

# Sheep and goat value chains in Ethiopia: A synthesis of opportunities and constraints

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# Acronyms

ACSI	Amhara Credit and Saving Institution
BPDO	Borana Pastoral Development Office
CAHW	Community animal health workers
CCPP	Contagious caprine pleuropneumonia
COMESA	Common Market for Eastern and Southern Africa
CRP	CGIAR Research Program
DCSI	Dedebit Credit and Saving Institution
DFID	Department for International Development (UK)
ETB	Ethiopian birr
FOB	Free on board
GTP	Growth and Transformation Plan
HABP	Household Asset Building Program
ICARDA	International Center for Agricultural Research in the Dry Areas
ILRI	International Livestock Research Institute
MENA	Middle East and North Africa
NGO	Non-Governmental Organization
OSCI	Oromia Credit and Saving Institution
PRA	Participatory rural appraisal
PSNP	Productive Safety Net Program
SNNPR	Southern Nations, Nationalities and People's Region
TLU	Tropical livestock unit (of measurement)
UAE	United Arab Emirates
USAID	United States Agency for International Development
USD	United States dollar
VCA	Value chain analysis

# Foreword and acknowledgements

In mid-2012, stakeholder discussions and planning for the CGIAR Livestock and Fish research program's small ruminant value chain development project were initiated by the International Center for Agricultural Research in the Dry Areas (ICARDA), the International Livestock Research Institute (ILRI) and national partners.

After selecting eight research sites meeting various criteria, the first step was to conduct rapid value chain assessments in each site. In November 2012, national teams were formed and trained to carry out these assessments (including for the associated 'safe food fair food' project). Field implementation of the rapid value chain assessment took place in December 2012 and January 2013, with mixed teams comprising staff from CGIAR and national organizations. The teams used a toolkit developed through the program and undertook focus group discussions with farmers using checklists and participatory methods as well as key informant interviews with experts, traders, butchers, researchers, government officials, community leaders, transporters, veterinarians and people working in non-governmental organizations.

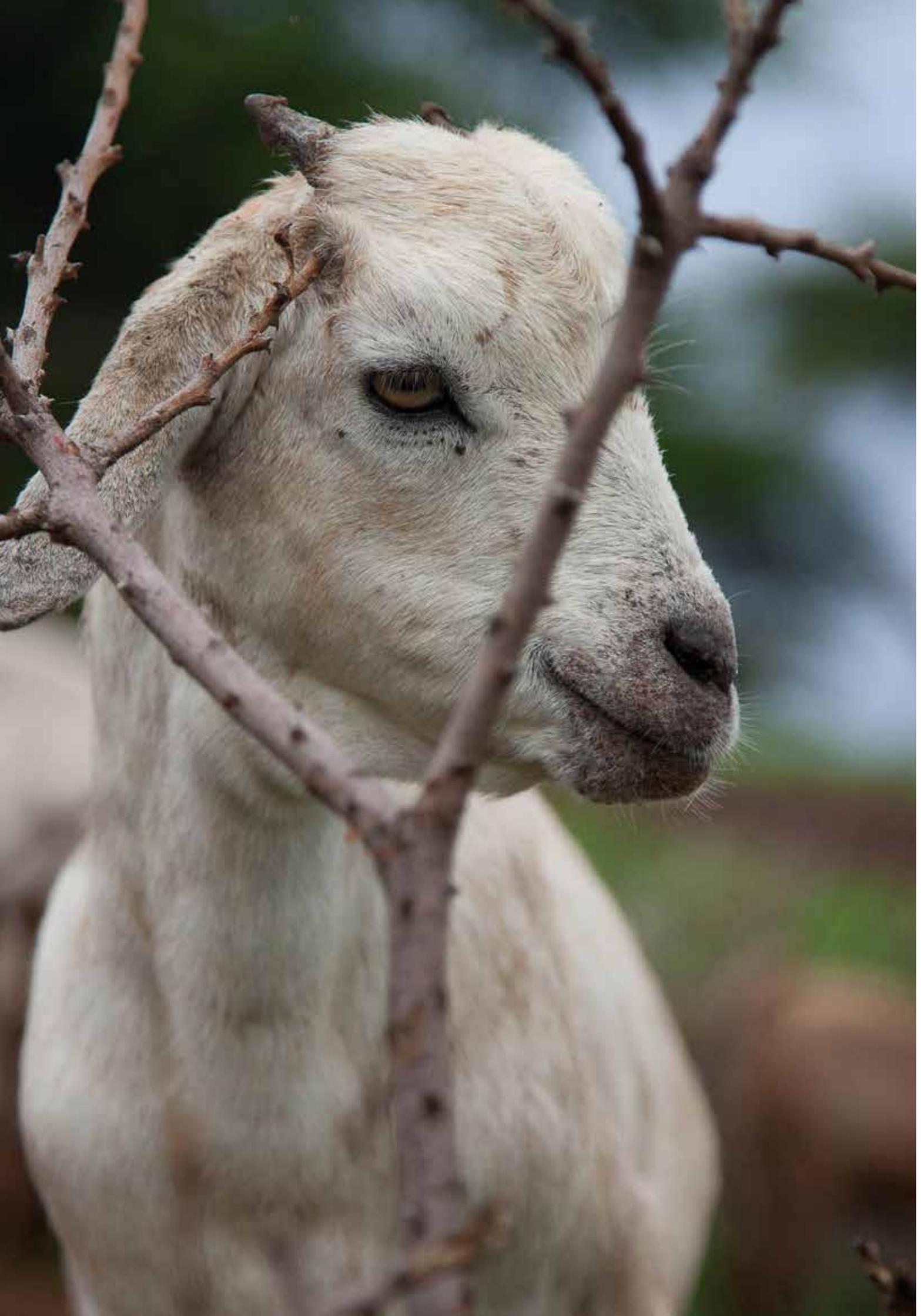
The preliminary reports from these assessments were reviewed at three multi-stakeholder workshops held in March and April 2013. In these workshops, research and development partners validated the value chain assessments and formulated initial 'best bet' intervention plans for each of the sites.

These activities are documented at <http://livestockfish.cgiar.org/category/countries/ethiopia/>

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# Introduction

The sheep and goats population of Ethiopia, including expert estimates of the pastoral areas, is 66 million head of which some 35 million are sheep (Negassa et al. 2011). They provide 46% of national meat consumption and 58% of the value of hide and skin production (Awgichew et al. 1991).

Sheep and goats have many advantages over large ruminants for most smallholder farmers, including: lower feed costs, quicker turnover, easy management and appropriate size at slaughter (Wilson and Morrical 1991; Abegaz 2002; Donkin 2005). They also have greater tolerance to less favourable conditions, suffering less mortality during periods of drought than large ruminants (Galal 1983; Wilson and Morrical 1991). In addition, subsistence farmers prefer sheep and goats as the risk of losing large ruminants is often very high (Sölkner et al. 1998).

Apart from subsistence, livestock also play important economic and cultural roles. Thus, goats have important roles in food security and in mitigating environmental risks due to their unique adaptation to arid and semi-arid areas. Sheep and goats are primarily used for meat and milk production for home consumption. They are the major sources of cash income for farmers and pastoralists. With more frequent droughts and environmental degradation the pastoral community is expanding goat production as an adaptation strategy.

In its five-year plan for growth and transformation, the Government of Ethiopia has decided to increase meat exports to 110,000 t in 2015 with the aim of earning USD 1 billion a year. The government is committed to support the private sector involved in export of these commodities. It is assessing the constraints along the meat export value chain and is ready to take all necessary measures to increase the supply of live sheep and goats to export abattoirs and the export of meat according to targets. This creates better market opportunities for sheep and goat producers. As part of this commitment, regional governments are allocating significant funds in the scaling up and out of community based breeding programs and veterinary drugs revolving funds to boost supplies of better quality animals to the market.

More generally, the demand for Ethiopian sheep and goat meat has dramatically increased after market promotion by development projects in close collaboration with the government. This has created an opportunity for sheep and goat producers to sell more animals at better prices. Meat export performance has increased from 870 t in 1991 to 18,000 t in 2011–12.

According to the traditional classification of livestock production systems, there are two distinct subsystems in Ethiopia. The highlands, more than 1500 metres above sea level, cover 40% of the total area of the country and host some 60% of the total livestock population. The lowlands cover 60% of the country. While the exact numbers are not known, pastoral and agropastoral areas contain an estimated 40% of the goats, 40% of sheep, 20% of cattle and all of the camels in the country (Negassa and Jabbar 2008). The lowland areas are home to over 12 million pastoral people, who are highly dependent on livestock.

The productivity of Ethiopian sheep and goats is low; they grow slowly and kid mortality is high. There is an urgent need to increase the productivity of sheep and goats to improve household income and nutrition, and to meet the demands of the growing human population and foreign markets.

Developing efficient input delivery systems, knowledge-based animal husbandry (including feeding, breeding, housing and health care), cost-effective marketing, and efficient and equitable supply chains have all been identified as important interventions.

This report is a synthesis of eight value chain assessments that examined the constraints and opportunities along sheep and goat value chains in Ethiopia. The assessments also identified best-bet research, development and policy interventions to support development of the sheep and goat value chain.



# Methodology

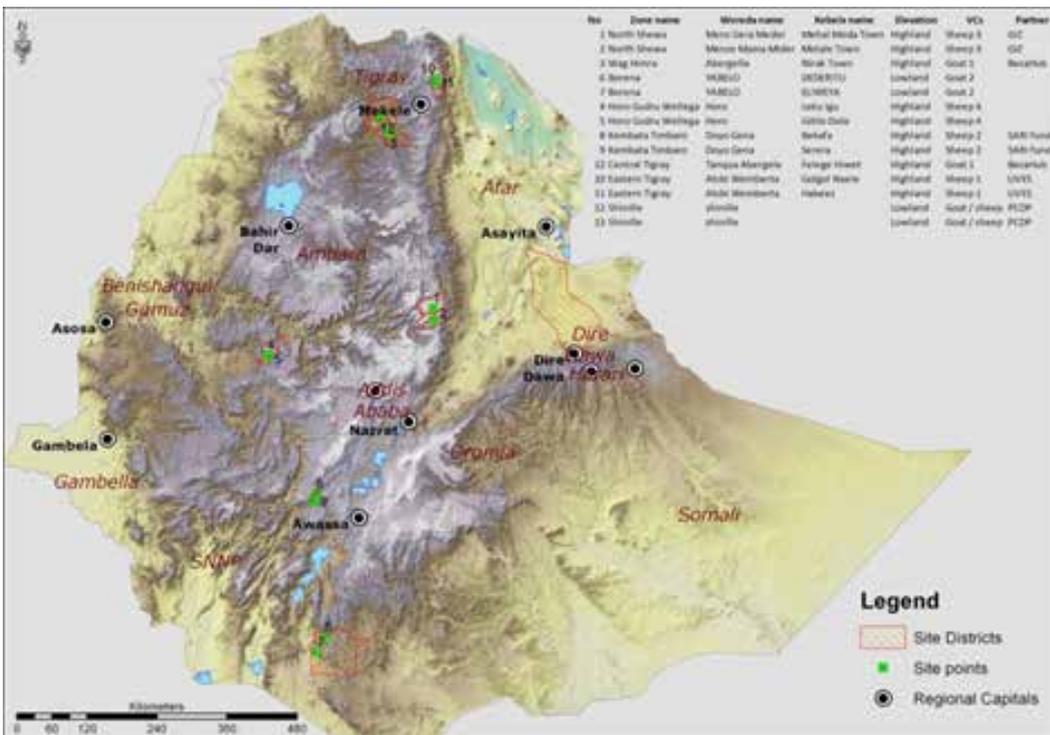
## Study areas

This study was conducted in eight locations (districts) in five regional states—Atsbi and Tanqua Abergelle in Tigray Region, Menz and Sekota Abergelle in Amhara Region, Horro and Yabello in Oromia, Doyogena in Southern Nations, Nationalities and People’s Region (SNNPR) and Shinelle in the Somali Region.

Three sites—Menz, Horro and Doyogena—represent sheep-dominated production systems. The two Abergelles and Yabello represent goat dominated production systems and Shinelle has a sheep and goat mixed production system.

Two *kebeles* were selected from each of the eight districts, except the two Abergelles where one *kebele* was selected from each regional state (Amhara and Tigray). The location of each of the districts is indicated by a number on the map below. In terms of their agro-ecology, Atsbi, Horro and Doyogena represent the highlands; the two Abergelles represent the lowlands; and Yabello and Shinelle represent pastoral areas.

Figure 1. Map of Ethiopia indicating the study sites and topography of the area.



## Data collection

Different methods were combined to generate data on the various value chains. Participatory rural appraisals, focus group discussions, and key informant interviews were used to collect primary data. Secondary data were also collected from district offices. Relevant literature and documents were also reviewed to provide theoretical background. Focus group discussions, mainly with sheep and goat producers, were conducted with 2 groups of 10 to 12 men and women in each of the *kebeles*. Further, more than 160 key informants were interviewed—experts in livestock extension, marketing and cooperative promotion, or abattoir managers, livestock traders, supermarket managers, butchers, researchers, transporters, veterinarians and NGO staff.

## Conceptual framework

The 'value chain' describes the full range of value-adding activities required to bring a product or service through the different phases of production, including procurement of raw materials and other inputs, assembly, physical transformation, acquisition of required services such as transport or cooling, and ultimately to consumers (Kaplinsky and Morris 2002). They include all of the vertically linked, interdependent processes that generate value for the consumer, as well as horizontal linkages to other value chains that provide intermediate goods and services. Value chains focus on value creation—typically via innovation in products or processes, as well as marketing—and also on the allocation of the incremental value (Webber and Labaste 2010).

A value system contains value chain actors, value chain service providers and the institutional environment. Value chain actors exercise ownership of the product or its value addition, thus bearing the risk in handling a commodity. Value chain service providers provide service to value chain actors, either at cost or for free (e.g. a public extension service). In some cases, a value chain actor may provide service to its own operation (e.g. a value chain actor may use its own transport service or processing facility). In such cases, the service becomes part of the value chain actor activities. Both value chain actors and value chain service providers operate under given institutional environments comprising formal institutions (written laws and regulations) and informal institutions (Gereffi 1995).

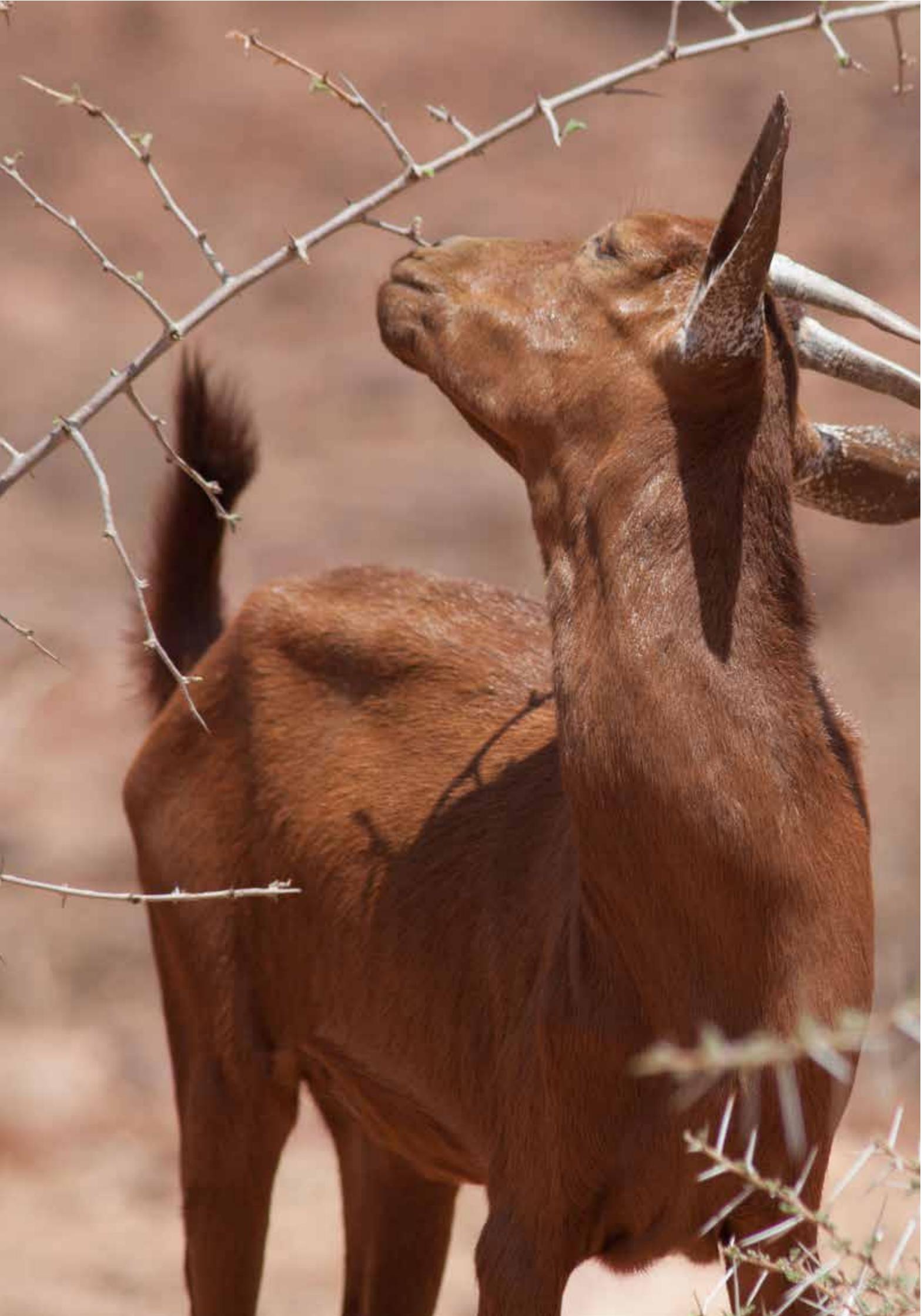
The key in the concept is the idea of value addition. This is what distinguishes the value chain from 'market chains' or 'supply chains' which focus on the logistical aspects of a commodity's transfer (Webber and Labaste 2010). Value chain analysis normally identifies many potential upgrading strategies. The key, however, is to identify a few points (nodes) of intervention which, in the literature, are called 'leverage nodes' or 'leverage points'. These are nodes which, if addressed, will have the highest impact in upgrading the value chain. Value chain development is about implementation of upgrading interventions (Anandajayasekera and Gebremedhin 2009).

Value chain analysis (VCA) is reasonably flexible and a value chain can be analysed from the point of view of any one of the actors in the chain (Purcell et al. 2008). The desired development outcome in this set of assessments is increased access by poor rural households to more meat and milk through development of small ruminant value chains. This could either be direct consumption of milk and meat or through better income that affords purchase of meat and milk from other sources.

Kaplinsky and Morris (2002) argue that there is no 'correct' way to conduct a value chain analysis, rather, the approach taken fundamentally depends on the particular question. In this study, we adopted the approach suggested by Purcell et al. (2008) in analysing agricultural commodities. This comprises four aspects of value chain analysis:

- i. A VCA systematically maps the actors participating in the whole value chain and assesses their characteristics. This set of assessments identified, mapped and described the basic functions in Ethiopian small ruminant value chains in selected intervention sites. Major activities of each actor, product flows, end markets, and other relevant details were assessed based on data collected.

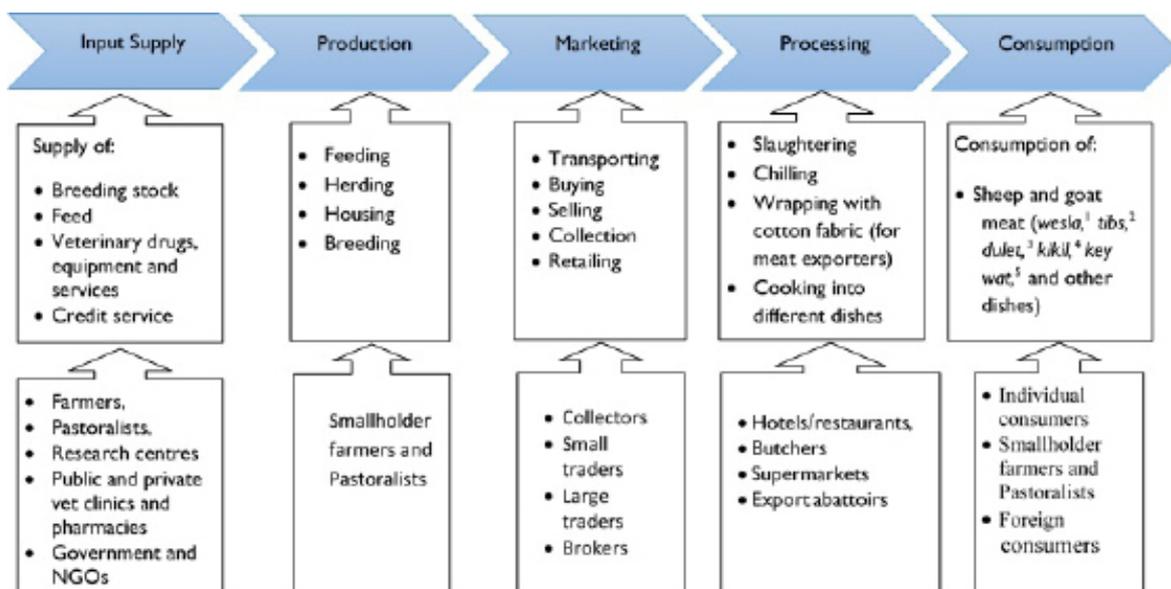
- ii. Value chain analysis identifies the distribution of benefits to actors in the chain. This set of assessments used analysis of margins to show who benefits and by how much, and who will benefit from any additional support to be provided.
- iii. VCA can examine the role of upgrading within the chain. In this set of assessments, best bet intervention options to improve the productivity of animals and their quality (according to consumer's requirement) were identified as upgrading strategies.
- iv. VCA also highlights the role of governance in the value chain. Analysis of vertical and horizontal linkage of smallholder sheep and goat producers with each other and with other actors were given due emphasis in the assessments.



## Core functions of the sheep and goats value chain

The core functions along the sheep and goat value chains in the study areas are shown in Figure 2. Each of these core functions of the value chain is described below.

Figure 2. Core functions, activities and actors along sheep and goat value chains in the study areas.





# Input supply to sheep and goat value chains

## Supply of breeding stock

In almost all intervention sites, breeding rams and bucks are obtained from the market or from other farmers. No breeding centre or other responsible body was found to supply breeding sheep and goat. The centres in some of the regions such as Oromia are privatized and owners use them for other purposes. The centres in other regions could not provide sufficient number of breeding stock to respond to the high demand of farmers. The only promising move with regard to supply of breeding stock is the initiative by ICARDA, ILRI, BOKU University and NARS in Ethiopia in a community-based breeding program especially for highland sheep in Horro, Menz and Bonga areas. This has attracted the attention of regional governments. Since the target communities in the pilot areas have benefited from the initiative, some regional governments such as SNNPR have allocated significant funds to scale-up the sheep breeding program. Similar initiatives were initiated at Abergelle (Amhara region) as well but have stalled because of lack of funds.

The major sources of breeding stock in all the study sites are farmers and pastoralists themselves. Farmers buy animals from known locations for breeding purposes. In highland areas (Horro, Menz, Atsbi, Abergelle and Doyogena), smallholder farmers usually buy breeding stock on their own. In very few cases, NGOs organize women into groups and provide them with foundation stock (possibly two female sheep or goats) as a revolving stock for several households. In the lowlands (Yabello and Shinelle), farmers and pastoralists face recurrent drought that usually wipes out their livestock and NGOs provide replacement stock from nearby markets to farmers and pastoralists after screening households. But since the replacement stock may be a different breed, this can endanger the local breeds adapted to specific agro-ecologies (Zelalem and Haile 2009). A case in point is Yabello area where replacement goats from Konso and Guji are diluting the pure Boran breed.

Producers also get breeding stock from community members. This is the practice in Borana, where pastoralists contribute breeding stock and provide it to those households that lost their stock because of drought. The system is known as 'busa gonofa' whereby a council of elders screens eligible households. Only those who lost their animals because of drought are eligible for this and all members of the community have to contribute animals. Busa gonofa has several advantages over re-stocking programs run by the government and NGOs in that it develops a culture of self-reliance and maintains the local breed. Since no one is allowed to contribute inferior animals or animals bought from the market (non-local breeds), the probability of losing local breeds is low.

## Feed supply

Smallholder farmers are the major producers and suppliers of roughage (hay and crop residues). They produce feed mainly for their own use while a small portion of it is supplied to the market. Households in the highlands that do not have livestock or those who have only a limited number of animals sell crop residues either at the farm gate or in the towns to traders and livestock owners. Feed traders in some towns collect crop residues during harvest, then store them to sell at better prices—especially during dry seasons. Some households sell the grass from their holdings during

summer season when they are short of money. In general, there is no regular commercial supply of roughage from known sources, even in highland areas. In the lowlands, since there is no tradition of harvesting forage, the supply of feed is from the highlands.

The major sources of concentrate feeds are flour and edible oil mills and the sugar factories in central parts of the country. By-products of these factories such as wheat bran, wheat middling, oil seed cakes and molasses are used as animal feed. The supply of each of the feed types is described below.

Supply of concentrate feeds is mainly from flour and edible oil mills. Sheep and goat producers get different feed ingredients such as wheat bran, wheat middling and oil seed cakes either directly from the factories or traders. Availability and demand are seasonal; i.e. high during dry seasons when animals cannot get sufficient grazing and browse and low during wet seasons. Even farmers fattening sheep and goats follow this seasonal pattern since they do not depend on concentrate feeds. The major challenge in the use of concentrates is the ever increasing price, which has more than doubled in about the last five years, especially after 2011 when the government started regulating the price of wheat flour and sugar. Mills were forced to sell wheat flour at fixed price while they were free to sell the by-product (wheat bran and wheat middling) at any price. This opened a window of opportunity for mill owners to compensate using the proceeds of the by-products, whose price rose. There is no quality control for feed ingredients and pricing does not reflect quality. Once the price of a certain feed is fixed somewhere, everybody follows it regardless. Buyers inspect feed quality using visual observation of its colour, smell and feel.

Growing annual and perennial forages has been introduced to different parts of the country since the 1960s through different development projects. However, since farm land holding sizes are decreasing and forage competes for land with food crops, adoption of these forages has remained a challenge. In the highlands, population pressure and the resulting fragmentation of land is the main reason for this. Since different development projects, including the government extension system, provide forage seeds and other planting materials for free, there is no proper marketing system for forage seeds. It is only recently that the Ethiopian Seed Enterprise started multiplying seeds of some forage species. The usual practice is that projects buy seeds or cuttings from farmers who are advised to cultivate them and distribute them for free to other farmers. Such initiatives encourage farmers to multiply seeds and buy these seeds for distribution to other farmers. However, such initiatives last until the projects phase out since proper marketing systems are not developed and the system does not sustain itself. In the lowlands, use of cultivated forages is very limited mainly because of the dry conditions (shortage of moisture). Drought-tolerant forage crops such as cactus and acacia leaves and pods can help in such areas.

Brewery by-products are mainly obtained in small towns and villages near towns, especially in highland areas. These by-products are called atela in Amharic, and farmers buy them to feed to their animals. Some households also produce the local beverages and provide atela to their animals.

Grazing land is shrinking due to population pressure and expansion of agriculture. It is available mainly after harvest in the highlands, where some areas such as Atsbi are practicing enclosure to rehabilitate natural vegetation by excluding livestock. There, farmers practice 'cut and carry' rather than grazing. In pastoral areas, bush encroachment is eroding grazing land over time.

## Supply of veterinary drugs and clinical equipment

The other important aspect of veterinary service is the drug supply. Shortage of drugs is reported in most of the study areas except in Borana and Horro. Oromia regional state assigned revolving drug funds to districts. Amhara regional state has also allocated a revolving drug fund for each of its districts. Doyogena, Atsbi and Tanqua Abergelle need project interventions to resolve the drug shortages.

Another important problem identified in all the study sites was shortage of veterinary clinical equipment at district clinics and health posts. While the drug shortage in some regions (Amhara and Oromia) is resolved through revolving funds, these funds have never addressed the question of equipment.



# Production of sheep and goats in the value chains

## Breeding

In all the study areas, the dominant sheep and goat breeds are local but varied. Menz, Horro, Adilo and Somali black head sheep are the dominant breed types kept in , Menz, Horro, Doyogena and Shinelle sites, respectively. The Abergelle goat breed is reared in Tanqua Abergelle and Sekota Abergelle areas. White Somali goats and Borana goats are dominant, respectively, in the Shinelle district of the Somali region and Yabello and neighbouring districts of Borana zone. There are attempts in all regions to introduce crosses of Boer goats and Dorper sheep with the local breeds to improve their productivity. However, these efforts are not yet successful since there are no clear strategies as to how to maintain herds of cross-breed sheep and goats.

One of the important findings of this survey is farmers' and pastoralists' poor understanding of inbreeding problems. They keep one ram/buck in the same flock for up to five years. In Sekota Abergelle, for example, farmers do not share bucks since the traditional belief is that they will become poorer if they do.

Since good-looking male sheep and goats are in high demand in the market, neither farmers nor pastoralists in all the study areas, except Menz and Horro select and maintain breeding rams and bucks. This means rams and bucks with unwanted traits are replicating and compromise the livelihoods of producers. Farmers in Horro and Menz did the same before the onset of community sheep-breeding programs in their areas. Some regional states (SNNP and Amhara) are trying to replicate the experience (community based breeding programs) in other areas.

Controlled mating is not practiced except in Shinelle where pastoralists exercise controlled mating for sheep. Somali pastoralists in Shinelle do not let rams graze with the flock. They also separate rams from ewes at night to avoid lambing during drought seasons. The Somalis do not do the same for goats since they can better tolerate drought.

## Feeding

Major sheep and goat feeding systems vary with agro-ecology and seasons. In highland crop–livestock farming systems, where sheep dominate, all the cultivated lands are covered with crops during the wet season and hence on-farm grazing is not possible. During such seasons, farmers in Horro and Menz try to keep their sheep on fallow and marginal land and in the homestead. In areas such as Doyogena where land is extremely fragmented, it is very hard to find grazing land during the rainy seasons. Animals are tethered on small plots during the day and supplemented with green cut fodder from different sources.

During dry seasons, almost all fields will be free for grazing whereby animals freely graze and browse on crop residues. In Atsbi, most of the grazing fields are enclosed to encourage the rehabilitation of natural vegetation. In such cases, farmers collect grasses grown in the area and feed them to tethered animals around the homestead (using stall feeding system). In pastoral areas, both grazing pasture and browse are available after both the short and long rainy seasons.

Farmers adopt different feeding systems for different categories of sheep depending on the purpose of production. A general trend is that sheep for fattening are fed in the barn and separated from the flock. More feed with better quality is given to fattening sheep than to other members of the flock.

Goats are mainly kept in lowland mixed crop–livestock production systems such as in Abergelle and pastoral systems such as in Yabello and Shinelle. Goat production depends mainly on browsing of bushes and shrubs. Goats produced in both Sekota and Tanqua Abergelles are kept at a relatively high altitude, where there is ample browse (when the field is not covered with crops). In extreme dry months and the rainy seasons (when the field is covered with crops), goats are taken to the extreme lowlands that are free from crop cultivation and where there is better vegetation cover. Male farmers are responsible for herding goats to distant areas since they have to be protected from predators and theft. Women household heads usually hire shepherds and provide food and clothing and a quarter of new births in lowland areas.

In the pastoral areas (Shinelle and Yabello), pastoralists move with their animals in search of browse, pasture and water. Since crop cultivation is not common in such areas, the feeding system is not influenced by seasonal cultivation. Rather, water and feed availability govern the movement of animals through the year.

## Commonly used feeds for sheep and goats

Feed resources at the different sites vary according to the agro-ecological conditions, ranging from high dependence on natural pasture and browse at the two pastoral sites to a mix of crop residues, forages, concentrate feeds, and household leftovers in the highland sites.

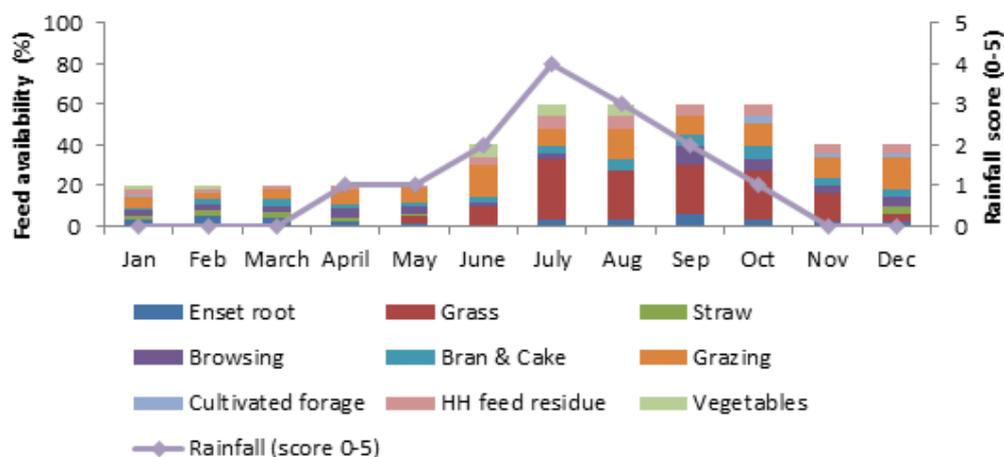
Using Doyogena as an example for a highland site, major feeds commonly used for sheep and goats include natural grazing, fresh cut grass like desho (*Pennisetum pedicellatum*) and local grass (during wet seasons), browse (like tree lucern, sesbania and other local herbs and shrubs), hamicho (the root part of false banana), tiny potato tubers and leaves (during seasons of potato production), household food scraps and residues (like coffee and kocho residue), wheat bran, noug cake (very rarely), oat fodder and local brewery by-products. Although oats is suitable for the agro-ecology and is in high demand by most farmers, its production is poor because of land shortages. Farmers are also shunning its cultivation because it becomes a weed by clogging more important crops. Wheat bran is used for fattening sheep and hamicho for both nursing ewes and fattening sheep. According to information generated from the assessment, this is mainly because the Doyogena area is heading towards a stratified sheep-rearing system in which some farmers rear sheep and sell kids at an early growth stage while others buy kids and fatten for special markets (holidays and consumers in big cities). Fattened sheep from this area are usually called Adilo sheep—taking the name Adilo from the place where farmers fatten sheep produced in Doyogena area and supply them to the market.

Although farmers harvest feeds and also buy industrial by-products, they do not usually provide supplementary feeds to sheep and goats. Sheep and goats usually consume leftovers around the troughs of large ruminants, as in Horro and Menz, where only a few farmers fatten sheep and provide supplementary feeds. Sheep in these areas depend on natural pasture. The length of time for which producers feed their sheep and goats is also important. In almost all the study areas, farmers still use traditional sheep and goat fattening methods in which a sheep or goat is fattened for more than a year. This is mainly due to lack of knowledge on improved feeding methods (Duguma et al. 2012).

## Seasonal feed availability and coping mechanisms

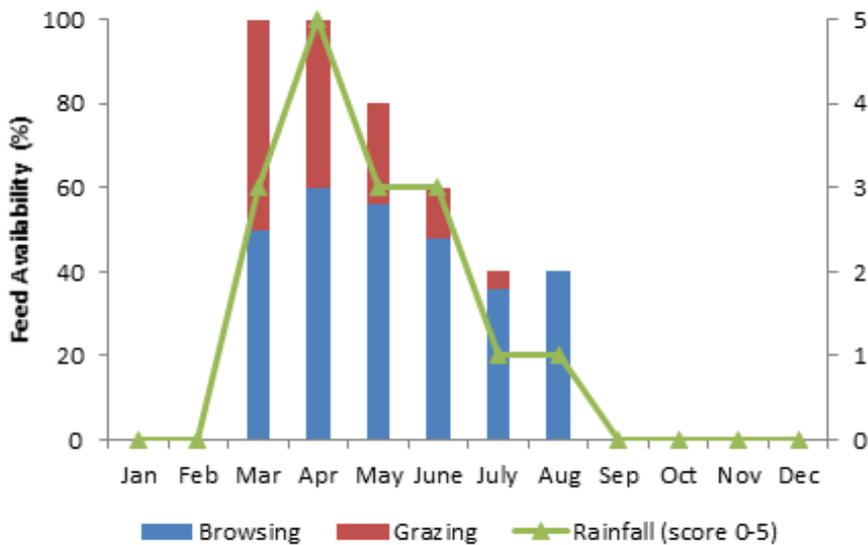
The availability of natural pasture and browse species follows the patterns of rainfall and is seasonal in nature. Figures 3 and 4 show the composition of feedstuffs available throughout the year in relation to the rainfall patterns in Doyogena and Shinelle, representing a highland and a lowland site. Farmers in crop–livestock mixed farming systems store different crop residues (mainly from cereals and pulse crops) and natural grass for use during dry seasons. Since green pasture is available during wet seasons (June–September) farmers do not provide supplementary feeds, even in the highlands. In the dry seasons, when pasture and browse dwindle, farmers start supplementing their animals’ diets with crop residues in areas such as Doyogena where farmers usually supplement their sheep and goats (see Figure 3). In areas such as Atsbi where farmers usually use cut and carry systems, animals can get cut grasses during wet seasons and farmers rely on crop residues and hay during dry periods.

Figure 3. Average rainfall and feed availability in Doyogena area (as an example of a highland site).



In Shinelle and Yabello, feeding systems rely entirely on grazing and browsing of natural grasses and bushes (as shown in Figure 4). However, the availability of grasses and browses depends on rainfall. Pastoralists stay around their temporary residential areas when there is ample grass or browse and water. When it becomes drier and animals are starving, they move to areas with better grasses and water. They conserve standing forage to feed calves and kids during dry seasons. Crop residues, hay and concentrate feeds transported to pastoral areas during extreme droughts are used to sustain large ruminants. Sheep and goats (especially goats) and camels are left to survive on the available bushes without any supplementary feeding. Somali pastoralists strategize their breeding practices in such a way that sheep will not give birth during dry seasons in order to avoid death of kids and loss of ewes.

Figure 4. Seasonal distribution of feed resources relative to the rainfall pattern in Shinelle district (example of a lowland site).



## Animal health care

The major diseases commonly reported in the study areas are pasteurellosis, coenurosis, pneumonia and sheep and goat pox (see Table 1). It needs careful professional investigation to tell which of the diseases are prevailing in each area. Since the Safe Food Fair Food component has properly addressed the disease aspect, we did not try to get detailed information about the diseases in the assessments. The health service delivery system in most of the sites is not adequate to properly treat most diseases. As a result, farmers and pastoralists use traditional practices to treat animals.

Table 1. Major diseases reported in respective study areas

Site	Types of diseases and parasites
Atsbi	Coenurosis, pasteurellosis, blackleg, blood urine
Doyogena	Ovine pasteurellosis, pneumonia, blackleg, foot and mouth disease, mastitis, anthrax, liver fluke, taenia saginata
Horro	Liver fluke, lice, pasteurellosis, pneumonia, Foot and mouth disease
Shinelle	Cholera, peste des petits ruminants (PPR), copper deficiency, fasciola, ecto-parasites, sheep and goat poxes, bovine brucellosis
Sekota Abergelle	PPR, goat pox, orf, actinomycosis, mange, lice, coenurosis, moniezia expansa
Tanqua Abergelle	Anthrax, rabies, ovine pasteurellosis, PPR, sheep and goat pox, coenurosis, demodex, lice, tick
Yabello	Sheep and goat pox, PPR, orf, pasteurellosis, coenurosis, contagious caprine pleuropneumonia (CCPP), ticks, lice, demodex, hemoncus, mange mites

## Housing

The types of housing used in the eight study areas differ according to agro-ecology and season. In most of the study areas, sheep and goats are housed with large ruminants without concern for possible physical damage or discomfort of the animals. In most places, people share houses with animals. This is commonly used to deter theft and is common in Doyogena, Horro and Menz.

Yabello pastoralists also use this system with small herds. In some places such as Abergelle and Atsbi, farmers build different types of housing for the dry and wet seasons. Dry-season barns are open-top fences that are usually built from tree branches to confine animals during the night and protect them from predators. Table 2 shows the common types of housing used for sheep and goats in the study areas.

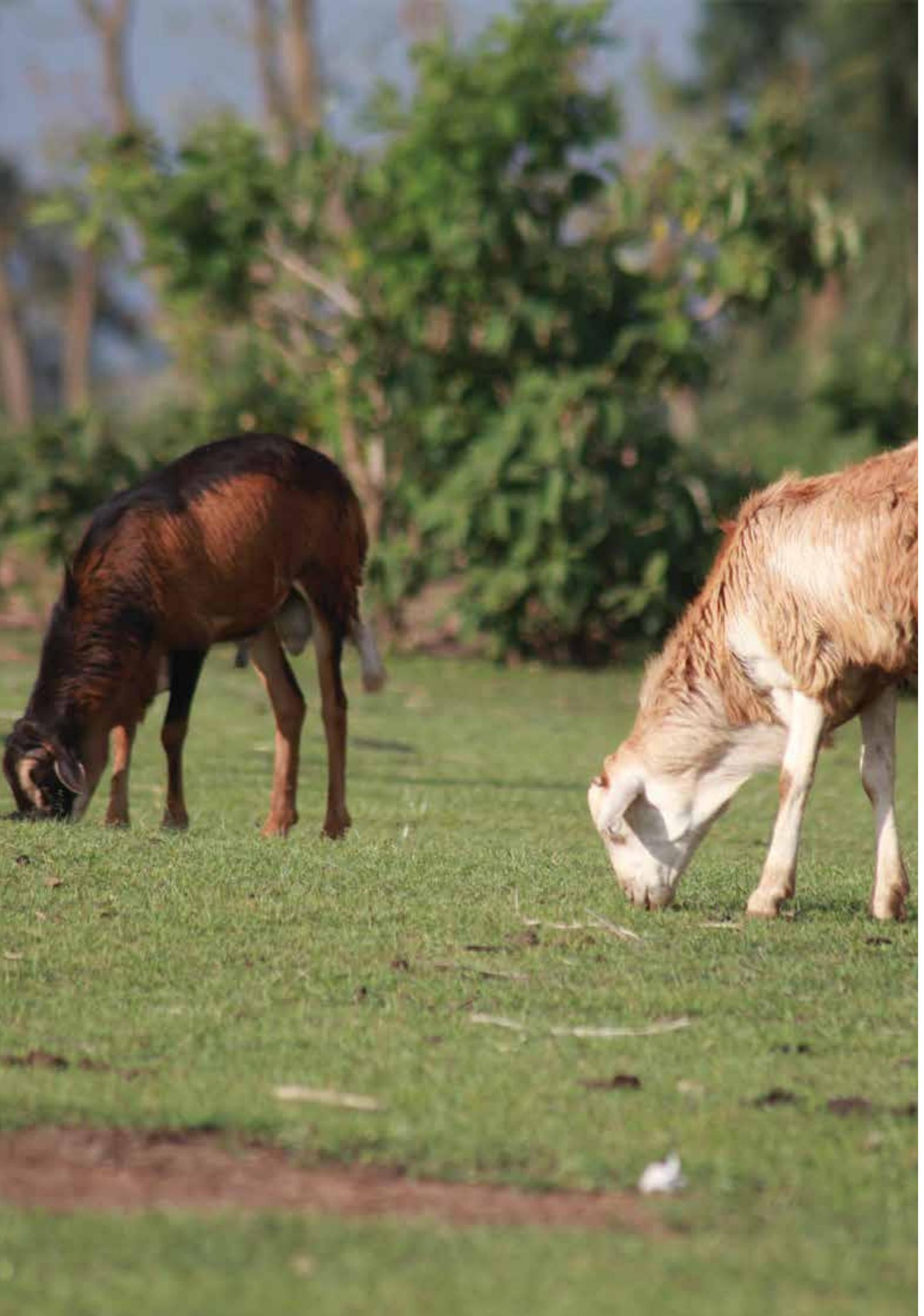
Table 2. Common housing types used in the study sites

Site	Types of housing
Atsbi	Open-top fences to confine animals during the dry seasons, called 'dembe' in Tigrigna Roofed barns known as 'gebela' in Tigrigna during the rainy seasons. Sheep together with large ruminants Barn cleaning is the responsibility of women during dry seasons and men and women during wet seasons
Doyogena	No separate barns for their animals All types of livestock share a house with people Some households partition for different species of animals Lambs and fattening sheep partitioned from the rest of the flock
Shinelle	Open-top fences for all animals Mature sheep and goats kept together Rams and kids/lambs partitioned from the rest of the herd
Sekota Abergelle	Open-top fences built from tree branches during dry seasons, for a maximum of two weeks in any one location to protect the development of external parasites such as mites Caves or roofed barns for the rainy seasons Kids are housed separately in order to milk the does in the morning
Tanqua Abergelle	Open-top barns during the dry seasons Earthen-top barns for rainy seasons Same house for all species of animals Some households share the same house with animals Barn cleaning is the responsibility of women
Yabello	Open-top fences for all livestock Keep all species of animals together Build a separate barn for kids and lambs, known as 'dokoba' in Oromiffa Households with small herds share same space with animals Barn cleaning is the responsibility of both men and women

## Milk production

Households in the different study sites reported that they slaughter sheep/goats only during celebrations of religious festivals. This means, sheep and goats are mainly kept for sale to meet immediate cash demands of the households rather than for consumption. Sheep and goats are sources of milk for the household, even during the dry seasons. However, consumption of sheep and goat milk is not common in the highland areas such as Doyogena, Horro and Menz.

In pastoral areas (Yabello and Shinelle), the two Abergelles and Atsbi, households use sheep and goat milk for household consumption. In Shinelle, pastoralists consume sheep milk and sell goat milk. Selling sheep milk is not common in the area. In other areas, they consume skimmed milk and sell butter.



# Support services for sheep and goat production

## Veterinary services

Veterinary services are organized so that each national regional state has one laboratory and the districts have at least one animal health clinic. One veterinary health post is built to serve three *kebeles*. Health posts have been built in Atsbi district, but none of these structures has been functional for the last eight years. These veterinary health posts were not supplied with necessary drugs and clinical equipment and technicians were not assigned to serve in them. The same is true in Tanqua Abergelle. This creates a scenario in which district veterinary clinics should cover the entire district, but this is practically impossible. Farmers must travel very long distances to get treatment for their animals; in some cases the animals die on the way. Other areas such as Sekota Abergelle have only health posts. The district administration was building district clinics in December 2012 when this assessment was conducted. Problems elsewhere include shortage of personnel, drugs and clinical equipment.

The district clinics have at least one veterinarian and a number of assistants, but only one assistant veterinarian is assigned at each health post. Active health posts in almost all the study areas are operating with one health assistant. Farmers and pastoralists have to bring their animals to these health posts because one person cannot cover all three *kebeles* through mobile services. In addition to the veterinary services, a technician has to do all the clerical and accounting works. Shortage of transport facilities for animal health technicians to reach farmers is another big issue.

Private veterinary clinics and pharmacies provide complementary services to the public clinics and health posts, but availability of these service providers and understanding of their services by livestock producers is patchy. For instance, we did not come across any private clinic or pharmacy in Atsbi and Tanqua Abergelle areas. We learned that there had been a shop selling drugs in Tanqua Abergelle, established with support from a USAID project. However, this drug shop was closed when the project phased out. Farmers usually get free services or use traditional treatments, so private operators are not attracted, and farmers' confidence in them varies from site to site. In some places such as Atsbi, Abergelles and Menz, farmers are suspicious of the quality of expensive drugs sold by private drug suppliers. In other places such as Horro, Yabello and Shinelle districts, farmers have confidence about the drugs and services provided by the private operators.

Informal drug sellers are mushrooming in different parts of the country especially in pastoral lowlands and different parts of Oromia, Amhara and SNNP regions. This is inhibiting the activity of formal actors. The problem with these informal sellers is that they do not have the required level of skills to do the business and there is a high probability that they sell substandard drugs. Such sellers sell veterinary drugs in open air markets exposing the drugs to direct sunlight, in ordinary shops and mixing the drugs with human medicines in pharmacies. Thus, there are handling and storage related problems which have negative impacts on the quality of drugs available.

## Credit services

Rural microfinance institutions, household asset-building programs and rural savings and credit associations are the major sources of credit for sheep and goat producers. There are different microfinance institutions in each of the national regional states except Somali region. A credit scheme by Oxfam is the only source of credit for pastoralists in Shinelle. Those in Oromia, Amhara and SNNPR regional states depend on group-based collateral. Dedebit Credit and Saving Institute (DCSI) of Tigray region provides both group and individual credits. If clients prepare business plans in consultation with the extension agents and they are approved by the district offices of agriculture, DCSI provides individuals with credit. If the client's individual loan application is not supported by the extension system, he or she has to form a group of more than three people.

The logic is that farmers who get approval from the extension system are those who can properly make use of the loan, and this can easily be followed up by extension agents. The credit request through the group should also be based on a feasible business plan. The amount of credit also varies. For instance, DCSI can provide as much as ETB 35,000 to individual clients, while in other regions clients can get this much amount of money only if they demonstrate their creditworthiness through the use of smaller amounts of loans.

In all regions, the amount of credit can increase by 20% depending on repayment performance. The problem with Oromia Credit and Saving Institute (OCSI) and Omo Microfinance Institute of the SNNPR region is the limited amount of credit they can give. Whatever the client is going to finance with the credit, he or she has to start with between ETB 2000 and ETB 4000. But the Amhara Credit and Saving Institute (ACSI) can go up to ETB 12,000 when farmers apply for credit to purchase cattle.

The major complaint by farmers in Yabello, Doyogena, Menz, Horro and Sekota Abergelle farmers is about repayment schedules. Microfinance institutions demand that farmers start repayment immediately [usually one month] after receiving the loan, which is too early given that many agricultural operations take several months before they generate a cash income.

The other important problem with credit from microfinance institutions is low levels of awareness of people about their terms and conditions. In most of the study areas, farmers and pastoralists did not have a clear understanding of the conditions for getting credit and repayment modalities for livestock activities, nor did they understand any risks involved. The branches in some areas such as Yabello have few staff at *woreda* level to do awareness creation among pastoralists about their services.

The Household Asset Building Program (HABP) credit is targeting beneficiaries of Productive Safety Net Program with the purpose to enable them create assets upon their graduation from the use of the safety net. The implementation of HABP is also through microfinance institutes in respective regions. However, the implementation modality of HABP also varies. In Oromia and SNNP regions, the maximum loan from this program is also ETB 4000 while it is higher than this in Amhara and Tigray regions. This again has got a negative impact on the use of the credit money for livestock related activities including sheep and goat fattening and rearing. Interest on HABP credit is 15% while it is 18% on credit extended by microfinance institutions on their own. The problem in the HABP credit is delay in its implementation so intended beneficiaries in most of the survey areas had to wait a long time to get it.

Rural credit and saving cooperatives are also organized by farmers and pastoralists with members' contributions as share capital. These cooperatives are available in most of the study sites but with very low financial capacities. This is mainly due to low savings collected from members. If they can get some financial sources to establish strong initial capital, they can better serve the interests of their members. However, there is a need to build their management capacity and establish strong internal and external audit systems that can follow up the day to day activities of such cooperatives.

## Transportation services

A large proportion of the livestock reach markets by trekking all or most of their way. Thus, supply of live animals from the producers to the different categories of markets (primary, secondary and terminal markets) and slaughterhouses in the country is mainly carried out either by trekking or trucking or a combination of both.

Trekking is the predominant means of transporting animals from farm gates to the next nearby or primary markets. Though the primary livestock markets are the closest markets to the producers, the distance varies from place to place. In some places, the producers trek 1–3 hours to arrive at the primary markets to sell their animals.

Most of the animals sold at the secondary markets are transported to the terminal markets and slaughterhouses by truck. Ordinary trucks are the most widely used means of transporting live animals from the secondary markets to the terminal markets and these slaughterhouses. However, such trucks are not convenient for loading and unloading as well as transporting animals.

## Market information

Before selling their animals, producers search for information about market conditions through self-assessment, going to the markets, asking their neighbours and traders. They search for information on what the market seeks in terms of types of animals (yearlings, does/ewes, young female etc.), colour, age, weight and body conditions of sheep and goats. The main source of this information is information from the previous week's market. As a result, animals coming to the market are animals that were sold in large numbers during the last market days.

Institutional instability greatly hampers the proper management of livestock market information systems. The system has changed four umbrella institutions (Ministry of Agriculture, Ethiopian Meat and Dairy Technology Institute, Ministry of Trade and recently Ministry of Industry). In all these transitions, there is considerable staff turnover that distorted the continuity of the efforts.

## Extension services

The public extension system is the major source of agricultural information and knowledge for farmers and pastoralists. The government is trying to provide global coverage by assigning three extension agents at each farmers training centre. However, emphasis given to the different commodities differs from place to place. In most places, emphasis given to small ruminants is very low. As a result, little advice is available to farmers and pastoralists on improved production or marketing of small ruminants. The extension agents interviewed by the project team were not well informed about sheep and goat husbandry practices or major market actors, destination of the sheep and goats sold in their markets, the quality requirements of different consumers and the specific seasonal patterns in demand for sheep and goats.



# Marketing sheep and goats in the value chains

The performance of a market is influenced by its structural characteristics and the competitive behaviour of actors in the market chain. Dealing with these two key factors provides the basis for the formulation of interventions (Williams et al. 2006). Structural characteristics refer to the marketing channels, volume, concentration and entry barriers. Competitive behaviour refers to the strategies of actors in market transactions. This section presents an analysis of end markets, major marketing routes, channels, actors along the chain, and relationships among the different actors. Analysis of major production and marketing costs as well as marketing margins is also presented.

End markets determine the characteristics—including price, quality, quantity and timing—of a product or service. End market buyers have a powerful voice and generate change. They are important sources of demand information, transmit learning and in some cases are willing to invest in firms further down the chain. End markets for sheep and goats can be broadly classified as domestic and export. The domestic market comprises individual consumers, butchers, hotels and supermarkets.

## Domestic markets

Sheep and goats butcheries and retail sheep and goat meat in supermarkets were found in the major towns at all targets sites. A recent development is that even the sheep and goat butcheries in major towns in the highlands were serving goat meat while they used to serve mutton only. This trend is expanding to smaller towns too. The butcheries and supermarkets mostly slaughter fattened male sheep and goats.

The price of goat meat in Addis Ababa during the survey time is up to ETB 180/kg in butchers and ETB 85–95/kg in supermarkets. This is because of the service cost and the freedom of selecting the parts to be cut when buying from butchers. Supermarkets retail pre-packed meat.

Domestic individual consumers are the major final consumers for sheep and goats. Demand for sheep and goat meat is quite seasonal as it follows the religious calendar of fasting periods and festivities such as New Year, Christmas, Easter, Ramadan and Arafa. Coat colour, tail type, health status and origin of the animals are some of the criteria used by individual consumers in selecting sheep and goats. A black coat is not preferred by most buyers wanting to use animals for sacrifice. Terfa et al. (2013) in Horro Wellega zone indicate that black coloured sheep received a price discount of 15% compared to red coat coloured sheep. Results of FGD in Horro indicated that colour preference is largely seasonal or related with certain occasions. For instance, religious festivals (sacrifice) called 'Ayyana Abbaa' and 'Ayyana Dubarti' ('Hatete') need animals with specific colour and age. For the former, males of uniform brown colour are required in December and January while for the latter, old ewes of uniform colour (preferably brown) are in high demand in July. In addition, when lightning strikes or other disasters cause damage, a black ram is sacrificed to reconcile the household's pain with this 'punishment' from God.

Most households buy fattened male or sterile female sheep and goats, so producers fatten animals to sell during holidays. Sheep with long fat tail are needed in most of the places. Buyers also consider origin of the animal in order to be sure that its liver will not be condemned due to liver fluke. Thus, buyers always prefer sheep from hilly areas to those coming from marshy areas. They also believe that mutton from mountainous areas have better test than those coming from plain fields mainly because of special vegetation growing only on mountains on which sheep are grazing.

## Export markets<sup>1</sup>

The study areas are the major sources of animals for export of live sheep and goats or shot meat. The live sheep and goat exporters usually focus on animals originating from lowlands since highland sheep cannot tolerate the high temperature during transportation through Djibouti. However, there are options to use air lifting during special occasions such as Arafa (Haj season) when animals are highly demanded in destination markets. The meat exporters used to collect slaughter animals only from lowlands because of the fear of darkening of meat from highland sheep and goats within a short period of time. However, some abattoirs found this to be due to the chilling management and the low body fat cover of animals rather than origin of animals. So, meat exporters are collecting export quality sheep and goats regardless of the origin of animals. Thus, description of the characteristics of the export markets is very crucial since it is about one of the important end markets.

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*1. Analysis of data from the Ethiopian Revenue and Customs Authority shows that 12 Middle East countries are the major market outlets for meat and live animals exported from Ethiopia. The lion's share of meat volume was exported to Saudi Arabia and the UAE. Other destinations for Ethiopian meat are Egypt, Yemen, Kuwait, Oman, Bahrain, Congo, Democratic Republic of the Congo, Turkey, Vietnam, Angola, Comoros Islands and India. Egypt, the two Congo's, Angola and Comoros are beef markets and Vietnam and Turkey are destinations for offal.*



# Actors in the sheep and goat value chains

According to the VCA framework, actors in the value chain refer to those individuals or entities who engage in a transaction which moves a product from inception to end use. They must exchange money (or equivalent) as well as a product that generally increases in value with each transaction. The primary actors common to the livestock value chains in the study areas are producers (farmers/pastoralists), collectors, livestock marketing cooperatives, brokers, small and large-scale traders, sheep and goat butchers, hotels, supermarkets, individual domestic consumers and export abattoirs. Analysis of the characteristics of these actors and their marketing strategies helps design intervention measures to overcome high transaction costs and other factors that depress the price producers get. The characteristics of each of the actors are described below.

## Producers

Sheep and goat producers are smallholder farmers and pastoralists living in different parts of the country. Pastoralists and farmers usually buy animals for breeding purposes. Their preferred sources of animals are farmers/pastoralists from known locations since they want to make sure whether the animal will adapt to their situation. They also buy from collectors and small traders. In cases of restocking programs after drought seasons, the latter are important sources for NGOs and GOs since it is difficult to get the required number of breeding stock in a short period of time. Farmers and pastoralists can buy either in the market or in their villages/bush markets depending on their convenience. In some areas such as Sekota Abergelle, farmers do not want to sell their breeding stock to neighbouring farmers. Thus, a farmer has to go to the market in order to get breeding stock. In the pastoral areas, however, a pastoralist does not need to go to the market to get breeding stock. They usually exchange breeding stock within the village. In Yabello people contribute breeding stock to rehabilitate households that have lost their animals because of drought.

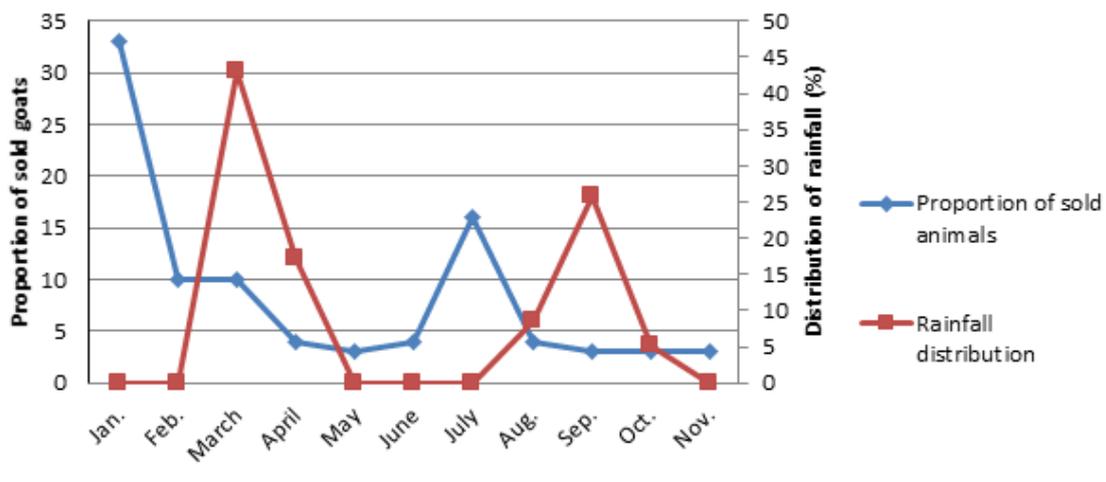
Regarding the time of purchases, farmers usually buy animals after crop harvesting. This is mainly because of two important reasons. The first is they get cash by selling grains and can easily buy sheep and goats at this time. The other important reason is availability of grazing pasture and crop aftermath in this time of the year. Since the crop land will be free until the next rainy season, farmers want to make use of the available natural pasture. On the other hand, pastoralists buy animals at the end of the dry seasons when it starts raining. They rarely sell their animals by this time since it adds value by grazing the available natural pasture and browses. The price of sheep and goats rises at this time of the year.

Producers usually sell their animals to any buyer in the market. However, the type of preferred buyer varies from location to location. In Yabello and Shinelle, where export abattoirs and live animal exporters collect male yearlings, pastoralists prefer selling their animals to traders. In Horro, Menz, Atsbi and Abergelle, producers want to sell their animals to individual consumers, hotels and farmers who buy animals for breeding purposes. In Abergelle and Atsbi, the Abergelle export abattoir is also an important buyer of animals for slaughter, but producers expressed dissatisfaction with the price it offers.

Sheep and goat producers sell animals mainly in the market places. About 70% of marketed sheep and goats in all the study areas were sold in market places, while the rest are sold either in the villages or on the road to the market. As indicated above, both pastoralists and sheep and goat producers in highland areas sell their animals for cash, and do not plan when to do so. Among the two pastoral districts, Yabello is the major supplier of sheep and goat to meat and live animal exporters while Shinelle supplies to live animal exporters. Demand for animals in these areas follows the demand in the export market. Since major destination markets for Ethiopian sheep and goats are Middle East markets, demand for sheep and goats rises during Muslim festivals. Unlike highland livestock markets, pastoral markets are not affected by Christian holidays.

The major factor influencing supply of animals in the pastoral areas is rainfall. The challenge exporters face in these markets is when the Ramadan season (when the demand in the export market rises) overlaps with the rainy season. Pastoralists become reluctant to sell their animals during the rainy seasons where as there is very high demand from end markets. As a result, the price of animals increases, attracting pastoralists to bring their animals to the market. The correlation of rainfall occurrence and supply of animals to the market in Yabello is indicated in Figure 5.

Figure 5. Distribution of rainfall and proportion of goats sold in different months in Yabello market.



In pastoral areas (Yabello and Shinelle), the two Abergelles and Atsbi, sheep and goat are important sources of milk. Households in these areas use sheep and goat milk mainly for household consumption. In Shinelle area, pastoralists consume sheep milk and sell goat milk. Selling sheep milk is not common in the area. In other areas, sheep and goat milk are not sold. Rather, they churn the milk and sell butter. This means household members consume the skimmed milk and sell butter. Consumption of sheep and goat milk is not common in highland areas such as Doyogena, Horro and Menz. In such areas, there is no market for sheep and goat milk. Households in the different study sites reported that they slaughter sheep and goats only during religious festivals.

Market information is scarce among pastoralists and farmers. In order to get market information, at least one person either from the family or a neighbour has to go to a market. Though it is not reliable, producers also try to get information from collectors who are members of their community.

## Collectors

Collectors operate alone or work on commission for traders of all sizes. The commission for collectors working for other traders depends on getting a good price from producers in villages or remote livestock markets. This could be up to ETB 20 a head. Those collectors who use their own money collect up to 20 animals at a time and sell to any buyer, getting a margin of up to ETB 100. They get higher margins if they buy animals from remote areas that do not have access to markets. For collectors in pastoral areas, Ramadan and Arafa seasons are the best seasons because of high meat demand from the Middle East. For those operating in the highlands, the best time is religious festivals when consumers need slaughter animals. Collecting is usually a sideline for people who are also producers and have better social ties with producers.

## Brokers

Brokers mediate transaction between buyers and sellers. Brokering activities in sheep and goat markets depends on the mode of transaction. In weight based transactions of male yearling sheep and goats where price per live weight kg of animals is known to everybody, their task is to channel more sellers to a buyer. In such cases they do not influence the price of live weights of animals for individual sellers. On the other hand, they help price setting when animals are sold based on visual estimation and negotiation. In this case, there is an information asymmetry where brokers can make use of their knowledge about prices, quality and quantity of animals demanded to influence sellers. They simply provide either too low or too high prices to sellers so they will use this price as a reference and will not come to an understanding with other buyers. Brokers do not compete with each other and no other broker mediates the animal that another broker started. At the end of the day, the seller will not get any buyer and will come back to the person that set the price at the beginning of the day. In doing so, brokers get a commission of about ETB 10 each from buyers and sellers.

The role of brokers also varies with location. In Somali region for example, brokerage is a clan-based activity. Producers sell their animals only through a broker who is a member of their clan. Producers bring the animal to the market and hand it over to the broker. The broker has full responsibility to sell the animal at the prevailing market price. Though the known commission per sold animal is ETB 10/animal, the broker can agree with the buyer not to disclose the real price and tell the producer that his animal is sold at a lower price than what it was actually sold.

## Small traders

Small traders supply hundreds of animals every week to large traders or export abattoirs, as well as to hotels, butchers and live animal retailers in Addis Ababa, Mekelle, Hawasa, Dire Dawa, Adama and other urban centres. They have their own network of collectors. There are fewer small traders than collectors but more than large traders. They usually operate using their own capital and sometimes receive advance payments from buyers (large scale traders). Most small traders do sheep and goat trading as a sideline and are involved in cattle trading or other businesses. They go to primary and secondary livestock markets and buy from producers and collectors.

## Large traders

Large traders supply thousands of sheep and goats to export abattoirs each week, in some cases at a premium (to ensure ongoing supply), using their own capital. This limits the number of suppliers abattoirs have to deal with and simplifies administration. Large traders arrange a supply network with many small traders and share the premium—a win-win for all concerned. Large traders in such cases simply stay in a central place, communicate with small scale traders, transfer money to their suppliers, receive animals from all over the country, let them rest for two to three days, and hand them over to the abattoirs.

Large traders have their own network of collectors that reach producers in primary markets, farm gate or bush markets in pastoral areas. These traders have sheep and goat collection networks in all corners of the country. They go to secondary markets in order to coordinate the activity of their suppliers. They provide information about the prevailing market price, type of animals and number required to their respective suppliers.

Large scale sheep and goat traders also trade cattle and camels but generally stick to sheep and goats because of continuous demand from export abattoirs, even if some pay late.

## Livestock marketing cooperatives

In the eight sites, there are livestock marketing cooperatives in Yabello and Shinelle. They market sheep and goats, cattle and camels depending on the size of their working capital and market demand. They buy from members and non-members. Some of these marketing cooperatives are actively involved in restocking (after drought) programs by supplying replacement stock from different markets. There have also been efforts to engage them in commercial destocking of animals from pastoral areas during the drought season—using cooperatives to collect animals from pastoral areas and selling them in the highlands. This was not a success because of financial arrangements and other administrative issues.

Cooperative activities are run by a committee selected from members rather than employed professionals. Thus, they usually experience a lack of entrepreneurship skills, poor market linkages and non-transparent management. Heterogeneity of membership and conflict of interests are another problem hindering cooperatives in pastoral areas. The leadership of marketing cooperatives is usually taken up by members who are already engaged in livestock marketing. Since cooperatives lack flexibility and their operation costs are very high as compared to individual traders, they usually fail to be competitive in the market. In principle, cooperatives have to be cost effective as compared to individual traders. However, these cooperatives are not using economies of scale as is intended.

Market linkages were created between export abattoirs and pastoral livestock marketing cooperatives by several NGOs and GOs operating in pastoral areas. However, none of them were found to be competitive and continue in business.

On the other hand, we have seen a very good experience with cooperatives engaged in sheep and goat butchery in Shinelle town. These cooperatives were organized through a USAID funded project run by Save the Children. These cooperatives have a very good slaughterhouse and retain shops. They collect slaughter animals from the surrounding pastoral community and supply goat meat to the community. These types of cooperatives can serve members, sheep and goat producers and the surrounding community through supply of hygienically safe meat.

## Individual consumers

Individual consumers are livestock market actors that buy either live animals or meat for their own household consumption. They buy live sheep and goats from traders, collectors and producers depending on where they are. They also buy raw meat from butchers and supermarkets on a kilogram basis. Individual consumers buy live sheep and goats to slaughter for religious festivals and special occasions. Though it varies with income of the household, they usually go for fattened male sheep and goats (mukit). Individual consumers in rural areas usually buy from producers. In the bigger cities, individual consumers buy from any seller.

## Hotels and restaurants

Hotels are important actors in sheep and goat value chain. From the outset, any outsider expects competition between hotels and export abattoirs for the slaughter animals. However, the two actors have different criteria in selecting animals. While export abattoirs buy young, male, uncastrated sheep and goats weighing 14–27 kgs, the hotels focus on mature female sheep and goats, since they believe that female sheep and goats have better meat yield than males (Legese et al. 2008). Hence, there is no competition between traders buying for export abattoirs and those buying for local hotels. Hotel owners buy animals either from producers and collectors in the market or they have customers (small scale traders) that supply up to ten animals a week.

Hotels use sheep and goat meat to prepare different types of dishes like fried meat, boiled meat flavoured with different spices and 'dulet'. Animals from non-marshy areas are preferred to those from marshy areas. Sheep and goats from marshy areas usually have damaged livers because of liver fluke infestation. Since liver is used to make dulet, buyers do not want to lose it and thus go for animals from non-marshy areas.

Though transactions are carried out based on the visual inspection of the quality of animals, sheep and goat traders can estimate how much meat could be produced from animals of a given size with reasonable accuracy. They consider carcass weight by estimating live weight of animals ahead of buying. For instance, based on information from a hotel manager at Shambu town, a mature ewe weighing about 28 kg can yield a carcass of 16.5 kg (7.5 kg flesh and 9.0 kg bone). That means about 58% dressing percentage. Offals, skin, legs and the head of the same animal are about 3.0, 0.75, 1.25, 1.75 and 3.50 kg, respectively.

## Butchers

Butchers are becoming important actors in the sheep and goat value chain in all the study areas. They pay attention to body condition and body size, but not coat colour and tail type when buying sheep and goats. The preference for male and female animals varies with their location. Butchers in big towns and cities such as Addis Ababa do not go for female animals. They perceive that matured sterile ewes sold after conditioning have more fat content than male animals. Since they are selling meat on a kilogram basis, the fatty meat from such female sheep and goats is very light and it is not profitable for them. Moreover, consumers do not want to buy meat from old animals since it is not as tender as meat from younger sheep and goats.

However, mature barren ewes are the most preferred type of sheep by butchers in some areas such as Horro where barren ewes are sold as matured sterile animals. This is mainly related to their lower price and higher carcass quantity (high meat yield) as compared to young growing ones. They also go for castrates because their carcass yield is higher than from intact mature and young males. Generally, castrates are not as frequently slaughtered as mature sterile ewes due to their higher price. Producers sell the mature pregnant ewes as barren. They never reveal that ewes are pregnant. The driving force behind this is the better price of sterile ewes. This warrants strong extension interventions that support the retention of these mature productive ewes in the flocks.

Butchers retail meat on a kilogram basis as take away or to be fried (roasted) and consumed in their premises. In some places, they prepare the dishes of hotels and restaurants and serve it to their customers at a lower price than in hotels and restaurants. We observed two types of butchers in Dire Dawa (major consumer of Shinelle goats). The first serves high income groups and slaughters fattened male goats. This group of slaughterhouses serves both fried and raw goat meat at their premises. The other group, located at Melka Chebtu, comprises hundreds of butchers serving raw sheep and goat meat to lower income groups. These butchers slaughter any type of sheep and goats and prices are lower than in the first group.

## Supermarkets

Meat supermarkets are mainly found in Addis Ababa. Apart from sheep and goat meat, supermarkets sell beef, chicken, pork and dairy products. They slaughter animals of different live weights depending on their customers' needs. They mainly slaughter male sheep of 40–45 kg. In addition to packed meat, supermarkets sell carcasses to restaurants and hotels on a contract basis. Their prices are usually less than from a butcher, but it increases according to carcass weights. Supermarkets charge higher prices for carcasses of larger weight. They usually sell carcasses of over 12 kg weight to restaurants. Supermarkets buy animals from small traders and live animal retailers.

Supermarkets slaughter animals in municipal slaughterhouses and do the cutting and packing at their premises. Since meat cutting and packing needs special skills, they hire one or two skilled persons (in cutting and packing for retail outlets) and let them train other workers. They have cold rooms, deboning and packing facilities.

## Export abattoirs

Most of the study areas are major suppliers of live sheep and goats to export abattoirs at Bishoftu, Mojo and Mekelle towns. Five out of the seven export abattoirs found in the country are located in Bishoftu and Mojo towns. Yabello, Doyogena, Horro and Menz supply sheep and goats to Bishoftu and Mojo export abattoirs, while the two Abergelles and Atsbi are suppliers to the export abattoir in Mekelle town (Abergelle Export Abattoir).

The major sources of slaughter animals for these export abattoirs are smallholder farmers and pastoralists. They buy slaughter animals at the factory gate. Some abattoirs such as Abergelle also collect animals from different markets. Since they are buying at the factory gate, export abattoirs in Bishoftu and Mojo areas get animals mainly through traders that collect animals through their own networks. However, they may buy from any person that can supply a minimum of 100 goats at a time. To deal with the fewest number of suppliers and to encourage supply of large number of animals per trader, some export abattoirs pay premium prices so their customers can supply thousands of animals a week.

Each of the export abattoirs slaughters some 2000 goats a day on average, and exports chilled carcasses to the Middle East and North Africa. About 80% of sheep and goats slaughtered at export abattoirs are goats and the rest sheep. Some of the export abattoirs have opened domestic outlets in Addis Ababa. However, their major outlet is the export market. To encourage their suppliers, export abattoirs provide transportation services at cost for animals that are supplied to their plants. This is using ordinary Isuzu trucks. Invoice terms vary from abattoir to abattoir, up to two weeks.

A good development in the meat export operation is the opening of market outlets for meat from highland sheep. It had not possible to export this as there were complaints about the darkening of meat colour and export abattoirs attributed this problem to the origin of the animals. However, some export abattoirs have managed to prevent the darkening problem through better chilling management and they are exporting highland sheep meat to Bahrain. They now explain that meat darkening is associated with body fat cover rather than origin of animals. The consumers in Bahrain have now developed a good taste for Ethiopian highland sheep and Luna export abattoir is exporting highland sheep meat to this market. Menz, Horro, Doyogena and Atsbi sheep can be targeted especially to this market. Currently, the export abattoirs only differentiates Menz sheep coming into the abattoir. However, traders are supplying Horro and Doyogena sheep without disclosing the source to recipients.

## Live animal exporters

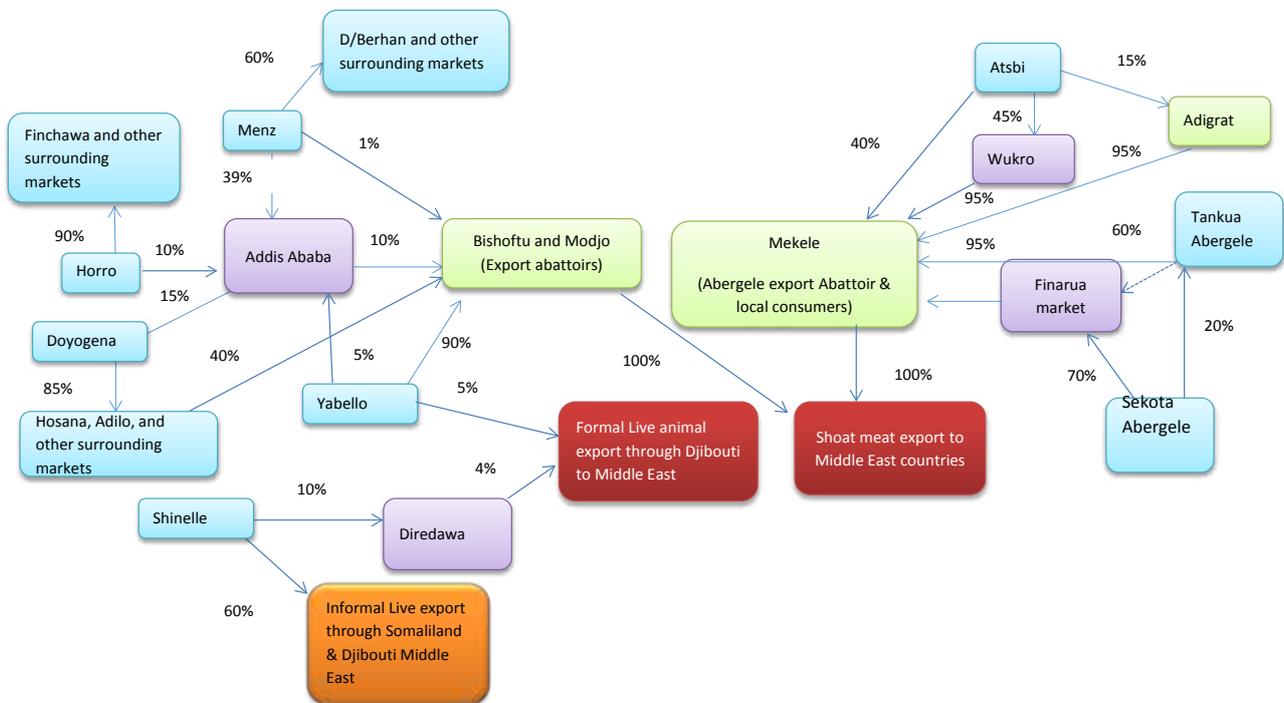
Live animal exporters export live sheep and goats mainly to Saudi Arabia during the Arefa season for sacrifice at the Haj ceremony. They need male, uncastrated sheep and goats. Unlike the export abattoirs, live animal exporters need animals of larger live weight. They collect such animals from all corners of the country and export them mainly through Djibouti. Since the temperatures in Djibouti and all along the way to Saudi Arabia are very high, live animal exporters need animals from the lowlands that can tolerate this temperature. Thus, pastoral and agropastoral areas are the major sources of animals for live animal exporters. Collection of animals from these areas is through a network of traders and collectors reaching to the remotest areas that are far from markets. Such traders and collectors also go into neighbouring countries such as Kenya in search of export quality animals. However, their work is highly seasonal since Arefa is celebrated only once a year.

There have been some efforts to export live animals from highland areas by air. This leads to lower mortality rates compared to transport by sea. The major challenge with air transport is its costs which might not be affordable for smaller operations. Such live sheep and goat export operations will enable producers to have more outlets for their animals.

# Marketing routes for sheep and goats

The study areas are sources of live sheep and goat for both domestic and export markets. Figure 6 below shows that animals flow in three major routes: the northern route that includes the two Abergelles and Atsbi; a southern route including Yabello, Doyogena, Horro and Menz; and the eastern route in Shinelle.

Figure 6. Marketing route for sheep and goats produced in the study areas.



The northern route is used to supply live sheep and goat to consumers in Sekota, Mekelle and Abergele export abattoir. The major terminal market in this case is Mekelle where urban dwellers, hotels/restaurants, butchers and Abergele export abattoir are the main consumers.

The major destination markets for the southern route are export markets supplied by the five export abattoirs in Bishoftu and Mojo areas. Addis Ababa market is also an important destination, especially for Menz and Horro sheep for which meat darkening was an issue. Traders collect sheep supplied to Addis market and sell to the export abattoirs.

The eastern route supplies animals to Dire Dawa and surrounding areas. The Shinelle area supplies only about 10% of animals entering Dire Dawa, which are either consumed there or exported to the Middle East. Most animals from Shinelle enter export markets via the informal cross-border markets in Somalia. The southern and eastern routes meet in the live export markets while the northern and southern routes join up in the meat export markets

## Marketing channels for sheep and goats

Marketing of sheep and goats in the study areas starts with the collection of sheep and goats of different classes and ages from production areas moving on to the 'end markets' (Figure 7). In the process, animals pass through different market actors before they reach end-users.

To depict the distribution of marketing costs and margins, 18 major marketing channels linking producers with end-users were identified. These different channels represent the full range of available outlets through which sheep and goats move from the different collection points in major production areas to terminal markets to meet end-users' needs.

### Major marketing channels

#### For domestic consumers

- Channel 1: Producers → Hotels → Consumers
- Channel 2: Producers → Collectors → Hotels → Consumers
- Channel 3: Producers → Consumers
- Channel 4: Producers → Producers (for breeding purposes)
- Channel 5: Producers → Collectors → Consumers
- Channel 6: Producers → Collectors → Small traders → Supermarkets
- Channel 7: Producers → Collectors → Small traders → Large traders → Retailers → Butchers/Supermarkets → Consumers
- Channel 8: Producers → Collectors → Small traders → Large traders → Retailers → Consumers
- Channel 9: Producers → Collectors → Large traders → Retailers → Butchers → Consumers
- Channel 10: Producers → Collectors → Large traders → Retailers → Hotels → Consumers
- Channel 11: Producers → Cooperatives → Consumers
- Channel 12: Producers → Collectors → Cooperatives → Consumers

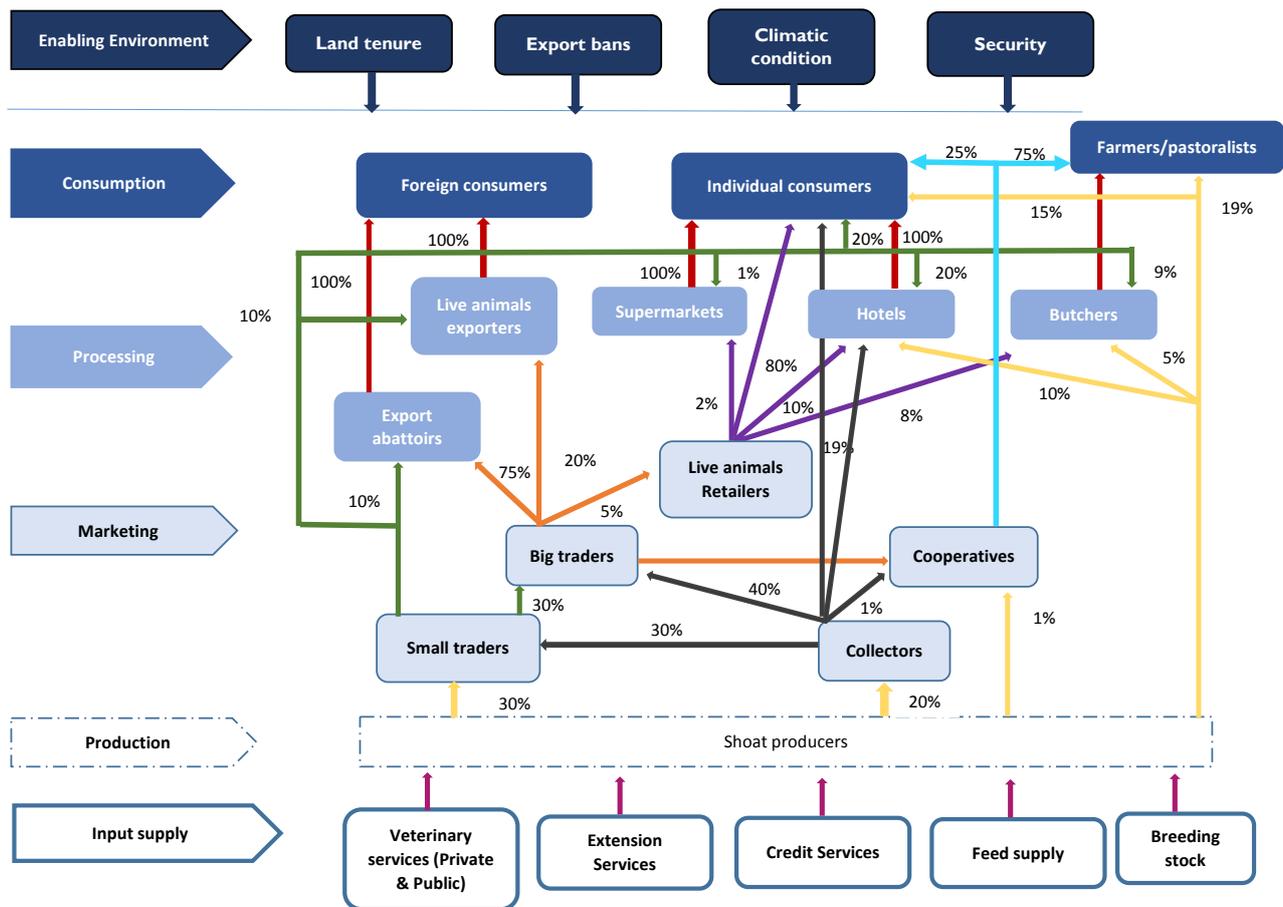
#### For sheep and goat meat exports

- Channel 13: Producers → Collectors → Small traders → Large traders → Export abattoirs
- Channel 14: Producers → Collectors → Small traders → Export abattoirs
- Channel 15: Producers → Collectors → Large traders → Export abattoirs
- Channel 16: Producers → Small traders → Export abattoirs

#### For live sheep and goats exports

- Channel 17: Producers → Collectors → Small traders → Large traders →
- Channel 18: Producers → Collectors → Small traders → Live sheep and goat exporters

Figure 7. Value chain map for sheep and goats produced in the selected sites.



### Major marketing channels for domestic consumers

- **Channel 1: Producers → Hotels → Consumers**

This is one of the shortest channels because there are no intermediaries between producers and buyers. Both parties benefit from transactions in this channel because producers can bargain their price and get margins that would normally be obtained by intermediaries. The buyer also benefits since there are few transaction costs and the margins added by several intermediaries are not included. This encourages the producers to produce more and the buyers to go for sheep and goat meat since they get the animals at relatively lower prices. Encouraging such direct transactions between producers and consumers would boost the proportion of final price of the animal that would reach producers and improve their welfare too.

- **Channel 2: Producers → Collectors → Hotels → Consumers**

In this channel, collectors are involved in selling sheep and goats to hotels, making up to ETB 50/animal.

- **Channel 3: Producers → Consumers**

This is direct sale of animals by producers to consumers. In this case, producers get all the margins since there is no intermediary to share in the middle. Consumers also benefit from such transactions since prices are not inflated due to marketing and other intermediary costs.

- **Channel 4: Producers → Producers (for breeding purposes)**

As indicated in the input supply section, farmers and pastoralists get replacement stock from the market. They usually buy from known producers to ensure adaptability of the animals to their area. Apart from lower transaction costs, the level of trust between buyers and sellers is high. Farmers and pastoralists feel comfortable to buy from other farmers and pastoralists since they can get reliable information about the animal and there is an advantage of traceability in case something goes wrong with the ownership of the animal.

- **Channel 5: Producers → Collectors → Consumers**

Individual consumers (urban dwellers) in the production areas usually buy from producers. However, when there is very high demand in the markets (especially during holydays), it is very hard to get the required types of animals only from the producers coming to the market. Since collectors have better entrepreneurship quality relative to farmers/pastoralists, they collect the required types of animals in different times of the year and avail them in better quantities than what the producers are bringing to the market. As a result, buyers revert to such sellers as long as they can get animals at reasonable prices.

- **Channel 6: Producers → Collectors → Small traders → Supermarkets**

Some supermarkets in Addis Ababa have permanent suppliers from pastoral areas. These suppliers are small traders that usually supply animals to export abattoirs. They buy bigger goats with good body condition to supply them to supermarkets. They also supply similar animals to butchers in bigger towns including Addis Ababa and Hawasa.

- **Channel 7: Producers → Collectors → Small traders → Large traders → Retailers → Butchers/ Supermarkets → Consumers**

- **Channel 8: Producers → Collectors → Small traders → Large traders → Retailers → Consumers**

- **Channel 9: Producers → Collectors → Large traders → Retailers → Butchers → Consumers**

- **Channel 10: Producers → Collectors → Large traders → Retailers → Hotels → Consumers**

Channels 7–10 serve big towns such as Adama, Bishoftu, Mekelle, Hawasa and Addis Ababa. The consumers usually get animals through retailers of live sheep and goats that buy animals either from small or large traders. In these channels, animals change at least six hands before reaching the final consumer. This means each of the actors involved in the chain takes a margin and this inflates the price of the animal/meat to the final consumers. The final price does not reach the producers. The inflated meat/animal price discourages consumers from eating meat. Such very long channels that escalate the price of the animal deter resource-poor households from consuming sheep and goat meat.

- **Channel 11: Producers → Cooperatives → Consumers**

- **Channel 12: Producers → Collectors → Cooperatives → Consumers**

In these channels (11 and 12), cooperatives are involved in sheep and goat marketing. They buy sheep and goats from their members and non-members moving from market to market. They also buy from collectors and sell to consumers. The procurement of animals and all other activities of cooperatives are run by a committee passing through a lengthy process and thus transaction costs are higher for cooperatives than for individual traders.

## Major marketing channels for sheep and goat meat exports

- **Channel 13: Producers → Collectors → Small traders → Large traders → Export abattoirs**

This is a channel whereby some export abattoirs (such as Luna) provide premium prices to large traders that can supply thousands of animals a week. Large traders in such cases establish a huge network of small traders and collectors in all corners of the country and collect as many sheep and goats as they can. Small traders hand over to

large traders since they cannot get the premium price if they directly supply abattoirs because of their smaller size of operation.

- **Channel 14: Producers → Collectors → Small traders → Export abattoirs**

This is a channel in which export abattoirs buy from any supplier that can supply at least a truck load of animals at the factory gate. In most cases, two or more small traders buy sheep and goats and share an Isuzu truck to take their animals to the abattoirs. There is no premium price in this channel since abattoirs have to deal with a number of small traders.

- **Channel 15: Producers → Collectors → Large traders → Export abattoirs**

Some large traders have a network of collectors that buy sheep and goats on commission basis and supply thousands of animals a week to export abattoirs. These traders are also buying for live animal exporters. They provide advance payment to collectors so they would collect many animals at a time. The collectors working for these traders are usually relatives and long standing customers that have built trust through honest performance with traders.

- **Channel 16: Producers → Small traders → Export abattoirs**

In some areas, small traders collect animals directly from producers (especially in highland areas) and transport the animals to export abattoirs. Since they cannot get sufficient number of animals at a time, they mostly share a truck with other traders (two or more of such traders fill the truckload) and send the animals to export abattoirs.

## Major marketing channels for live sheep and goats exports

- **Channel 17: Producers → Collectors → Small traders → Large traders → Live sheep and goat exporters**

This is the longest channel to live sheep and goat exporters with the involvement of many intermediaries. Some live animal exporters establish a collection network in different parts of the country with as many traders and collectors as they can. This is used to collect the required number of animals within a very short period of time. Since the operation is usually to collect animals that will be used for sacrifice at the Hajj ceremony, exporters have to collect huge numbers of animals.

- **Channel 18: Producers → Collectors → Small traders → Live sheep and goat exporters**

Some small traders have sufficient capital and a strong enough network of collectors to buy many animals on their own and supply them to live animal exporters. This involves more risk since the traders keep the animals themselves and mortality is high, even if the animals gain weight over the days they are kept.

## Relationships

### Vertical linkages

The general pattern in sheep and goat markets is for producers sell to different traders each time they go to the market, and for animals to change hands up to six times before they reach the consumer. Thus there is no vertical linkage between producers and buyers in the sheep and goat value chain. Even the most frequent buyers do not have any contractual agreement with producers and there is no strong relationship or trust between buyers and producers. This is mainly because the production system is not market oriented, affecting the competitiveness of the entire meat industry. As a result, there is little transfer of skills and knowledge from buyers to producers.

The relationships between collectors and small traders, hotels and butchers are based on trust, not contracts. Collectors sell sheep and goats to small traders and hotels on credit or down payment, helping all actors to expand their businesses.

## Horizontal linkages

The livestock marketing cooperatives in the study areas (especially in Yabello) are bases for horizontal linkage among producers. These cooperatives are meant to boost the bargaining power of producers and safeguard the benefit of their members.

There are some encouraging efforts by cooperatives in some of the sites. For instance, several cooperatives in pastoral areas have signed agreements with export abattoirs but cannot meet the terms of the contract and supply animals, while individual traders can. A promising move in terms of horizontal linkages is one that has been started with the members of community-based breeding program in Horro and Menz. Learning from the success stories of the Bonga farmers with similar initiative in forming producers cooperatives, farmers in these areas are trying to not only sharing breeding rams but also to join hands in marketing of their animals.

While there is vertical linkage among traders in the sheep and goat value chain, only a limited level of horizontal linkages is found among export abattoirs and small scale trades. The export abattoirs have an association, the Ethiopian Meat Producer-Exporters Association. The live animal exporters also have an association known as Ethiopian Livestock Traders Association. These associations set minimum export prices, and lobby the government for better policies and services at the airport. Export abattoirs share expensive air cargo space, but compete with each other for slaughter animals and buyers.

Horizontal linkages among small traders are in shared trucks for transportation of sheep and goats to the next market level. Since they usually collect small numbers of sheep and goats from different markets, it is not economical to hire a truck on individual bases. Thus, small traders share Isuzu trucks to transport sheep and goats to either Mojo or Bishoftu. This reduces their transaction costs and improves their efficiency.

## Processing

Sheep and goat meat processing is carried out by hotels and restaurants, butchers, households and export abattoirs. Hotels and restaurants process sheep and goat meat into different dishes for sale to customers. They mostly use trained cooks (chefs) in this process. Butchers slaughter sheep and goats either in the municipal abattoirs or backyard depending on where they are located. They sell either raw meat for consumption on the spot or as take away. They also serve fried meat or some local dishes in some places. Households usually buy live sheep and goat to slaughter at home and process it into different dishes. Export abattoirs slaughter sheep and goats, chill the carcasses, wrap them with cotton linen and transport them to the airport maintaining the cold chain. They also collect offal (internal organs) such as brain, heart, kidney, liver, testicles and penis, and freeze and pack them for export using refrigerated containers. Some companies collect intestines and process them into different products for export to the Middle East and Asia.

## Consumption

Sheep and goat meat is consumed by domestic and foreign consumers. Over 90% of the meat exported to different countries is sheep and goat meat; Ethiopian sheep and goat meat is exported mainly to the Middle East and North Africa. Because of limited processing capacity of Ethiopian meat exporters, only chilled carcasses and different organs are exported, targeting lower income populations. This is mainly because well-off domestic Arabs go for better quality meat that is either freshly slaughtered on the spot or imported from Australia and other countries.

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Domestic consumers buy either raw meat from butchers and supermarkets or buy live sheep and goats and slaughter them at home. Domestic hotels and restaurants also serve domestic consumers with different dishes made from sheep and goat meat.

Sheep and goat milk and milk products are consumed by domestic consumers. Unlike cow milk, consumption of sheep and goat milk is not common, especially in the highlands. However, people who do consume sheep and goat milk appreciate its nutritional value and consider it as a medicine. Some consumers say that children who drink sheep and goat milk will never face any health problems. Sheep and goat milk is consumed either in its fresh state (boiled whole milk) or skimmed milk. The butter can be used for cosmetic purposes or in cooking. Consumption of sheep and goat milk is common in pastoral and lowland areas. It is also consumed in some highland areas such as Atsbi.



## Summary of constraints and interventions

Identified challenges	Sites	Recommendations	Category of activity (research/development)	How to do it	Implementing bodies	Time horizon*
Input supply						
Shortage of bucks and rams	All sites	Training producers on the need for selection and maintenance of breeding bucks and rams	Development	Conduct training need assessment Preparation of training materials Conduct the training	Regional Bureaus of Agriculture (BoA)	Short
No selection of breeding bucks and rams	All sites except Menz and Horro	Introduction of community based breeding programs in the highlands strengthening traditional breeding practices in pastoral areas	Research	Follow up the application and impacts of the training	District administrations ICARDA/ILRI	
			Development	Identify the existing traditional breeding practices	Regional Research Institutes NGOs	
				Design gap filling interventions		
				-Resource mobilization, implementation and monitoring and evaluation		
Shortage of veterinary equipment and Drug supply in animal health posts and clinics	Drug shortage in Atsbi, Tanqua Abergelle, Sekota Abergelle, Menz, Doyogena, Shinelle	Allocating more funds for procurement of vet equipment in all locations since the drug revolving funds are not used for procurement of clinical equipment  Establishing drug revolving fund in locations such as Doyogena, Atsbi, Shinelle and Tanqua Abergelle where it is not yet established	Development	Taking inventory of the existing facilities and identification of gaps  Allocating resource and procuring the necessary equipment and drugs  Allocating resources and establishing drug revolving fund where necessary	Regional bureaus of agriculture Pastoral development commissions District administrations, ICARDA/ILRI	Short
	Shortage of equipment in all sites	Provision of technical support (in the establishment and smooth administration of revolving funds) to locations such as Menz and Sekota Abergelle where the regional state has already allocated money for the drug revolving fund		Organizing experience sharing tours and forums to enable Menz and Sekota Abergelle offices of Agriculture learn from experiences of Oromia region in administration of revolving fund  Provide technical back up in the process of establishing revolving funds	Regional research institutes NGOs	
				Monitoring and evaluation		

Identified challenges	Sites	Recommendations	Category of activity (research/development)	How to do it	Implementing bodies	Time horizon*
Non-functional animal health posts and poorly equipped CAHWs	Atsbi, Tanqua Abergelle and Shinelle	Provision of necessary drugs and equipment to health posts Develop, test and implement economically viable business model for CAHWs (e.g. linking them to private sector) Maintenance and rehabilitation of animal health posts and staffing to address the gap	Research	Use the above suggested procedure in the procurement of drugs and equipment Taking inventory of available and potential business models for operation of CAHWs Piloting the potential models	Regional bureaus of agriculture Pastoral development commissions District administrations ICARDA/ILRI Regional research institutes NGOs	Short
Shortage of skilled technicians and skill gap among the available technicians to address animal health problems	All sites	Training of some enlightened farmers as community-health workers and equipping them with necessary drugs and equipment Provision of on job training for technicians (easy intervention)	Development	Select interested and capable farmers to work as community animal health workers(CAHWs) Conduct training need assessment for the existing technicians Contact with training centres that have experience in training of CAHWs and provision of in-service training Conduct the training Equip the CAHWs and the existing technicians with the necessary facility and drugs Follow up the activity of the technicians and evaluate impacts of the training	Regional bureaus of agriculture Pastoral development commissions District administrations ICARDA/ILRI Regional research institutes NGOs	Short

Identified challenges	Sites	Recommendations	Category of activity (research/development)	How to do it	Implementing bodies	Time horizon*
Shortage of vaccines for CCPP, PPR, Sheep and Goat Poxes	All sites	Provision of sufficient dose of vaccines (through proper planning and consultation with NVI)	Development	<p>Conduct vaccine need assessment</p> <p>Consult and plan with NVI for proper allocation of vaccines</p> <p>Deliver sufficient dose of vaccines to the needy sites</p>	<p>Regional bureaus of agriculture</p> <p>Pastoral development commissions</p> <p>District administrations, ICARDA/ILRI</p> <p>Regional research institutes</p> <p>NGOs</p>	Short
Problem in maintaining cold chain for vaccines and provision of dead vaccines (low efficacy of vaccines)	All sites	Provision of better cold chain facilities for transportation and storage of vaccines including alternative energy sources	Development	<p>Identify specific problems with the cold chain facilities that are being used to transport vaccines</p> <p>Provision of facilities that can enable longer shelf life of vaccines</p> <p>Identify alternative energy sources (electric generators, solar energy traps, biogas etc.) that could be used in cases of power disruptions</p> <p>Allocate resources, procure the necessary equipment and distribute to needy sites</p>	<p>Regional bureaus of agriculture</p> <p>Pastoral development commissions</p> <p>District administrations, ICARDA/ILRI</p> <p>Regional research institutes</p> <p>National Veterinary Institute</p> <p>NGOs</p>	Short

Identified challenges	Sites	Recommendations	Category of activity (research/development)	How to do it	Implementing bodies	Time horizon*
Vaccines provided for unidentified strains	Tanqua Abergelle	Identification of different strains of diseases for effective vaccination example PPR	Research	Following the normal research protocol	Regional bureaus of agriculture Pastoral development commissions District administrations, ICARDA/ILRI Regional research institutes National Veterinary Institute NGOs	Short
Informal vet drug sellers availing vet drugs everywhere (regulations not enforced)	Yabello, Shinelle, Horro, Doyogena	Enforcing the government rules and regulations	Development	Identify the root causes of the problem Identify if there are gaps in the rules and regulations on vet drug import and distribution Discuss with MoA on the processes of import and distribution of vet drugs Lobby enforcement of government rules and regulations regarding veterinary services Training the community on the hazards of illegal drugs Capacitate health posts and clinics in terms of their drug holding	Regional bureaus of agriculture Pastoral development commissions District administrations, ICARDA/ILRI Regional research institutes NGOs	Medium

Identified challenges	Sites	Recommendations	Category of activity (research/development)	How to do it	Implementing bodies	Time horizon*
Lack of private veterinary service providers and vet drug shops in Atsbi and Tanqua Abergelle areas	Atsbi, Tanqua Abergelle and Sekota Abergelle	Identification of the reasons behind the none existence of private vet service providers and drug shops in the <i>woredas</i> Inspiring private sector operators interested in vet drug supply and service delivery	Development	Conduct detailed study on the root cause of the problem Taking corrective measures especially in areas of fee collection for the public veterinary service provision that is usually on free of charge basis (this prohibits people from paying for veterinary services) Inspiring youth graduates in veterinary medicine and related areas to be engaged in private service provision (This could be through arrangement of credit and availing facilities)	Regional bureaus of agriculture Pastoral development commissions District administrations, ICARDA/ILRI Regional research institutes National Veterinary Institute NGOs and others)	Medium
Land shortage for feed production	Doyogena	Introduction of high yielding improved forage crops adaptable to the area Integrating forage development with Soil and Water Conservation (SWC) activities	Research	Assess the available forage species in the area and identify species that are high yielding and most adaptable to the SWC structures of the different areas Demonstrate the use of the identified species in different sites Develop proper utilization strategy and market for the introduced forage species	Regional bureaus of agriculture Pastoral development commissions District administrations, ICARDA/ILRI Regional research institutes NGOs	Short

Identified challenges	Sites	Recommendations	Category of activity (research/development)	How to do it	Implementing bodies	Time horizon*
None inclusive land use system (sole-cropping)	Doyogena	Introducing intercropping of forage legumes with food crops	Research	<p>Training farmers in the advantages of intercropping forage legumes with food crops</p> <p>Demonstrating the practices in farmers training centres</p> <p>Provision of planting material in order to encourage farmers to use intercropping</p> <p>Encouraging farmers to sell forage legumes in the market so that they will be attracted by the sells proceeds</p>	<p>Regional bureaus of agriculture</p> <p>District administrations,</p> <p>ICARDA/ILRI</p> <p>Regional research institutes</p> <p>NGOs</p>	Medium
Seasonal availability of feeds (knowledge gap)	All sites	<p>Arranging exposure visits to areas where proper conservation and utilization of crop residues are undertaken</p> <p>Demonstration of best practices of crop residues management, storage and utilization</p>		<p>Organizing focused training for farmers on how to conserve and utilize the plentiful crop residues available in their areas</p> <p>Arranging exposure visits to areas where proper conservation and utilization of crop residues are implemented:</p> <p>Identify areas where there are best practices of crop residues conservation and utilization, identify model farmers, conduct visits, post-visit mentorship by model farmers, evaluation of visits</p> <p>Monitoring of the impact of the exchange visits</p>	<p>Regional bureaus of agriculture</p> <p>District administrations,</p> <p>ICARDA/ILRI</p> <p>Regional research institutes</p> <p>NGOs</p>	

Identified challenges	Sites	Recommendations	Category of activity (research/development)	How to do it	Implementing bodies	Time horizon*
High feed price (for concentrates)	Reported from Doyogena but relevant to all sites	Organizing farmers into cooperatives to reduce transaction costs and improve their bargaining power Improving farmers' access to credit by improving linkages between the community and the credit institutions	Development	Encourage the existing farmers/pastoralist cooperatives to enter into the feed trading business or support the establishment of feed trading cooperatives Provide technical, material and financial support to such cooperatives so that they will be able to provide their intended purposes their members	Regional bureaus of agriculture Pastoral development commissions District administrations, ICARDA/ILRI Regional research institutes NGOs	Short
Shortage of planting materials for improved forage species	All sites	Improve the dissemination of improved forage technologies, their multiplication and distribution systems Encouraging individual farmers as forage seed multipliers Develop market or forage seeds, seedlings, cuttings and tubers	Development	Assess the available forage species in the area and identify species that are high yielding and most adaptable to the area Demonstrate the agronomic practices and uses of these forage species Encourage farmers to sell these forage species and their seed in the market Train interested farmers in the multiplication of these forage species and provide them with start-up seeds Follow up the activity of seed multipliers and provide technical support	Regional bureaus of agriculture Pastoral development commissions District administrations, ICARDA/ILRI Regional research institutes NGOs	Short

Identified challenges	Sites	Recommendations	Category of activity (research/development)	How to do it	Implementing bodies	Time horizon*
Shortage of transportation facilities to reach farmers in areas far from vet clinics and health posts	All sites	Provision of transportation facilities (motor bicycle, mule or bicycle) for vet service staff	Development	<p>Taking inventory of the existing facilities and identification of gaps/needs</p> <p>Allocating resource and procuring the necessary transportation facilities (motorcycle, bicycle, mules)</p> <p>Signing agreement with district administration on the use of the facilities only for its intended purpose</p> <p>Monitoring the proper use of facilities</p>	<p>Regional bureaus of agriculture</p> <p>Pastoral development commissions</p> <p>District administrations,</p> <p>ICARDA/ILRI</p> <p>Regional research institutes</p> <p>National Veterinary Institute</p> <p>NGOs (Farm Africa, Gayo Pastoral Initiative, World vision, Care, SOS Sahel, Action for Development and others)</p>	
Lack of flexibility in the credit system, inconvenience of having group collateral and insufficient amount of credit	All sites	Facilitate a flexible and individual based credit services	Development	<p>Discussing with Oromia, Amhara Omo and Dedebit Credit and Saving Institutions on issues related to flexibility, problems of group to collateral and the loan size and finds mechanisms in which sheep and goat producers can get credit without group collateral</p> <p>Organizing experience sharing forums between the four regions strengthening and establishment of community based saving and credit system (technical and financial supports)</p>	<p>Regional bureaus of agriculture</p> <p>Pastoral development commissions</p> <p>District administrations,</p> <p>ICARDA/ILRI</p> <p>Regional research institutes</p> <p>Credit and saving institutions</p> <p>NGOs</p>	Medium

Identified challenges	Sites	Recommendations	Category of activity (research/development)	How to do it	Implementing bodies	Time horizon*
No credit service facilities and practices in Shinelle area for procurement of necessary inputs	Shinelle	<p>Establish Microfinance Institution (MFI) in the region</p> <p>Encourage and support formation/strengthening of credit and saving cooperatives</p>	Development	<p>Discuss with the regional government and find mechanisms to bring the regional MFI in to the district</p> <p>Assess the current status of saving and credit cooperatives in the area, their gap and mechanisms of building their management and financial capacity</p> <p>Where appropriate, establish new ones or strengthen the existing cooperatives</p> <p>Build their management capacity and provide them with initial capital/seed money</p>	<p>Regional bureaus of agriculture</p> <p>Pastoral development commissions</p> <p>District administrations,</p> <p>ICARDA/ILRI</p> <p>Regional research institutes</p> <p>Credit and Saving Institutions</p> <p>NGOs</p>	Short
Lack of livestock market extension	All sites	Provision of continuous and intensive training for extension agents and the district level experts about the different market actors, quality requirements of different consumers and the specific seasonal patterns of demand and supply of the different livestock species	Development	<p>Conducting training need assessment</p> <p>Development of training materials</p> <p>Selection of trainees</p> <p>Conducting training of trainers</p> <p>Training extension agents</p> <p>Monitoring and evaluation</p>	<p>Regional bureaus of agriculture</p> <p>Pastoral development commissions</p> <p>District administrations,</p> <p>ICARDA/ILRI</p> <p>Regional research institutes</p> <p>NGOs</p>	Short and medium

Identified challenges	Sites	Recommendations	Category of activity (research/development)	How to do it	Implementing bodies	Time horizon*
<b>Production</b>						
Feed shortage in drought times and lack of alternative sources during this time	Shinelle and Yabello	<p>Training extension agents and farmers in conservation of locally available feed sources and their efficient utilization</p> <p>Introduction of forage trees including acacia species in areas where water is available all year round and Cactus in dry areas</p> <p>Link forage development to soil and water conservation structures</p>	Development	<p>Assessment of the existing feed conservation practices and identification of gaps</p> <p>Training Extension Agents and farmers/pastoralists on conservation of available feed resources and their efficient utilization</p> <p>Identification of drought browse/MPT species</p> <p>Promotion of the adapted species</p>	<p>Regional bureaus of agriculture</p> <p>Pastoral development commissions</p> <p>District administrations, ICARDA/ILRI</p> <p>Regional research institutes</p> <p>NGOs</p>	Short and medium
Lack of awareness on improved sheep and goat production and management practices	All sites	<p>Training extension agents, SMS, and the community in sheep and goats production and management with special focus on feeding using locally available feed resources</p> <p>Need based capacity development</p>	Development	<p>Assessing training needs</p> <p>Preparation of training materials</p> <p>Follow up the application and impacts of the training</p>	<p>Regional bureaus of agriculture</p> <p>Pastoral development commissions</p> <p>District administrations, ICARDA/ILRI</p> <p>Regional research institutes</p> <p>NGOs</p>	Short
Lack of a practice to provide supplementary feed to sheep and goats even in drought times						

Identified challenges	Sites	Recommendations	Category of activity (research/development)	How to do it	Implementing bodies	Time horizon*
Low feed quality	Menz	Over sowing pastures with improved varieties, supplementation, developing improved feeding options	Research	Follow normal research procedures	Pastoral development commissions District administrations, ICARDA/ILRI Regional research institutes NGOs	Short
High incidence of disease and parasites (CCPP, PPR, sheep and goat pox, senorosis, ticks, lice, mengineites, hemoncus, liver fluke, kid mortality)	All sites	Expansion and strengthening of health posts Training extension agents, pastoralists, community leaders and managers of respective offices of agriculture in sheep and goat disease prevention and control Provision of regular vaccination and treatment Monitoring efficacy of anthelmintic drugs Diagnosis/identification of important diseases	Development Research	Conduct training and other interventions need assessment Preparation of training materials Conduct the training Implementing other interventions Follow up the application and impacts of the training Following the normal research protocol	Regional bureaus of agriculture Pastoral development commissions District administrations, ICARDA/ILRI Regional research institutes NGOs	Short
Loss of production (morbidity and mortality) due to frequent and prolonged draughts in pastoral areas	Yabello and Shinelle	Develop community based draught mitigation strategy Training pastoralists and DAs in draught mitigation mechanisms and herd management in these times	Research	Develop community based strategy Preparation for training (Selection of trainees, Development of training materials) Conduct of ToT Conduct community training Monitoring and evaluation of impacts		

Identified challenges	Sites	Recommendations	Category of activity (research/development)	How to do it	Implementing bodies	Time horizon*
Poor/traditional housing for sheep and goats	All sites	Awareness creation and demonstration on improved housing through training and demonstration	Development	Identify/design appropriate housing for the respective sites Demonstrate the different design through construction of model houses that will be used by willing farmers/pastoralists Encourage and support farmers/pastoralists to build their barns according to the recommended design	Regional bureaux of agriculture Pastoral development commissions District administrations, ICARDA/ILRI Regional research institutes NGOs	Medium
Low performance of local breeds, inbreeding problem	All sites	Introducing and strengthening community based sheep improvement programs Provision of training to farmers on sheep breeding	Action Research	Follow the normal procedures for action research	Regional bureaux of agriculture Pastoral development commissions District administrations, ICARDA/ILRI Regional research institutes NGOs	Medium
Marketing						
Lack of formal livestock market information	All sites	Institutionalizing the data collection and transmission from livestock markets in the study areas (making it the responsibility of district offices of marketing and trade) Linking the districts with national livestock market information system Support the operationalization of national livestock market information system	Development	Discuss with EMDTI, LMD,PRIME,LIVESTOCK AGENCY, on how make NLMIS information system functional	Regional bureaux of agriculture Pastoral development commissions District administrations, ICARDA/ILRI Regional research institute Ethiopian Meat and Dairy Technology Institute NGOs (Mercy Corps/PRIME, SNFA/LMD)	Medium

Identified challenges	Sites	Recommendations	Category of activity (research/development)	How to do it	Implementing bodies	Time horizon*
Long distance between the production areas and the livestock markets (animals should be trekked for over three hours)		Support establishment of primary livestock markets with all necessary facilities	Development	Undertaking diagnostic survey to understand the density of primary and secondary markets in the study areas  Discuss the outcome of the assessment with stakeholders  Establishing the primary markets where necessary	Regional bureaux of agriculture Pastoral development commissions District administrations, ICARDA/ILRI Regional research institutes NGOs	Medium
None uniform method of selling (weighing scale vs. visual estimation) sheep and goats	Yabello, Abergelle, Atsbi, Shinelle	Awareness creation on the advantage and disadvantages of the two selling methods,  Promoting the method of choice by the community	Development	Identification of the advantages and the disadvantages of the two selling and buying methods as well as the community preference  Awareness creation for the community on pros and cons of the two selling methods  Promotion of the methods of choice by the community	Regional bureaux of agriculture Pastoral development commissions District administrations, ICARDA/ILRI Regional research institutes Regional Bureaus of Marketing and Trade NGOs	Medium
Clan conflict on feed and water that destabilize the market in pastoral areas (especially Borana)	Yabello, Shinelle	Assessment of available feed and water resources  Training the community on efficient feed and water utilization	Research	Following the normal research protocol  Conduct training need assessment  Preparation of training materials and venues  Conduct the training  Follow up the application and impacts of the training	Regional bureaux of agriculture Pastoral development commissions District administrations, ICARDA/ILRI Regional research institutes Regional Bureaus of Marketing and Trade NGOs	Long

Identified challenges	Sites	Recommendations	Category of activity (research/development)	How to do it	Implementing bodies	Time horizon*
Shortage of supply of export quality sheep and goats to the market	All sites	<p>Training pastoralists/farmers on the export qualities, standards and how to attain it</p> <p>Support establishment or strengthening livestock marketing cooperatives to enter into sheep and goat fattening/conditioning business and link them to the market</p>	Development	<p>Conduct training need assessment</p> <p>Preparation</p> <p>Conduct the training</p> <p>Follow up the application and impacts of the training</p> <p>Identification of the existing gaps and needs</p> <p>Identification of alternative buyers and linking them with producers/cooperatives</p> <p>Resource allocation and implementation</p>	<p>Regional Bureau of Agriculture</p> <p>Regional marketing agency,</p> <p>District Office of Agriculture,</p> <p>District cooperatives office,</p> <p>District administration,</p> <p>ICARDA/ILRI,</p> <p>PRIME</p>	Short
Seasonality of sheep and goats supply and demand	All sites	Encourage and support meat processing and export to create nonseasonal demand that can also encourage pastoralists to supply animals regardless of seasons	Development		<p>Ministries of agriculture, trade and industry</p> <p>Regional bureaus of agriculture</p> <p>Pastoral development commissions</p> <p>District administrations,</p> <p>ICARDA/ILRI</p> <p>Regional research institutes</p> <p>Regional Bureaus of Marketing and Trade</p> <p>NGOs</p>	Short

Identified challenges	Sites	Recommendations	Category of activity (research/development)	How to do it	Implementing bodies	Time horizon*
Lack of vertical linkage of sheep and goat producers to the other market actors	All sites	Organizing regular multi stakeholders platform to discuss the major marketing problems, find common solutions and creating market linkage between pastoral producers and other actors	Development	Identify the major stakeholders Discuss with relevant administration bodies Define and share responsibility Organize forum Follow up implementation of assignments given to the different stakeholders	Ministries of agriculture, trade and industry Regional bureaus of agriculture Pastoral development commissions District administrations, ICARDA/ILRI Regional research institutes Regional Bureaus of Marketing and Trade NGOs	Medium
Weak horizontal linkage among sheep and goat producers	All sites	Strengthening/establishing sheep and goat producer/marketing cooperatives in terms of management capacity and market linkages and finance	Development	Conduct SWOT analysis on the existing cooperatives Design interventions Support the implementation of the designed interventions example preparation business plan, provision of management training, entrepreneurship training, financial support etc. Support the establishment of cooperatives where they are not available	Regional bureaus of agriculture Bureaus of Cooperative promotion Pastoral development commissions District administrations, ICARDA/ILRI Regional research institutes Regional Bureaus of Marketing and Trade NGOs	Medium
Flow of animals to informal cross border trade and this is limiting number of animals coming to the formal market	Yabello and Shinelle	Support implementation of policy and development interventions that can reduce informal cross border trade	Development	Identify the root causes of informal cross border livestock trade Design /implement policy and development interventions that can reduce the informal cross border trade	Ministry of Agriculture Ministry of Trade Customs and Revenue Authority	Long

Identified challenges	Sites	Recommendations	Category of activity (research/development)	How to do it	Implementing bodies	Time horizon*
Low bargaining power of producers and limited access to market information	All sites	Provision of market information to farmers and enabling them to produce market oriented products  Facilitating credit facility that can serve farmers/pastoralists when they are in need of cash for different purposes	Development	Collaborate with different development projects and support Ministry of Agriculture in proper implementation of the national livestock market information system and inclusion of the target intervention areas in data collection and their access to the system  Strengthen the financial and management capacity of rural credit and saving cooperatives so that they will be able to satisfy the credit demands of their members	Regional bureaus of agriculture Bureaus of Cooperative promotion Pastoral development commissions District administrations, ICARDA/ILRI Regional research institutes Regional Bureaus of Marketing and Trade Ethiopia Meat and Dairy Technology Institute NGOS	Short, medium and long
Transportation problem: Animals are transported from production areas to primary and secondary markets by trekking. Since there are no dedicated livestock transportation trucks, animals are transported from secondary markets to terminal markets by ordinary trucks	All sites	Lobby the government to allow duty free export of dedicated livestock transportation trucks  Encouraging the private sector operators to set up companies involved in livestock transportation using dedicated trucks  Training truck drivers and their assistants involved in animal transportation in animal handling during transportation and basic welfare issues  Enforcing regulations on animal transportation	Development	Review the current investment proclamations, rules and regulations on the incentives given investors involved in live animal trade and live animal transportation and identify policy gaps  Develop an agenda on the stakeholders meeting involving top government officials to raise the policy gap as an issue and point of government intervention  Follow up implementation of the decisions	Ministries of trade and transportation Ethiopian Investment Agency Ministry of Agriculture Regional Bureau of Agriculture Regional Bureau of Trade and Transportation Woreda Offices of Agriculture, ICARDA/ILRI Private sector operators	Long

Identified challenges	Sites	Recommendations	Category of activity (research/development)	How to do it	Implementing bodies	Time horizon*
Multiple Taxation as the animal crosses regional boundaries escalates the final price of the animal and also discourage traders without adding anything to the proportion of final price of the animal reaching producers	Doyogena, Menz, Yabello, Sekota Abergelle	Organizing stakeholders meetings involving political leaders, customs and revenue Authorities, municipality and traders to periodically discuss problems related to task and other bottlenecks hindering the smooth operation of livestock trade and suggest alternative solutions	Development	Discuss with relevant administrative bodies Identify the major stakeholders Define and share responsibility Organize the forum Follow up implementation of assignments given to the different stakeholders	Ministries of trade and Agriculture Ethiopian Investment Agency Regional Bureau of Agriculture Regional Bureau of Trade and Woreda Offices of Agriculture, ICARDA/ILRI Private sector operators	Short
<b>Processing</b>						
Low level of food preparation skill in the hotels and restaurants of the study areas	Yabello, Shinelle	Supporting the town administrations so that they will aware and force hotels and restaurants in using qualified chefs	Development	Conduct training need assessment Preparation for the training Conduct the training	Ministry of agriculture Regional marketing agency, District Office of Agriculture,	Medium
Poor slaughtering skill that spoils the quality of meat and skin	All sites	Organizing the unemployed youth in groups and train them in slaughtering techniques, linking them to municipal abattoirs	Development	Follow up the application and impacts of the training	District cooperatives office, District administration, ICARDA/ILRI,	
Backyard slaughtering of sheep and goats (threat for public health)	All sites		Development	Identify the gaps in the existing rules and regulations Enforce the rules and regulations	NGOs	

Identified challenges	Sites	Recommendations	Category of activity (research/development)	How to do it	Implementing bodies	Time horizon*
<b>Consumption</b>						
Meat price setting is not based on quality standard of the meat	All sites	Encourage quality based meat pricing Encourage enforcement of meat quality standard in the country	Development	Popularize the existing meat quality standards and train quality inspectors Enforce quality based pricing	Regional marketing agency, District Office of Agriculture, District cooperatives office, District administration, ICARDA/ILRI, NGOs	Medium
Low dressing percentage (39%) of local breed sheep and goats	All sites	Improving the genetic performance, feeding and health conditions	Research and Development	Raise awareness of smallholder farmers and pastoralists about problems of inbreeding, need for selection and use of best performing breeding stock Implement community based breeding program where applicable Train producers in improved feeding and health care of small ruminants to improve live weight at slaughter age and dressing percentage	Regional Bureau of Agriculture Woreda Office of Agriculture, ICARDA/ILRI TARI LIVES Abergelle export abattoirs	Short to medium
Red offal are condemned due to disease and parasites	Menz, Horro, Doyogena, Arsi	Disease and parasite control	Research and Development	Diagnose the problems and their root causes Take corrective measures according to the result of the diagnosis	Bako and Areka research centres Woreda Office of Agriculture ICARDA/ILRI	

NB:

\* Short-term shows interventions to be implemented within two years.

Medium-term shows interventions to be implemented in two to four years.

Long-term shows interventions whose implementation takes more than four years.

## Conclusions

Small ruminants are important sources of livelihood for millions of poor rural households in Ethiopia. They are important sources of income and nutrition for smallholder farmers and pastoralists in the selected intervention areas. Smallholder farmers and pastoralists are rearing small ruminants mainly to sell to meet cash obligations. Since they can better tolerate drought, they are more sustainable sources of meat and milk for the household.

Despite this, their productivity remains very low. This is attributed to traditional husbandry practices, and poor supply of inputs and support services delivery system. Sheep and goat production in all the sites depends on traditional breeding, feeding, health care and housing. All the producers except those in Menz and Horro are unaware of the problem of inbreeding in their herds. They keep one breeding buck/ram for about five years on average. Moreover, there is a general shortage of breeding bucks/rams since male sheep and goats are sold at the early breeding stage. Negative selection is a common problem across the sites.

The dominant feeding system in all sites except in Atsbi and Doyogena areas is grazing and browsing on natural pasture and bushes. Because of efforts to rehabilitate vegetation through enclosure, farmers in the Atsbi area use stall feeding and grazing on limited crop lands during dry seasons. In Doyogena, where the system is heading towards specialization in sheep breeding and fattening, farmers engaged in fattening provide their animals with supplementary forage and concentrates feeds. In other sites, it is rare to see sheep and goats provided with supplementary feeds; animals browse the leftovers of supplements to large ruminants. The housing system is also traditional in that large and small ruminants are kept all together in one barn. In some areas, animals share housing with people.

The condition of the animal health service varies with regions, but there are some commonalities. There is a general shortage of health technicians. One health assistant is assigned to each health post, but this is not sufficient to address the problems faced by the community for which they are expected to serve. Some sites such as Atsbi and Tanqua Abergelle closed their health posts eight years ago.

There is also a general shortage of clinical equipment in all sites. Some regions such as Oromia have established revolving veterinary drug funds and Amhara region is also on the process of establishing such a fund. However, these funds exclude clinical equipment, and all the sites need support with basic equipment both for clinics and health posts. Drug shortage is also a problem in Doyogena, Atsbi and Tanqua Abergelle, where a revolving fund for drugs is called for.

The major actors in sheep and goat value chain and sheep and goat marketing channels have been identified in this study, along with the nature of the relationship between different actors. There is no vertical linkage between producers and other actors in the market. An animal changes hands at least six times before it reaches the consumer. In general, longer chains are artificially inflating prices, and low-income groups in society struggle to afford sheep and goat meat.

There are embryonic initiatives in Horro and Menz intervention sites in organizing producers into cooperatives so that they can strategically share breeding stock and market together. Livestock marketing cooperatives in Yabello and Shinelle are now engaged in sheep and goat marketing. In other sites initiatives to strengthen the horizontal linkage

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of farmer and pastoralists are not yet in place. In general, the horizontal linkage between sheep and goat producers is weak.

There is a general increase in demand for sheep and goat meat both in the domestic and export markets. However, the supply of animals to both markets is not well strategized as production is not market-oriented. Producers sell their animals when they are in need of cash. They also sell any animals that happen to be available, rather than what the market demands. There is no formal livestock market information system that informs farmers which animals are needed, who are the potential buyers, and prices for the different class of animals, this situation is likely to continue.

Another important issue is the quality of animals supplied to the market. Export abattoirs need male, uncastrated yearlings with good body condition. They need animals that can produce carcasses with good body fat cover. However, producers supply skinny animals especially when they face shortages of grazing pasture. Export abattoirs pay lower prices to discourage supply of such animals to the market. Practically, supplementary feeding for a very short time would increase the acceptance of animals in both markets. Sheep and goat fattening by farmers in Doyogena area is a very good example of this approach.

Sheep and goats are important sources of meat and milk for rural households in the study areas. However, cultural taboos in some of the sites prohibit female household members from consuming whole sheep and goat milk. This may need efforts in creating awareness among community leaders and different influential social groups in these communities to change this scenario.

Our overall conclusion is that there is plenty of scope to improve the productivity of animals and household income and access to milk and meat in all the selected sites through careful implementation of best-bet interventions.

## References

- Abebaw, L., Alemu, T., Kassa, L., Dessie, T., Haile, A., Rischkowsky B. and Legese, G. 2013. *Assessment of Abergelle goat value chain in northern Ethiopia, the case of Wag-Abergelle*. Addis Ababa, Ethiopia: ICARDA/ILRI.
- Abegaz, S. 2002. Genetic evaluation of production, reproduction and survival in a flock of Ethiopian Horro sheep. PhD thesis. Bloemfontein, South Africa: University of the Free State.
- Anandajayasekeram, P. and Gebremedihin, B. 2009. *Integrating innovation systems perspective and value chain analysis in agricultural research for development: Implications and challenges*. Improving Productivity and Market Success (IPMS) of Ethiopian Farmers Project Working Paper 16. ILRI (International Livestock Research Institute), Nairobi, Kenya.
- Awgichew, K., Gebru, G., Alemayheu, Z., Akalework, N. and Fletcher, I.C. 1991. Small ruminant production in Ethiopia: Constraints and future prospects. In: Proceedings of the 3rd National Livestock Improvement Conference (NLIC), 24–26 May 1989, Addis Ababa, Ethiopia.
- Desta, D., Hados, H., Belay, S., Gizaw, S. and Legese, G. 2013. Value chain analysis of Abergelle goat in Tanqua Abergelle district, Central Zone of Tigray Region, Ethiopia. Addis Ababa, Ethiopia: ICARDA/ILRI.
- Dirbaba, D. and Hurrissa, B. 2011. Trends of meat and live animal export performance. Ethiopia Sanitary and Phytosanitary Standards and Livestock and Meat Marketing Program. Addis Ababa, Ethiopia.
- Donkin, E.F. 2005. Sustainable livestock development in Africa: How do we help Africa to feed itself? *South African Journal of Animal Science* 6:56–67.
- Duguma, G., Degefa, K., Jembere, T., Temesgen, W., Haile, A., Duncan, A., Rischkowsky, B. and Legese, G. 2012. *Sheep value chain analysis in Horro District of Oromia Region, Ethiopia*. Addis Ababa, Ethiopia: ICARDA/ILRI.
- Galal, E.S.E. 1983. *Sheep germplasm in Ethiopia*. Animal Genetic Resources Information Bulletin 1/83:4–12.
- Gereffi, G. 1995. Global production systems and third world development. In: Stallings, B. (ed), *Global change, regional response: The new international context of development*. New York, USA: Cambridge University Press. pp. 100–142.
- Gereffi G., Humphrey, J. and Sturgeon, T. 2005. The governance of global value chains. *Review of International Political Economy* 12(1):78–104.
- Hagos, T., GebreYowhans, S., GebreMeskel, K., Gebreyohanse, W., Zegeye, T., Assfaw, M. and Wamatu, J. 2013. Characterization of the farming and livestock production systems and the potential for enhancing livestock productivity through improved feeding in Habess, Atsbi Wonberta district, Tigray, North Ethiopia. Addis Ababa, Ethiopia: ILRI.
- Hagos, T., GebreYowhans, S., GebreMeskel, K., Gebreyohanse, W., Zegeye, T., Assfaw, M. and Wamatu, J. 2013. Characterization of the farming and livestock production systems and the potential for enhancing livestock productivity through improved feeding in Gebrekidan, Atsbi district, Tigray, Ethiopia. Addis Ababa, Ethiopia: ILRI.
- Hagos, T., GebreYowhans, S., GebreMeskel, K., Gebreyohanse, W., Zegeye, T., Assfaw, M. and Wamatu, J. 2013. Characterization of the farming and livestock production systems and the potential for enhancing livestock productivity through improved feeding in Golgonaale, Atsbi district, Tigray, Ethiopia. Addis Ababa, Ethiopia: ILRI.
- Hagos, T., GebreYowhans, S., GebreMeskel, K., Gebreyohanse, W., Zegeye, T., Assfaw, M. and Wamatu, J. 2013. Application of the Techfit Tool to prioritize feed technologies in Habess, Atsbi Wonberta district, Tigray, North Ethiopia. Addis Ababa, Ethiopia: ILRI.

- Hagos, T., GebreYowhans, S., GebreMeskel, K., Gebreyohanse, W., Zegeye, T., Assfaw, M. and Wamatu, J. 2013. Application of the Techfit Tool to prioritize feed technologies in Gebrekidan, Atsbi district, Tigray, Ethiopia. Addis Ababa, Ethiopia: ILRI.
- Hagos, T., GebreYowhans, S., GebreMeskel, K., Gebreyohanse, W., Zegeye, T., Assfaw, M. and Wamatu, J. 2013. Application of the Techfit Tool to prioritize feed technologies in Golgonaele, Atsbi district, Tigray, Ethiopia. Addis Ababa, Ethiopia: ILRI
- Hussein, N., Kumsa, S., Haile, A., Rischkowsky B. and Legese, G. 2013. Analysis of goats value chain in Yabello district of Borana zone, Southern Oromia, Ethiopia. Addis Ababa, Ethiopia: ICARDA/ILRI.
- Kaplinsky, R. and Morris, M. 2000. A handbook for value chain research. Ottawa, Canada: International Development Research Center.
- Kaplinsky, R. and Morris, M. 2002. A handbook for value chain research. Ottawa, Canada: International Development Research Center (IDRC). (Available from: <http://www.ids.ac.uk/ids/global/pdfs/VchNov01.pdf>.)
- Kidanu, E., Regassa, M., Rischkowsky, B. and Legese, G. 2013. Analysis of sheep value chains in Atsbi Woreda, Tigray Region, Ethiopia. Addis Ababa, Ethiopia: ICARDA/ILRI.
- Legese, G., Teklewold, H., Alemu, D. and Negassa, A. 2008. Live animal and meat export value chains for selected areas in Ethiopia. Constraints and opportunities for enhancing meat exports. ILRI Discussion Paper 12. Nairobi, Kenya: ILRI.
- Mekonnen, A., Addisu, J., Mengistu, S., Hassen, H. and Legese, G. 2013. Analysis of sheep value chains in Doyogena, southern Ethiopia. Addis Ababa, Ethiopia. ICARDA/ILRI.
- Mekonnen, A., Mengistu, S., Wolde, S. and Abiso, T. 2013. Characterization of the livestock production systems and the potential of feed-based interventions for improving livestock productivity in Bekafa, Doyogena district, SNNPR, Ethiopia. Addis Ababa, Ethiopia: ILRI.
- Mekonnen, A., Mengistu, S., Wolde, S. and Abiso, T. 2013. Characterization of the livestock production systems and the potential of feed-based interventions for improving livestock productivity in Serera, Doyogena district, SNNPR, Ethiopia. Addis Ababa, Ethiopia: ILRI.
- Mekonnen, A., Mengistu, S., Wolde, S. and Abiso, T. 2013. Prioritizing feed technologies using the TechFit Tool in Serera, Doyogena district, Southern Ethiopia. Addis Ababa, Ethiopia: ILRI.
- Mekonnen, A., Mengistu, S., Wolde, S. and Abiso, T. 2013. Prioritizing feed technologies using the TechFit Tool in Bekafa, Doyogena district, Southern Ethiopia. Addis Ababa, Ethiopia: ILRI.
- Negassa, A. and Jabbar, M. 2008. *Livestock ownership, commercial off-take rates and their determinants in Ethiopia*. ILRI Research Report 19. Nairobi, Kenya: ILRI.
- Negassa, N., Shahidur, R. and Gebremedhin, B. 2011. *Livestock production and marketing*. ESSP Working Paper 26. Washington, DC, USA: IFPRI.
- Purcell, T., Gniel, S. and van Gent, R. (eds). 2008. Making value chains work better for the poor: A toolkit for practitioners of value chain analysis. Version 3. Making Markets Work Better for the Poor (M4P) Project, UK, Department of Foreign International Development (DFID), Agricultural Development International: Phnom Penh, Cambodia.
- Sölkner, J., Nakimbugwe, H. and Zarate, A.V. 1998. Analysis of determinants for success and failure of village breeding programs. 6<sup>th</sup> WCGALP, 11–16 January 1998, Armidale, NSW, Australia. 25:273–280.
- Staal, S., Delgado, C. and Nicholson, C. 1997. Smallholder dairy under transactions costs in East Africa. *World Development* 25(5):779–794.
- Tefera, B., Goshme, S., Gizaw, S., Haile, A., Rischkowsku, B. and Legese, G. 2013. Analysis of sheep value chain in Menz Gera district, North Shewa Zone, Ethiopia. Addis Ababa, Ethiopia: ICARDA/ILRI.
- Teklewold, H., Legese, G. and Alemu, D. 2008. *Market structure and function for live animal and meat exports in some selected areas of Ethiopia*. EIAR Research Report 79. Addis Ababa, Ethiopia: EIAR.
- Terfa, Z.G., Haile, A., Baker, D. and Kassie, G.T. 2013. Valuation of traits of indigenous sheep using hedonic pricing in Central Ethiopia. *Agricultural and Food Economics* 1:6.
- Webber, C.M. and Labaste, P. 2010. *Building competitiveness in Africa's agriculture: A guide to value chain concepts and applications*. New York, USA: The International Bank for Reconstruction and Development/The World Bank.

- Williams T.O., Spycher, B. and Okike, I. 2006. *Improving livestock marketing and intra-regional trade in West Africa: Determining appropriate economic incentives and policy framework*. Nairobi, Kenya: ILRI.
- Wilson, D.E. and Morrical, D.G. 1991. The national sheep improvement program: A review. *Journal of Animal Science* 69:3872–3881.
- Zelalem, Y. and Haile, A. 2009. *Effect of climate change on livestock production and livelihood of pastoralists in pastoral areas of Borana, Ethiopia*. Addis Ababa, Ethiopia: FAO.