl, with a mean annual rainfall ranging from 500–700mm and an average daytime temperature of 30–37°C. A significant part of the woreda falls under the warm semi-arid (kola) climatic zone. Many perennial rivers and intermittent streams that are of vital importance to the communities pass through Meyumuluke. The major ones include Mojo, Gobele and Erer.

As of June 2019, Meyumuluke has an estimated total human population of 90,210 organized in 10,563 households, out of which 78% are male headed. Some 93% of the population live in rural areas. Meyumuluke has 18 rural kebeles and one town. It is one of the most sparsely populated districts in the zone. The average household size in the rural areas of the woreda is 4.7 people.

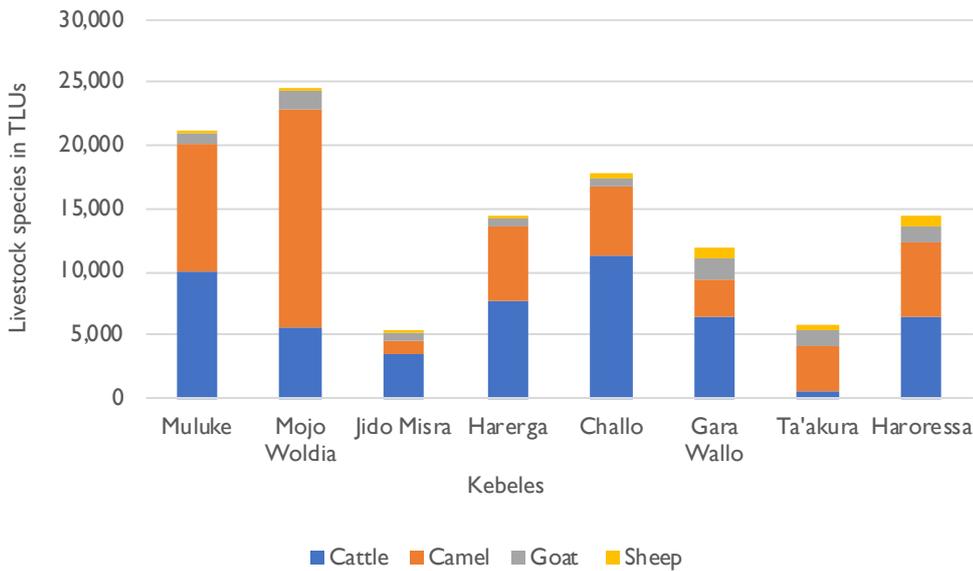
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The bulk of the rural population in Meyumuluke are either pastoralists (eight kebeles) or agropastoralists (10 kebeles). All pastoralists in the woreda are adherents of the Islamic faith. Figure 1 shows a map of the pastoral kebeles, which are also the focus of this study. The livelihoods of pastoralists in Meyumuluke have been threatened by recurring droughts. The woreda has also been the scene of intense border conflicts recently with pastoralists in the adjacent Somali region, which has resulted in population displacements from three of the eight pastoral kebeles of Meyumuluke.

The district possesses large livestock resources of which cattle constitutes the majority followed by goats, camel and sheep²; which are also very critical assets for the pastoralist communities. In addition, donkeys are extensively used for transportation of water from ponds and wells along with other commodities.

Figure 2 provides the estimated number (in TLUs³) and distribution of livestock in the eight pastoral kebeles of Meyumuluke with a focus on cattle, camel and shoats—species that are often the subject of livestock insurance in east Africa.

Figure 2: Livestock population in Meyumuluke by Kebele and animal species



Source: Interview with stakeholders and local government officials

² Cattle (173,612; 41%); goats (156,211; 37%); camels (49,321; 12%); and sheep (40,512; 10%)

³ 1 Cow = 1 TLU; 1 Sheep/goat = 0.1 TLU; 1 Donkey = 0.5 TLU; 1 Camel = 1.25 TLU

Source: <http://www.fao.org/3/t0828e/T0828E07.htm>

3 Methods

The study began by undertaking analysis of documents to obtain background information on historical, socioeconomic, biophysical, risk and vulnerability, and livelihood related issues of the study area and its environs. However, field-level data collection carried out in the study area in late July and August 2019 served as the main source of information that informed much of this report.

Fieldwork for this study, including community-level consultations and discussions, were conducted in three of the eight kebeles in Meyumulukey where pastoralists live—Muluke, Mojo Woldia and Chalho. The three kebeles were selected based on accessibility (all three kebeles), opportunities for combining community consultations with visitations of markets and other infrastructures (Mojo Woldia), and the scope of interacting with both displaced and host pastoralist communities (Chalho)⁴. Consultations were also made with senior experts of pertinent line departments at woreda and zonal levels, as well as other non-state development actors to understand the workings of development and/or disaster risk management operations in the study area that may have a bearing on the design and delivery of IBLI.

Below are the three basic parameters that were considered to explore the feasibility of introducing livestock index insurance product for pastoralists in Meyumulukey (ILRI 2017).

- i. Biophysical (e.g., the extent to which the rangeland vegetation has a clear growth seasonality; whether there are sufficiently productive rangelands in the targeted areas to sustain livestock grazing).
- ii. Risk and vulnerability (e.g., whether drought-related forage scarcity is a major determinant of livestock mortality).
- iii. Socioeconomic (e.g., whether extensive system of livestock production is a major source of income for the local population; the extent to which institutional networks facilitate efficient distribution of financial products; and perception of pastoralists towards IBLI as a workable instrument of drought risk financing.)

The specific methods of data collection used to inform the above three parameters are described below.

3.1 Biophysical

The specific objectives of the biophysical analysis were to assess rangeland dominance, seasonality and forage availability as premises for piloting IBLI implementation as a drought management tool and test its applicability. The biophysical analysis was backed by a qualitative study which involved field observations to get a general understanding of the biophysical aspects and the availability of natural resources in the area. This could be helpful in determining the delineation of the area into clusters for an index-based livestock product referred to as unit areas of insurance (UAIs). The biophysical analysis was mainly based on remote sensing data analysis on the spatial and temporal environment of Meyumulukey.⁵

⁴ Although the study team visited three kebeles where pastoralists live, the visit to Chalho where significant number of displaced pastoralists from other neighbouring kebeles of the woreda currently reside, enabled the team to collect field information from six out of the eight pastoral kebeles.

⁵ It is noteworthy that many of the kebeles in Meyumulukey woreda have disputed administrative boundaries. Hence, the grouping of the pastoral kebeles of the woreda for IBLI implementation based on available shapefiles and information gathered from fieldwork should be considered tentative and unofficial.

From a biophysical perspective, the feasibility of IBLI is based on three main premises including dominance of extensive rangelands to provide a clear linkage between satellite NDVI values and the ground forage conditions, sufficient forage production to allow for clear satellite NDVI signal to be detected, and well-defined seasonal rainfall/vegetation growth distribution modality (e.g., unimodal or bimodal) to allow identification of the risk period and payout windows in the insurance contract design. These conditions were assessed using multiple remote sensing data products including NDVI, phenology metrics, landcover maps including cropland and rangeland masks and precipitation data. (Table 1.)

Table 1: Satellite data products used in the technical pre-feasibility analysis for IBLI in Meyumuluke woreda

Data	Product and source	Description
NDVI	Normalized Difference Vegetation Index (NDVI) from Enhanced Moderate Resolution Imaging Spectroradiometer (eMODIS) from the United States Geological Survey (USGS)	A 10-day temporary smoothed NDVI product at 250 m spatial resolution covering the period July 2002–June 2019.
Phenology	Phenology from Joint Research Centre (JRC) products	Three products were used including: Number of Growing Seasons per year (NGS), Start of Season (SOS) and End of Season (EOS). These phenological products were derived from long term average of the smoothed MODIS NDVI data produced by BOKU university at 1 km spatial resolution for the time between 2003 and 2016 (European Commission 2019; Klisch and Atzberger 2016).
ESA land cover	Land cover map developed by European Space Agency (ESA) Climate Change Initiative (CCI)	A prototype high resolution landcover map for Africa at 20 m spatial resolution based on Sentinel-2A observations from December 2015–December 2016. The classification was done using Random Forest and Machine Learning algorithms (ESA-CCI 2016).
Cropland and rangeland masks	Percentage of area covered by crops and rangeland developed by Joint Research Centre (JRC)	The cropland and rangeland masks are a hybrid product developed by merging various global and regional land cover products (European Commission 2019; Pérez-Hoyos et al. 2017). The product used was updated on 03 December 2019 (version 03), availed at ~1 km spatial resolution.
Precipitation	Climate Hazards Group InfraRed Precipitation with station (CHIRPS) data	Computed decadal averages using the 10-day product for Kenya for the years 2002–2019, available at 0.05° (Funk et al. 2015)

To determine IBLI suitability in Meyumuluke, a scoring criterion was defined based on the three premises of IBLI including rangeland dominance, forage availability and seasonality (Table 2).

Table 2: Scoring criteria defining the technical feasibility of IBLI in Meyumuluke woreda

Variable	Specifics	Description	Requirement
Seasonality	Clarity	Clear profile for either bimodal or unimodal regimes	Must be met
NDVI intensity	Maximum NDVI	Aggregate maximum > 0.2	Must be met
	Fraction of valid vegetation land areas	Per-pixel maximum NDVI > 0.2, dynamic range of 95 th minus 5 th percentiles > 0.1 and valid land vegetation areas. Together the valid fractional cover should be > 25% of the total area.	Must be met
Rangeland dominance	Rangeland fractional cover	Rangeland cover < 50%	Unsuitable
		Rangeland range > 50% and < 75%	Conditional for review
		Rangeland > or = 75%	Suitable

3.2 Risk and vulnerability analysis

This study recognized three levels of risks—micro shocks/idiosyncratic shocks, meso shocks, and macro shocks (Rass 2006). It is a known fact that pastoralists face the natural covariant risk of drought—a systemic risk that affects many pastoralist households because of the resultant shortages in livestock feed. In case of an epidemic, even the risk of livestock diseases that would otherwise affect individual pastoralists (so-called idiosyncratic risks) could become a covariant risk. On the other hand, in many countries, pastoralists have limited representation and say (voice) in decision-making circles, an aspect of political marginalization.

The study employed a range of methods to understand the nature of risks pastoralists in Meyumuluke face and their vulnerability to natural and human-induced shocks. This study specifically used literature review to understand the wider environment within which pastoralism in the country and in the zone/woreda has been pursued. To this end, a desk review was carried out on documents from national sources on pastoralism. A review of historical data was also conducted on the nature of external (both government and nongovernment) support provided to pastoralists in Meyumuluke.

Key informant interviews and focus group discussions (FGDs) with local institutional leaders were used to elicit information on the extent to which the risk of inter-ethnic conflict, the economic risk of market absence and the environmental risk of pasture unavailability/degradation have affected pastoral livelihoods and their responses to shocks. In addition, the study employed participatory resource sketch maps (timeline exercises) with community members to elicit vital information on community perceptions of risk, the extent to which pastoralists believe these risks have led to increased vulnerability, and the strategy adopted to respond to shocks over time, including decisions on seasonal migration.

3.3 Socioeconomic/institutional factors

As the feasibility study was aimed at understanding the possibility of introducing a livestock insurance product, the first set of priorities of the study team was to ensure a basic understanding of IBLI among key informants. Thus, local community leaders, woreda administration and pertinent woreda line department staff, and community members were engaged in an orientation of the IBLI product as being implemented in the Borana region with the objective of gauging the level of interest and demand for such a product in Meyumuluke. In order to understand the institutional setup and linkages for service delivery and access, key informant interviews were carried out with representatives of office bearers at woreda and community levels.

Through key informant interviews and field observations, information was gathered on the aspects of the periodic markets servicing pastoralist populations; the existence and effective functioning of livestock input and output markets, including the strength of the livestock value chain in and around the eight pastoralist kebeles; road infrastructure and quality; the existence and operational experience of rural cooperatives; type and organizational bases of agricultural extension services; and availability of mobile network and/or signal strength. This information on institutions and access are critical not only for informing the design and delivery of index-based livestock insurance products, but also to determine the type and level of investment needed to introduce and manage the insurance product.

Participatory exercises were carried out with members of the community to understand sources of income and spending patterns during times of stress and normal times. This adds value in considering risk diversification products like livestock insurance, as the exercise also considered major expenses associated with keeping livestock alive during drought/stress seasons.

4 Results

4.1 Biophysical

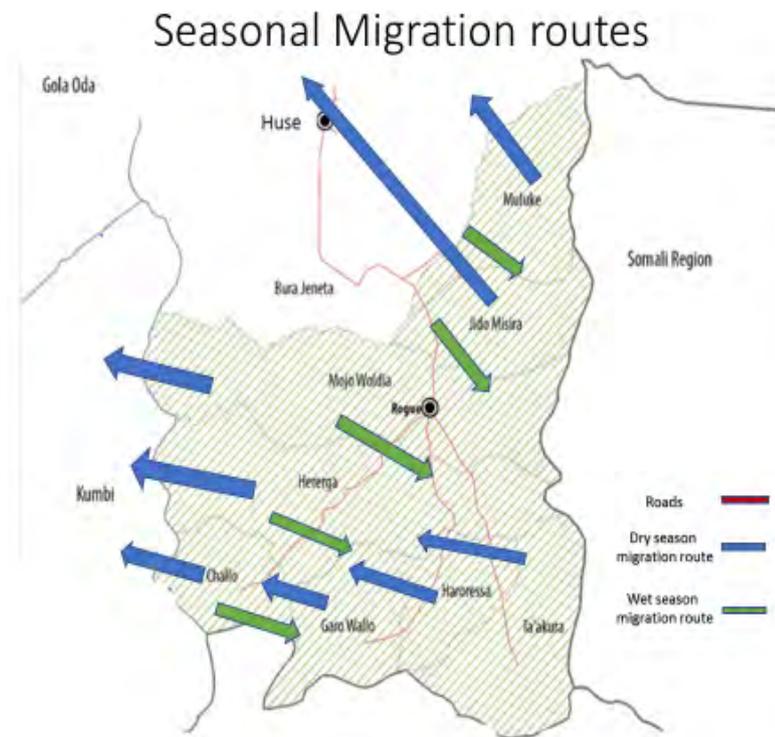
Agroecological conditions and seasonal migration patterns

The key issues discussed in the field to gather basic information on the agroecological conditions of the area included seasonality, rangeland dominance, forage availability and pastoral migration patterns. From the key informant discussions in the kebeles visited, clear seasonal patterns with the wet and dry season were identified. The area has four main seasons—long rain (Ganna), long dry (Bona Adoollessa), short rain (Hagayya) and short dry (Bona Hagayya). Information was also provided on forage resources and rangeland dominance. Presence of rich pastureland and palatable bushes (for their camels and goats) that exist within each kebele was identified as the main grazing resources for their livestock during the wet season. An exception to this trend was the situation in Chalho kebele where, due to conflict-induced displacement, pastoralists from neighbouring three kebeles had to share grazing resources that would otherwise have been available solely to the inhabitants of Chalho kebele.

A clear pattern of dry season migration emerged from information gathered during focus group discussions with community members in three of the kebeles visited. In terms of migration decisions, pastoralists in five of the eight kebeles under study—including Ta'akura, Haroressa, Gara Wallo, Chalho and Harerga lying on the southern part of the woreda—tend to exhibit a different migration pattern from those in Muluke, Jido Misra and Mojo Woldia kebeles located in the north-eastern corner of the woreda (Figure 3).

It is evident from the participatory mapping results (Figure 3) that early in the dry season, pastoralists from Muluke and Jido Misra kebeles migrate to the vast grazing lands of Mojo Woldia. After a while, when grazing resources start dwindling, they migrate northwest to Gola Oda woreda. Pastoralists at Mojo Woldia use the resources within their own kebele. However, Kumbi woreda (west) is the main destination for them during extreme stress times. The five remaining kebeles lying on the southern corner of the woreda appear to exhibit high degree of similarity in the way they use grazing land during stress times, specifically when the inhabitants of Chalho and Harerga migrate to Kumbi during times of stress; early in the dry season when pastoralists from Ta'akura, Haroressa, and Gara Wallo kebeles migrate to Chalho; and when they've exhausted the remaining fodder resources that were left behind by Chalho inhabitants—the original occupants of the land. Pastoralists from the above three kebeles also join those from Chalho by migrating to Kumbi woreda.

Figure 3: Map showing the seasonal migration routes of pastoralists in Meyumuluke woreda



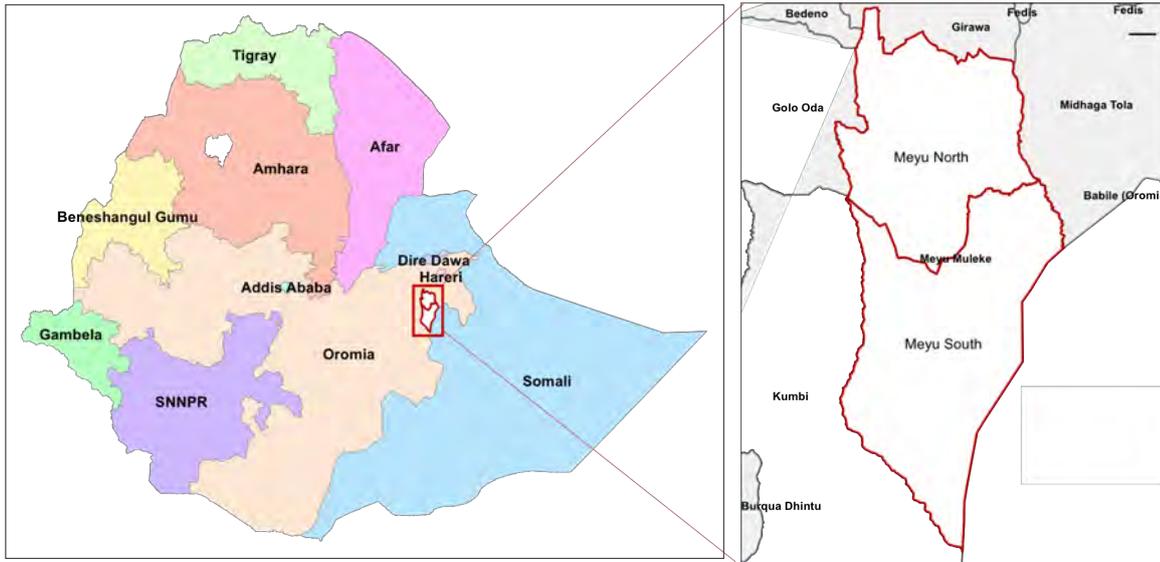
Source: authors' construct

From the information provided above, the following preliminary observations can be made.

- In most cases, migration occurs in a series of movements.
- Pastoralists in Muluke and Jido Misra kebeles exhibit similar biophysical features and appear to share similar migratory decision processes.
- Pastoralists inhabiting Mojo Woldia, which is the largest pastoralist kebele in the woreda, have a different movement pattern than pastoralists in the neighbouring kebeles, thus requiring further investigation on type and quality of fodder availability.
- Pastoralists in the remaining five kebeles (Ta'akura, Haroessa, Gara Wallo, Chalho and Harerga) display broadly similar migration decision processes.

Prior to the biophysical feasibility analysis, field visits and interviews were conducted which resulted in the delineation of the area into three operational units for IBLI implementation. In the figure below, the non-pastoralist kebeles of the woreda are described as North Meyu, whilst the three operational units pertaining to the eight pastoralist kebeles are labelled as East Meyu, Central Meyu and South Meyu (Figure 4).

Figure 4: Map of Meyumuluke woreda



The administration boundary data were provided by the ICRC in July 2019.

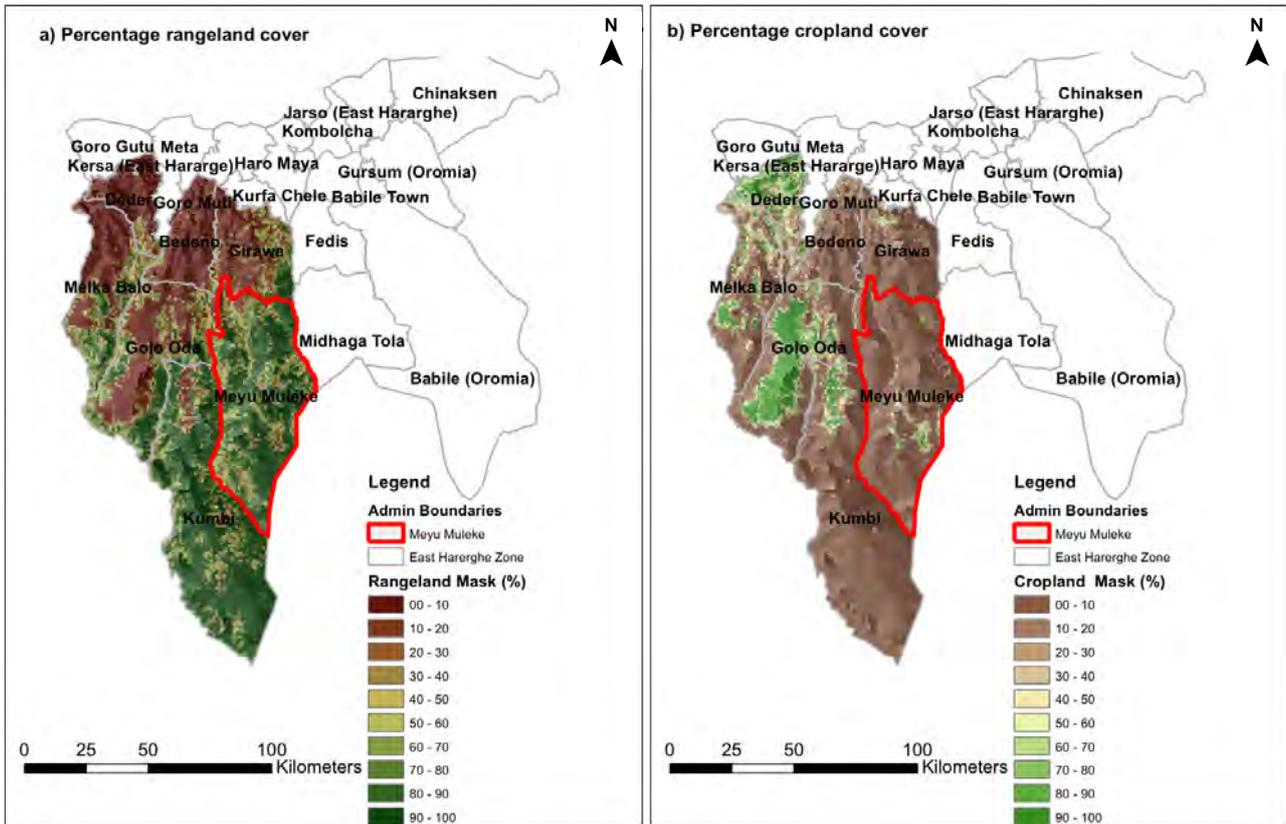
Disclaimer: The boundaries, names and designations in this report do not imply official endorsement, nor express a political opinion on the part of the ICRC, and are without prejudice to claims of sovereignty over the territories mentioned.

Although administrative boundaries are not always representative of biophysical and socioeconomic traits of an area, they help in the identification of community groupings and communication of the UAI boundaries for implementation of livestock insurance. Thus, the three operational units within the single UAI roughly cover kebeles as follows: East Meyu includes Muluke and Jido Misra; Central Meyu includes Mojo Woldia, and South Meyu includes Ta'akura, Haroressa, Gara Wallo, Chalho and Harerga.

Determining rangeland dominance and heterogeneity

The estimation of forage index is derived from the spatial aggregation of the UAIs. Thus, heterogeneous landscapes such as agropastoral systems, mixed crops, agroforest areas, etc. are challenging for the IBLI product design. Land cover map, cropland and land cover masks were used to determine rangeland dominance and heterogeneity (see Table 1 in Section 3.1 above and Figure 5 a and b below). The ESA landcover map has 10 classes; namely, tree cover areas, shrub cover areas, grassland, croplands, aquatic or regularly flooded vegetation, lichen and mosses/sparse vegetation, bare areas, built-up areas, snow and/or ice and open water. Snow and/or ice and open water were not present in Meyumuluke. The eight classes found in Meyumuluke were further reclassified into four main classes: forests, rangelands (shrubs and grassland), croplands and other (aquatic or regularly flooded vegetation, lichen and mosses/sparse vegetation, bare areas and built-up). The crop and rangeland masks presented as percentage area fraction per pixel of the cover type were aggregated to estimate the average area covered by crop/rangeland per operational units of Meyumuluke UAI (Figure 5a). The rangeland covered was between 70 and 80%, while cropland cover was as low as 1–12%. If a UAI had rangeland cover of greater than 75%, it was not considered fully feasible for IBLI and would require further review due to a higher degree of heterogeneity.

Figure 5: The land cover characteristics of Meyumulukey woreda in East Hararghe Zone a) rangeland percentage cover, and b) cropland percentage cover⁶

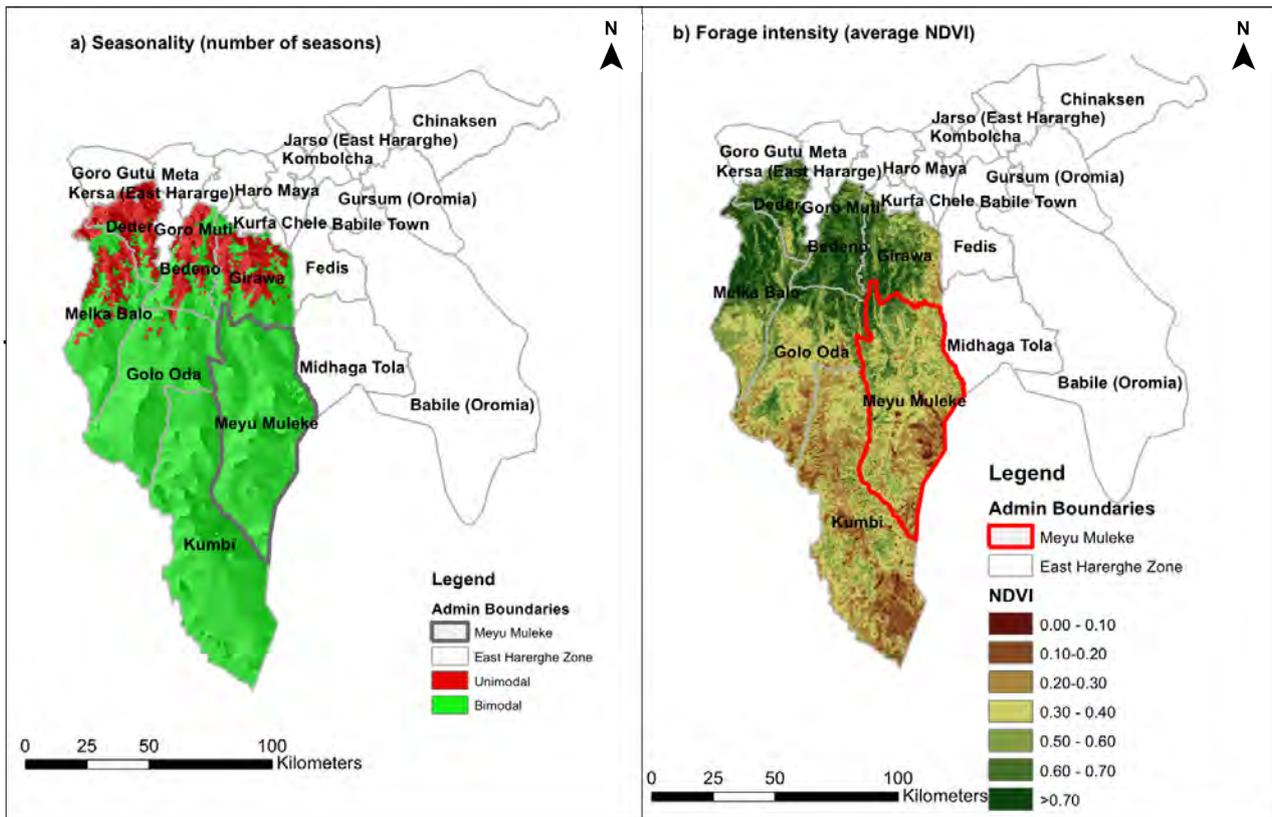


Determining NDVI intensity as a proxy for forage availability

In IBLI implementation, an area is considered suitable if there is enough forage production to allow for clear detection of forage indicator from satellites; in this case, the NDVI signal. NDVI is used as an indicator of forage availability (Figure 6b) for determining insurance index and payouts, thus ecosystems with limited/no forage resources such as barren lands, forests and other dense wood cover ecosystems should be identified and eliminated. Here, NDVI time series data for the period of July 2002–June 2019 (Table 2) was used in the analysis. At pixel level, areas were eliminated if the maximum NDVI for the available archive was < 0.2 . Further elimination involved identification of areas with invalid land pixels using a statistical filter that identifies non land area (Vrieling et al. 2016). The resulting mask of valid and invalid pixels was then used as a mask during the spatial aggregation of NDVI by UAI. There were no significant areas with invalid NDVI in Meyumulukey.

⁶ The two products are based on Joint Research Centre landcover metrics.

Figure 6: Seasonal characteristics and forage availability maps a) number of seasons, and b) average NDVI as a proxy for forage availability computed using eMODIS time series NDVI for July 2002–June 2019

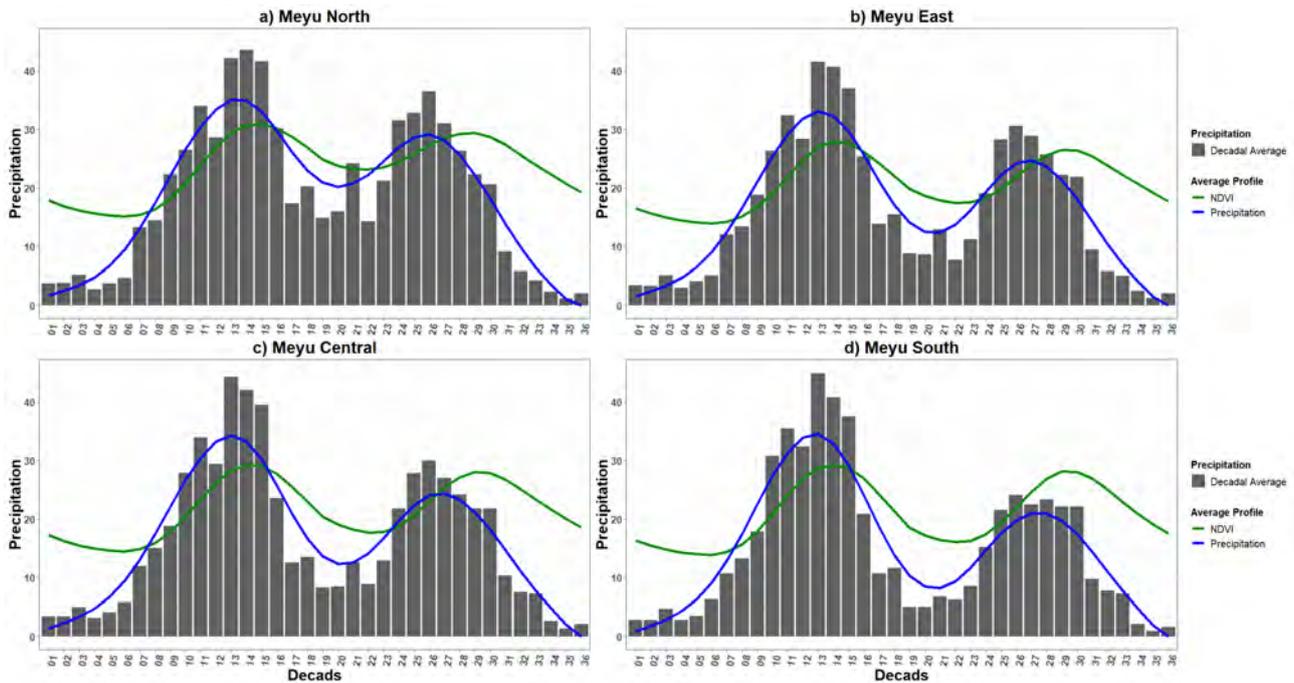


Definition of seasonality

Seasonality is critical in determining risk periods, sales/payout windows, etc. in the insurance contract design. In this analysis, three main seasonality metrics were assessed including seasonal clarity, length of the season and seasonal variability. NDVI, coupled with precipitation and phenological parameters, was used. The phenological parameters comprised NGS (Figure 6a), SOS and EOS from JRC phenology products (Table 2). These parameters available at 1 km resolution were extracted using the majority per UAI. These were further refined using decadal average precipitation and NDVI profiles (Figure 7).

Seasonal variability for the identification of clear seasonal profiles was done using a statistical analysis to the NDVI dynamic range by computing the difference between 95th and 5th percentiles of NDVI time series. If the difference is < 0.1 , then it is masked out from further analysis as recommended by Vrieling et al. (2016). In Meyumuluke there were no areas with low/no seasonal variability as the entire woreda observes a bimodal seasonal pattern (Figure 6a and Figure 7a–d)

Figure 7: Long term vegetation growth and precipitation profiles for Meyumuluke woreda



The woreda was subdivided into four zones for assessing seasonality. The mean annual precipitation for each unit is shown in millimeters per annum, while NDVI is scaled by 50 for ease in plotting alongside precipitation

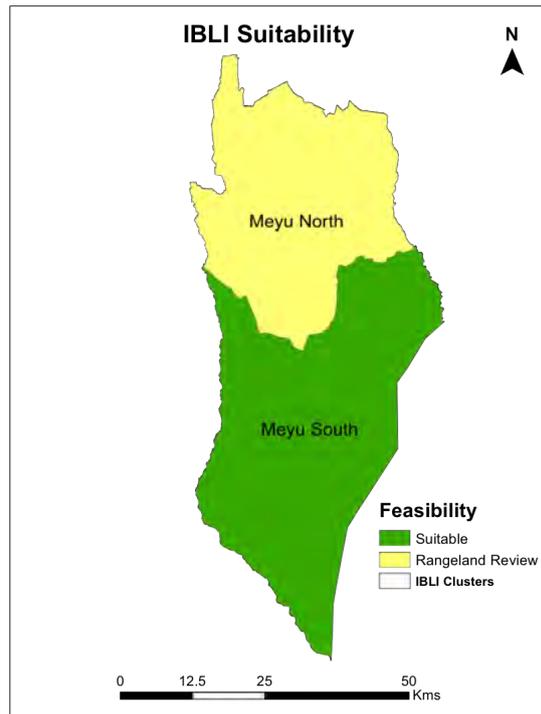
The bimodal season has two main wet seasons—the long and short rains. For the long rains, the season starts in mid-March and continues till the end of June while the short rains start in late August and lasts till mid-December (Figure 8).

Figure 8: Season length for Meyumuluke woreda showing the two wet and two dry periods within a year

IBLI UNIT	Jan	Jan	Jan	Feb	Feb	Feb	Mar	Mar	Mar	April	Apr	Apr	May	May	May	Jun	Jun	Jun	Jul	Jul	Jul	Aug	Aug	Aug	Sep	Sep	Sep	Oct	Oct	Oct	Nov	Nov	Nov	Dec	Dec	Dec			
Meyu Central																																							
Meyu East																																							
Meyu North																																							
Meyu South																																							

All in all, the technical IBLI pre-feasibility analysis in Meyumuluke resulted in two classes categorized as “suitable” and “rangeland review”. The “suitable” IBLI class consists of the IBLI cluster with kebeles that meet all the predefined conditions for seasonality, NDVI intensity and rangeland dominance of > 75%, whereas the “rangeland review” class includes areas where the seasonality and NDVI intensity requirements are met but have rangeland cover of > 50% and < 75%. The area is heterogeneous with pockets of dense woody cover and settlements. Therefore, further analyses should be undertaken to mask out those areas.

Figure 9: Results for the technical prefeasibility analysis of index-based livestock insurance in Meyumuluke woreda



The results show all pastoralist kebeles are suitable for an IBLI product. They all experience bimodal seasonal regime as also confirmed during the focus group discussions. The proposed pilot in Meyumuluke will cover the three southern clusters (earlier referred to as Meyu East, Meyu Central and Meyu South). These suitable kebeles are dominated by rangelands, share a similar bimodal precipitation pattern with clearly defined wet and dry seasons with low precipitation ranging between 540 and 680 mean annual precipitation, high annual average maximum NDVI values ranging between 0.59 and 0.62, and spatial average aggregate between 0.4 and 0.5.

Considering the similarity of drought impacts and risk profiles across the eight kebeles and in line with current understanding of building UAIs, IBLI should be implemented using one UAI, the Meyu South (Figure 9) as a result of merging the three IBLI operational areas of Meyu East, Meyu Central and Meyu South.

In summary, the results indicate IBLI suitability in southern Meyumuluke as the IBLI conditions on rangeland, forage availability and seasonality are met with a possibility of two IBLI coverage windows for the wet seasons approximately from March–June and August–December.

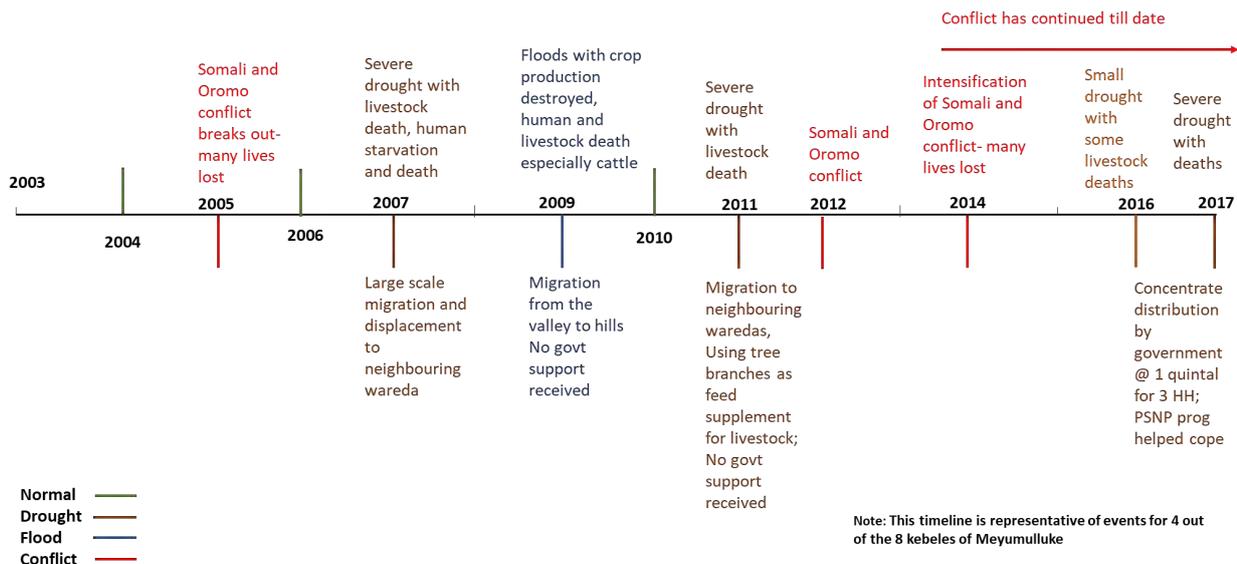
4.2 Risk, vulnerability and livelihood resources

Risk and vulnerability

Findings from field interactions suggest that the pastoral livestock production system in Meyumuluke is under stress. Considerable time was given to the participants to discuss amongst themselves on identifying the periods of drought, floods and conflict and almost all the major coping strategies were noted during the discussion. Through a timeline exercise (Figure 10), it was found that the community had suffered three severe drought shocks between 2007–2017, during which there were large scale livestock deaths and migration to neighboring woredas.

As a way of coping, the community had resorted to using tree branches as food supplements for their livestock (e.g., during the droughts of 2007 and 2011).

Figure 10: Timeline showing the shocks faced by the community over a period of 10 years and coping mechanisms



Conflict featured as a prominent cause of risk for the community. Findings suggest that though the first conflict in the area broke out in 2005, it has been recurring through 2014 and has continued unabated, leaving the community more vulnerable.

The woreda is endowed with vast tracts of grazing lands. However, low and intermittent amount of rainfall have been causing feed shortage, especially during the dry season. In fact, drought episodes have been reported to be more frequent and have increased in severity/intensity over time. Recurrence of drought, inter-ethnic clashes between pastoralists arising partly from unsettled regional/woreda boundaries, and contestations over dry season grazing areas around major rivers have compounded the vulnerability of pastoralists in Meyumuluke. As described in upcoming sections, the government's response to the different drought episodes in Meyumuluke have been woefully inadequate, reflecting the lack of voice and the political marginalization characterizing pastoralists in the region.

The productivity of livestock in the woreda is also significantly affected by the prevalence of a range of zoonotic and other livestock diseases.

Coping mechanisms and livelihood resources

Responses to drought and disasters can be looked at from two perspectives—institutional or government led and household or community based.

Regarding the bases for institutional response, it should be noted that the entire East Hararghe Zone is considered as a chronically food insecure area, and for several years now, response to chronic and acute food insecurity has taken priority on the basis of “food and agriculture security assessment”. These are surveys⁷ undertaken twice a year corresponding to “Belg” (June–July) and “Meher”(November–December) seasons⁸ and are led by the Office of Disaster Risk Management (ODRM). The mission also includes representatives from zonal departments of agriculture and livestock as well as UN agencies (WFP, UNICEF, OCHA) and other NGOs operating in the zone. Especially during times of severe drought, these annual surveys are also supplemented by rapid assessments under the leadership of the deputy administrator, zonal ODRM and the Office of Pastoral Area Development (OPAD) playing critical roles in the coordination and provision of emergency responses, the latter especially operating in pastoralist kebeles of the zone. According to information from WFP's sub

⁷ The assessments recognise agroecological and livelihood diversities in the Zone. For instance, Meyumuluke woreda falls under the northeast agropastoral livelihood zone.

⁸ In the main cropping areas of Ethiopia “Belg” is a name given to the short rainy season that runs from February–May. The corresponding crop assessments take place from June–July. “Meher” refers to the long rainy season that runs from June–mid-September and the corresponding crop assessment often takes place between October/November–December.

regional office in Dire Dawa, over the last 40 years Meyumuluke has been at the receiving end of international humanitarian assistance, notably food aid⁹. This observation was corroborated by the discussions held with officials of East Hararghe Zone and Meyumuluke woreda disaster risk management offices. However, humanitarian assistance interventions often do not consider the feed needs of livestock in pastoralist areas.

However, both ODRM officials as well as community members noted that the most significant livestock-focused support pastoralists in Meyumuluke obtained was in response to the 2017 drought where there was some government assistance in the form of hay and livestock feed concentrates distribution in the amount of 1 quintal for three households for a selected number of households—a gesture community members considered too little, too late. In addition, the zonal ODRM had also organised the collection of crop residues from neighbouring food farming woredas for use by pastoralist kebeles in Meyumuluke.

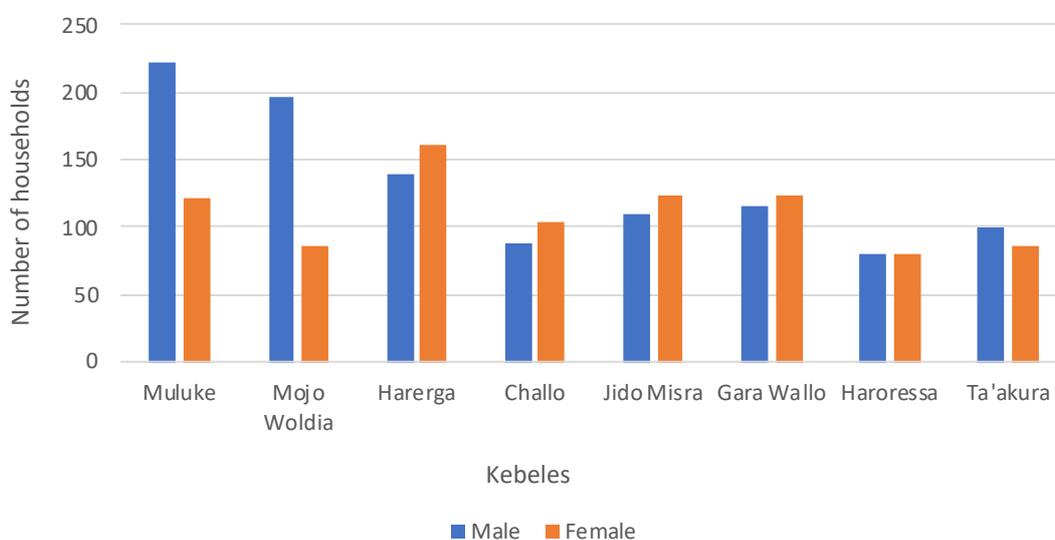
It is worth noting that part of the money used to purchase hay and concentrates, as well as transport crop residues to needy pastoral kebeles of Meyumuluke, were made available from a “reserve or contingency fund” under the custodianship of zonal/woreda Disaster Risk Management offices. This is a pot of money to which farmers, pastoralists and government employees are obliged to contribute.

Government officials interviewed both at zonal and woreda levels underlined that the response government provides to drought victims is not only expensive (judging from the substantial cost they incurred in purchasing concentrates), but also may not reach to the affected populations in time of need. The hierarchical nature of the verification process and the logistics of organising responses are explanatory factors for the latter.

Our findings didn't point to any meaningful community-wide mechanisms when it comes to traditional mechanisms of social security. The traditional social security mechanisms in Meyumuluke are either family mediated or are done as part of the practice of Islam called Sadaqa, which refers to the voluntary giving of alms or charity for the needy. Certainly, these are much less pronounced than the situation in places like Borana, where locally recognized and institutionalized mechanisms of intra-community solidarity are in place especially during times of drought. The most significant household/community-based response to drought is seasonal migration. However, there are still a few other mechanisms and livelihood resources that pastoralist households use as coping mechanisms.

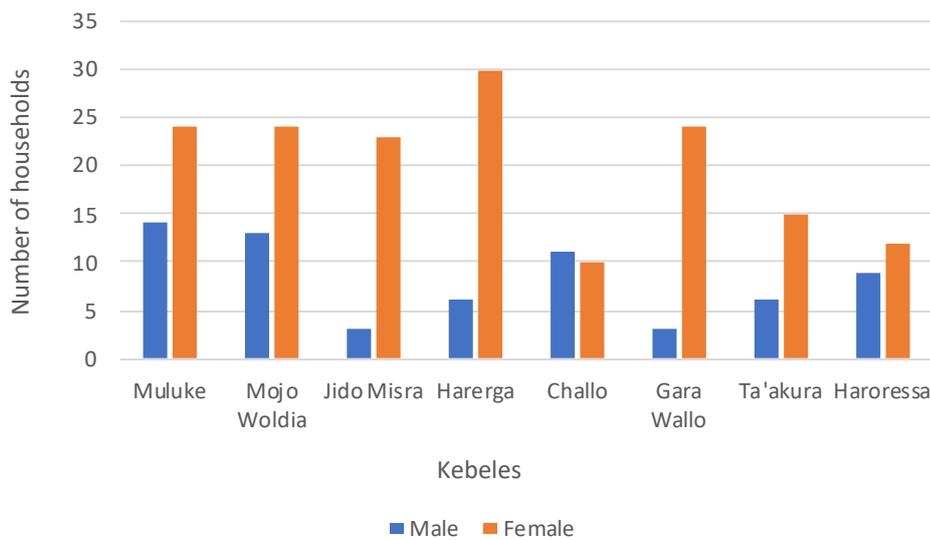
Since 2005, pastoralists in Meyumuluke have been targeted as beneficiaries of Ethiopia's Productive Safety Net Program (PSNP). According to woreda officials, the current phase of PSNP helps 1,938 beneficiaries in the Public Works component and a further 227 beneficiaries in the direct support scheme in the pastoral kebeles. Figures 11 and 12 show the number of PSNP beneficiaries disaggregated by gender.

Figure 11: Number of PSNP “Public Works” beneficiaries in Meyumuluke



⁹ Interview with Mohammed Jundi, officer in charge at the WFP Dire Dawa sub office, 24 July 2019.

Figure 12: Number of PSNP direct support beneficiaries in Meyumuluke



In some of the communities, PSNP resources have been cited as important resources for coping against the effect of drought. However, in many of the pastoralist kebeles where the conflict intensity is more pronounced, PSNP resources have reportedly been used for the upkeep of the local militia—a move local community members considered as an acceptable priority, given the need for keeping their adversaries at bay.

As far as livestock feed is concerned, several households resorted to using tree branches as feed supplements for their livestock during stress times. Pastoralists also went about harvesting palatable grasses scattered around mountain tops/cliffs and even those found in locally contested territories at considerable risk to the lives of the harvesters, including women.

From the key informant interviews and focus group discussions, it was also evident that sale of livestock and livestock products constitute the principal source of income in pastoral livelihoods both during normal times and periods of stress. There is extensive practice of goat fattening for sale, especially among women in some of the pastoral kebeles. In addition, women are involved in the sale of khat (*Catha edulis*), an important perennial crop the leaves of which are chewed for a stimulating effect.

4.3. Institutional settings

An assessment of institutions influencing the socioeconomic organization of pastoralist communities is critical for they affect how best and how fast IBLI could be operationalized.

Markets, livestock value chains and road accessibility

A preliminary discussion on cash income and expenditure pointed to the overriding importance of livestock and livestock products. However, pastoralist communities in the woreda are little served by modern input and output marketing arrangements. In general, road connectivity in the woreda is very poor; only dry-weather roads connect some of the kebeles to the main all-weather road in the woreda (Huse–Roge all-weather gravel road, with Huse being the woreda capital and Roge an important commercial centre). The nearest kebele centre (Jido Misra) is 36 km away from Huse, while the farthest (Gara Wallo) is located 105 km away. Although there are periodic/weekly markets serving pastoralists in the woreda, the only large markets for live animals are at Huse and Roge towns. The latter is considered as the commercial centre for pastoral kebeles in the woreda. Pastoralists also visit periodic markets in neighboring woredas of Kumbi and Midhaga Tola for household goods and for livestock marketing activities. It was mentioned in the discussions that pastoralists rarely used hay and concentrates to supplement open grazing. However, during times of stress, pastoralists living close to Huse town entered into a contractual agreement with a secondary school to harvest and utilize grass

grown in the school compound for a fee. There were also isolated cases where individual pastoralists bought concentrates for their animals from a handful of traders in Huse town and further afield. In general, livestock input market is virtually nonexistent and livestock output market is confined to the sale of milk and live animals. This is done opportunistically in the few periodic markets scattered around the woreda, as well as some of the bigger markets in the adjacent woredas. If an IBLI product was to be introduced in the woreda, the issue of organizing/upgrading the livestock input value chain would have to be given strong consideration as this could have implications on payouts and the effective use of these payouts to acquire major livestock lifesaving amenities.

Rural savings and credit cooperatives (RUSACOs)

Six of the eight pastoral kebeles has at least one functioning RUSACO each, which were established either by the now concluded Pastoral Community Development Project or by the Oromia Savings and Credit Association. The remaining two kebeles have no experience of running formally organized microfinance institutions. Some of the RUSACOs, such as the ones in Muluke and Mojo Woldia, have a well-functioning management structure, a relatively large membership (an average of 100 households, including female-headed ones), a sizeable capital sum and experience in livestock and grain marketing. The RUSACO in Muluke has particularly been active in the provision of loans not just to its members, but also to the kebele administration to meet some of their development commitments. In sharp contrast to the above, RUSACOs established in the kebeles lying on the southeastern corner of the woreda that experience violent conflict and displacement were reported to be characterized by weak deposit mobilization and limited loan extension performance. However, the presence of RUSACOs in most of the kebeles is an important organizational asset that could be considered in initiating IBLI-inspired financial literacy drives and extension entry points for the community.

Extension services

With the placement of an average of three extension workers called development agents (DAs) per kebele, the public extension system in Ethiopia is recognised as an important factor behind the encouraging agricultural growth observed in the country. In five of the eight pastoral kebeles of Meyumuluke that exhibit some degree of stability, there are two DAs per kebele with responsibilities for livestock husbandry and health. In addition, community animal health workers (CAHWs) also support pastoralists on the ground. These are livestock paraprofessionals which the ICRC in collaboration with the Oromia regional government had trained and supported on livestock health care and treatment and are critical linchpins for the establishment of a sustainable veterinary service delivery system at the grassroots level. The CAHWs provide their services on an on-call basis and for a fee (i.e., on a commission basis). The CAHWs have been selected by communities having met stringent criteria for reliability, trustworthiness and knowledge of the kebeles where they work. CAHWs have some basic education and are accessible via mobile phones. The presence of CAHWs bodes well for initiating IBLI, for distribution of IBLI products could benefit from the organizational capacities that this system has created. However, careful capacity assessments need to be carried out to understand not only their reach and networks, but also their capability of being possible agents for an IBLI product.

Network accessibility

Practically all pastoral kebele centres in Meyumuluke have good mobile phone connectivity, although in some places one needs to identify spots for stronger signal reception/connectivity. Along the main Huse-Roge-Harerga road (a 50 km stretch), one observes three cell towers that hold antennas and other communication equipment which are believed to facilitate cellular phone and other wireless communication device signal reception. Such cellular connectivity would play a critical role for operationalizing and effectively delivering IBLI since several IBLI support activities are being delivered through digital media in the current areas of operation.

4.4 Degree of favorability for implementing IBLI: perspective of local communities

Extensive discussions with a range of community representatives around the concept of insurance and index-based livestock insurance using context-specific terminologies and examples from the Borana experience of IBLI indicate that there is an overall willingness to partake in such an intervention. Some even identified sale of small ruminants as possible sources of income to purchase insurance premiums. The observed positive signals regarding willingness to participate in an IBLI initiative stemmed from an intense and iterative focus group discussion on which participants were shown a video on features of the product as implemented in Borana and the claim payouts effected. Frequent experience of drought and limited/unsatisfactory external support obtained during times of stress are factors that could be attributed for this willingness. Moreover, the fact that the IBLI concept and programmatic action has proven its value among the pastoralist community in Borana seems the reason for an initial favorable response for an IBLI product in Meyumuluke.

Informants underlined the existence of community separations along livestock ownership lines and suggested the importance of employing a differentiated approach to selling the IBLI product with targeted premium subsidies being directed towards poorer segments of the pastoralist communities. Further understanding needs to be sought on the social and wealth structure of the community and the targeting indicators that have been used thus far by other humanitarian/government organizations in that area. This would be critical especially for designing the insurance product and determining the potential use of payouts.

Key informants understood the relevance of the ICRC initiated market-based veterinary service delivery system to the conversation on IBLI. This provides an opportunity to explore how best this intervention on animal health could be leveraged should IBLI or a similar product be introduced in the area. In fact, noting the prevalence of different types of livestock diseases that also cause livestock losses, pastoralists in several of the community-level meetings wished the insurance product would consider insuring not just against forage scarcity, but also livestock diseases. In this regard, coupling an IBLI product with animal health interventions (bundling) is an opportunity that could be seized as part of the contract design process. In addition, as mentioned in the earlier section, conflict has emerged as an important reason for vulnerability for the communities in the eight pastoral kebeles in Meyumuluke. While giving consideration for a possible bundling of services, critical thought needs to be given to the product design and choice of delivery model in such a conflict-prone community.

Considering pastoralists in Meyumuluke are exclusively Muslims, discussions also focused on eliciting community views regarding IBLI as a Sharia-compliant product. Community members, including religious leaders, did not see any conflict between the current IBLI product and the dictates of Sharia. There seemed to be a strong inclination towards individual-based insurance, as opposed to group-based insurance; a view contrary to the central place charitable and obligatory donations have in the Islamic scheme of livelihood maintenance and a critical consideration under “Takaful”—the Sharia-compliant alternative to conventional insurance. However, a more in-depth analysis needs to be made on how the product could be customized to accommodate any emerging Sharia compliance issues. In addition, further investigation is needed to determine which model (group-based, individual-based or a mixed approach) would be most suitable for Meyumuluke from the perspective of payouts, insurance companies and implementing organization/s.

An important external positive factor for initiating an IBLI in Meyumuluke is the preparedness of OIC to serve as an underwriter. OIC, which has been underwriting IBLI for the last seven years in Borana area, sees expansion into East Hararghe as a risk diversification opportunity. If necessary, OIC would consider opening a branch office in Harar to support capacity building, premium collection and payout distribution processes that are critical deliverables of IBLI going forward. Based on their experience with implementing the scheme in Borana, OIC are also of the view that administrative costs for rolling out IBLI in such an underserved area like Meyumuluke are likely to be significant and a possible cost-hiker to OIC's involvement.

Summary of findings and recommendations

The study has set out to assess the extent of opportunities for initiating an index-based livestock insurance product in Meyumuluke woreda of East Hararghe Zone in Oromia National Regional State. The results of this study were informed by fieldwork undertaken in the eight pastoral kebeles of Meyumuluke using documentary analysis, social survey and remote sensing methods.

The study employed biophysical, risk and vulnerability, and institutional parameters to assess the conditions necessary for launching IBLI.

Biophysical factors: desk review of satellite data and social survey done in the field pointed to the prevalence of favorable conditions as demonstrated by dominance of rangelands, presence of clear seasonality and predictable seasonal migration routes especially during times of stress. In this regard, the study provided a broad understanding of pointers for clustering/index unit construction. However, the study underlines the need for more work in terms of understanding the spatial extent of the kebeles where a livestock insurance product is expected to be initiated.

Risk exposure and response: pastoralists in Meyumuluke have been exposed to a range of risks including frequent droughts and inter-ethnic conflicts. Of the traditional community-initiated drought response mechanisms, seasonal migration remains the most important one. However, the potency of this mechanism has been largely constrained by inter-community conflicts and overall rangeland degradation. From the perspective of pastoralists, government and external support to pastoralists to respond to these shocks, especially drought, have been slow and inadequate. One of the reasons for this could be the government's view that these response mechanisms as very expensive. In the same vein, implementation of PSNP in the eight kebeles has a mixed record as a viable food security intervention and an instrument of building livestock focused community assets. The program has had its own significance in relieving household food insecurity in a few instances, while in others, the PSNP resources have been used largely in activities that support community safety and security. Going forward, it is important to investigate opportunities for piggybacking IBLI on the resources and programmatic principles of PSNP. All in all, the seriousness of forage scarcity especially during times of drought, and the associated loss of livestock, call for innovative ways of mitigating the mentioned risks.

Institutional and socioeconomic conditions: the study has established the critical role livestock plays in household economy. Livestock and livestock products do not only support household consumption, but also serve major sources of cash income among pastoralists. It is believed that the launch of an IBLI product will contribute to the revitalization of pastoral livelihoods by strengthening the local exchange economy and generating additional income to actors along the livestock value chain. In this regard, the existence of a competitive livestock market that would facilitate sale of small stock for possible purchase of insurance premium, as well as availability and affordability of the requisite feed and fodder in the event of payouts, are critical. As discussed earlier, the limited options pastoralists have for sale of their prized asset and the virtual absence of a feed/fodder market in Meyumuluke could constrain the operation and efficacy of an IBLI product. Given the remoteness of Meyumuluke and the limited infrastructure characterizing it and its environs, it's highly unlikely that an organized private sector would fish for the opportunities that the IBLI product would create, including to benefit from higher frequency of livestock sales owing to the need for purchasing insurance premiums and supply of inputs when insurance payouts are effected.

Meyumuluke falls short when it comes to the presence of strong local structures facilitating the uptake of a livestock insurance product. However, there are structures and local organizational experiences that can serve as bases for the purpose at hand. The system of community animal health workers (CAHWS) seems to be relevant and locally accepted for reaching communities in support of an IBLI product. Existence of rural savings and cooperative associations in different predominantly pastoral kebeles, however limited, can be a channel for rolling out financial literacy among the pastoralists.

The relatively good cellular phone network available within the reach of the pastoralist communities is an important asset that can be put to good use especially for facilitating capacity building and performance assessment efforts of insurance agents. Moreover, this infrastructure could facilitate enrollment/registration for the product. For instance in Kenya, through the well-developed mobile money platform (M-Pesa), it has been possible to organize sales/premium collection and insurance payouts using digital means. From experience in other parts of Ethiopia, digitalization has the potential to expand the scheme and enhance insurance uptake. Looking ahead, it would be worthwhile to get a better understanding of the emerging telecom presence in Ethiopia, products and services offered, and the physical network coverage which could possibly be leveraged for extension services for an IBLI product.

Local views on IBLI: pastoralists in the study kebeles have expressed interest in trying out an IBLI product on an individual basis as has been practiced in Borana. Pastoralist leaders in Meyumuluke appear to be willing to buy IBLI premiums on a commercial basis, although they also saw a need for availing the product with some discount to sections of their community members who have the desire, but not the means, to partake in the scheme. Further understanding needs to be sought on the social and wealth structure of the community and the targeting indicators that have been used thus far by other humanitarian/government organizations in that area. This would be critical especially for designing the insurance product and determining the potential use of payouts.

An important organisational resource that can be seized is the interest of office bearers both at zonal and woreda levels in seeing a livestock insurance implemented in Meyumuluke (and possibly beyond).

Ways forward

Based on the findings of the study, ILRI and the ICRC are jointly working towards implementing a small pilot in Meyumuluke. This is aimed at generating the evidence base for scaling IBL beyond the Borena region to post conflict areas such as the ICRC operational regions in eastern Ethiopia and possibly beyond. In order to get the desired results, emphasis would have to be put on the following action points.

Product design, capacity development and preparation for implementation: the IBLI product will have to be context specific. To this end, several technical and analytical interventions must be implemented. The main ones include the following:

- contract design and product development through product design customization, risk profiling, rating options and identification of index units.
- development of support tools for private companies for index construction, contract design and pricing.
- index calculation and announcement.
- need and capacity assessment of distribution models, evaluation of distribution channels, and drawing protocols for appropriate agency selection.
- identification and targeting of beneficiaries.
- development of capacity building tools by creating and testing a customized blended learning (conventional and mLearning/digital) product for use on digital platforms to the existing sociocultural features of the community in Meyumuluke in order to enhance sensitization of pastoralists.
- training of trainers for local government partners and other key stakeholders.
- knowledge generation through action research with a focus on identification of linkages between insurance-driven innovative mechanisms, pastoral development interventions, social protection schemes (e.g., PSNP, relief) and understanding potentials of IBLI as a tool for managing intra-community and crossborder conflicts.

Targeted premium subsidy: ideally, the IBLI project would target all livestock in the eight kebeles. However, this is unlikely to be the case. Recognizing that not all pastoralists would be able to purchase the insurance premium, it is recommended to institute a targeted subsidy scheme to facilitate insurance uptake. This requires undertaking a wealth ranking exercise of pastoralist communities and possibly a “willingness to pay” analysis to determine whom any premium subsidy scheme should be targeted to and the duration of such a scheme. At any rate, the premium subsidy rate should be structured in such a way that it progressively declines over time depending on the affordability of IBLI and the relative appreciation of IBLI’s worth by pastoralists.

Local capacity strengthening: this involves all key stakeholders. At community level, orientation meetings and awareness creation among different levels of the community need to be undertaken. Uptake and sustained interest in the IBLI scheme could also be enhanced through organizing exposure visits (also called travelling seminars) involving pastoralists from Borana to Meyumuluke and vice versa. In addition, a series of purpose-tailored trainings must be organized for frontline insurance promoters/extension agents, woreda administration bodies, staff members of relevant woreda and zonal line/technical departments and ICRC field staff.

Community mobilization: high intensity of interaction is needed with the pastoralist community members aimed at deepening their understanding of the desirability of livestock insurance, its objectives and operational modalities. This cannot be done on an ad hoc basis. A dedicated expert (or team of experts) must be stationed in Meyumuluke and drive the sensitization and awareness raising agenda using a range of formal and of informal platforms. For this reason, it is recommended that a local NGO be subcontracted for this task. The existing collaborative engagement of ICRC with the Ethiopian Red Cross Society (ERCS) could be considered in this respect. Alternatively, consideration could be given to a government department/unit to carry out this responsibility.

There are definitely considerable opportunities in improvement of market conditions and the existing livestock value chain in Meyumuluke. Therefore, as the process of implementation of IBLI is initiated in Meyumulluke, it would be worthwhile to identify intermediary organization/s or dedicated personnel backed by an organizational entity that have both the interest and the resources for a value chain upgrading process. One of the ways to do this could be the tried and tested method of using innovation platforms at woreda or sub-woreda levels, including but not limited to key market actors within and outside the woreda. Such platforms are often useful in addressing critical challenges affecting livestock value chains and co-create solutions from a wide array of stakeholders, including opportunities for incentivizing private sector engagement with the livestock value chain.

The approach of rolling out IBLI should take a holistic approach. This would mean ideally including market actors, improving marketing facilities for livestock, and developing animal feed and fodder supply to pastoralist households so that they can be of aid during droughts. This could also help in conflict mitigation, eventually providing secure and resilient livelihoods to the pastoral communities in Meyumulluke and beyond.

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