Sheep meat value chain in Ethiopia: Background proposals for the CGIAR Research Program on Livestock and Fish

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International Livestock Research Institute

P O Box 30709, Nairobi 00100, Kenya
Phone + 254 20 422 3000
Email ILRI-Kenya@cgiar.org

P O Box 5689, Addis Ababa, Ethiopia
Phone + 251 11 617 2000
Email ILRI-Ethiopia@cgiar.org

www.ilri.org

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Ethiopia is home to 77 million people; 32 million are classified as poor living on less than USD 1 per day. With a population of 48 million small ruminants (FAOStat 2010) Ethiopia has one of the largest populations in sub-Saharan Africa (see Table below). Sheep (24 million) are the second most important species in Ethiopia (CSA 2008a).

Sheep and goat populations in selected sub-Saharan African countries in 2009

Country	Sheep and goat population (000s)	Production of sheep and goat meat (1000 t)
Sudan	93,931	334
Ethiopia	47,827	124
Kenya	23,395	124
Mali	18,538	78
Uganda	9,972	35
Cameroon	8,200	32
Mozambique	5,219	26
Congo, Democratic Republic	4,935	21
Malawi	2,906	18
Burundi	1,900	2

Sheep are mostly kept by smallholders and the rural poor, including women headed households. They contribute substantially to the livelihoods of Ethiopian smallholder households as a source of income, food (meat and milk), and non-food products like manure, skins and wool. They also serve as a means of risk mitigation during crop failures, property security, monetary saving and investment in addition to many other socioeconomic and cultural functions (Tibbo 2006). At the farm level, sheep contribute up to 63% to the net cash income derived from livestock production in the crop–livestock production system. In the lowlands, sheep together with other livestock are a mainstay of pastoral livelihoods (Negassa and Jabbar 2008).

The annual meat production from small ruminants is relatively small compared to the number of heads. The average annual offtake rate and carcass weight per slaughtered animal for the years 2000–2007 were estimated at 32.5% and 10.1 kg, respectively (FAO 2009); the lowest among sub-Saharan African countries. Negassa and Jabbar (2008) reported an even lower sheep off take rate of only 7% in the Ethiopian highlands.

Reasons attributed for the apparent low productivity are: absence of well-planned/appropriate breeding programs, lack of technical capacity, inadequate and poor quality feeds, diseases leading to high lamb mortality, and underdeveloped markets in terms of infrastructure and market information. As the market systems are typically informal, individual producers have little bargaining power. Furthermore, sheep and goats generally receive little policy or investment attention.

Although technologies to address many of the most common constraints are in hand, a key constraint is the lack of models of suitable and acceptable organizational strategies for producer groups that could facilitate access to services and markets. Research is therefore required to develop and test input and market service delivery options and models, as well as the institutional and organizational arrangements that would provide sustainable delivery and uptake of the available health management, feeding and genetic improvement technologies through effective public–private partnerships in which governmental support services and private partners are integral part of value addition process.

Why this value chain?

Demand and prices for sheep and goat meat show an increasing trend due to urbanization and increased income in the cities and increased demand from the Gulf countries. From 2000 to 2008 the price of live sheep and sheep meat increased by 157%; the increase for live goats and goat meat was slightly lower at 107% (FAOStat 2010).[1]

A structural model of the Ethiopian livestock sector estimates the total consumption of sheep and goat meat at 91,200 and 91,600 t in 2010 which exceeds the estimated sheep and goat meat production (124,000 t) by 47%. The same model predicts a per capita annual growth rate in sheep and goat meat consumption from 2010 to 2020 by 3.4% and 1.3%, and an overall change of 41% and 14%, respectively (Fadiga and Amare 2010).

It is evident that the increasing demand for sheep meat cannot be met with the current inefficient production and marketing systems. Although Ethiopian sheep breeds are well adapted to the existing production environments, their full production potential is obviously not being realized due to a combination of constraints. Many of these constraints have already been studied and technologies to overcome some of them have been developed. However, their uptake and wider adoption remains low, thus further research and dissemination of the knowledge and technologies are still required.

In our view this situation provides good opportunities to increase sheep meat production and ensure that this will benefit poor rural producers, both men and women. The following Table summarizes the reasons for proposing the sheep meat value chain as a focus value chain for our proposal.

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1. ILRI data.

Criteria and rationale for choosing Ethiopia

Criteria	Rationale for choosing Ethiopia
Growth and market opportunity	Huge and increasing demand for sheep meat within and outside the country reflected in increasing prices
	Ethiopia's strategic location promoting exports to Middle East markets
	Current annual livestock and meat export potential is estimated at USD 136 million; however, the realized export earning over the past 15 years to 2003 averaged only to USD 2.5 million.
	Abattoirs in Ethiopia operate only at 40% of their capacity (information from Elfora)
Pro-poor potential	High potential to raise the low flock productivity and offtake rate in smallholder flocks
	The majority of rural poor in Ethiopia depend on sheep (and goat) production
	Both men and women are involved in sheep production with different tasks and decision making power
	Good income opportunity for women headed households
Researchable supply constraints	Many market agents along the value chain (input/livestock traders, meat processors and transporters etc.) provide potential as well as challenge for cooperation
	Negative selection of breeding rams for lamb growth as fast growing lambs are sold first and inbreeding due to small flock sizes
	Shortage and fluctuation in quantity and quality of feed supply
	Poor animal hygiene and diseases (high lamb/kid mortality, PPR, CCPP)
	Lack of business enterprise production strategy
	Lack of sustainable organizational structures for breeder and producer groups in order to facilitate their access to affordable breeding animals, animal health care and efficient market services
	Poor market infrastructure and institutional arrangements (underdeveloped marketing system) resulting in high price difference between rural and urban markets, high number of middlemen and thus small producer margins
	Poor input supply system and limited support services (extension and credit systems)
	Insufficient supply of abattoirs with sheep meat (number, weight, age and body condition)
	Ineffective knowledge management systems, in particular knowledge sharing between producers and scientists, to enhance uptake of proven technologies
Enabling environment	Increasing international interest and support from donors for developing the livestock sector in Ethiopia (a number of livestock development projects funded by USAID)
	Various projects/initiatives on-going or planned and competent organizations/institutions
	Commitment by Government of Ethiopia to improve policy environment
	On-going improvement of paved road network which will enhance market access
Existing momentum	ILRI and ICARDA, together with their key partners, bring in a rich combination of technical and practical experiences on developing country and low-input mixed crop–livestock systems, and a history of having successfully worked together in related research, on which to build on
	Very few other global organizations combine development with innovative and adaptive research
	Both centres have experience with value chain development in small ruminants and other livestock production systems
	A number of ILRI and ICARDA partner organizations are already active in Ethiopia or are partners in new project proposals, such as the Ethiopian NARS, BOKU-Vienna, University of Goettingen, and EMBRAPA
	ILRI provides an excellent infrastructure and is partner in complementary project like IPMS;[2] two projects, SPS-LMM and ESGPIP[3] funded by USAID provide opportunities for linkages and knowledge sharing

2. IPMS = Improving Productivity and Market Success of Ethiopian farmers.
3. SPS-LMM = Ethiopian Sanitary and Phytosanitary Standards and Livestock and Meat Marketing Program; ESGPIP = Ethiopian Sheep and Goat Productivity Improvement Project.

Research and supporting actions

Further discussion with stakeholders along the value chain are required to refine and prioritize the major barriers and opportunities for increasing sheep flock productivity and meat production and supporting research and development actions. The constraints listed in the above Table are based on the experiences of an on-going ICARDA/ILRI/BOKU Community-based Sheep Breeding project and the ILRI IPMS (Improving Production and Market Success of Ethiopian Farmers) project.

In common with many other livestock production systems in the developing world and constraints identified in other key value chains, major constraints at input and production level include lack of access to breeding rams with proven genetic attributes (breeding value), inadequate feeding at critical production stages and poor healthcare, inefficient healthcare services (disease control and prevention measures), lack of access to inputs and supportive institutional/organizational and knowledge systems. This preliminary analysis underlines the need for the platform research approach described in an earlier section of this proposal that will allow the program to search for technology solutions across the proposed value chains.
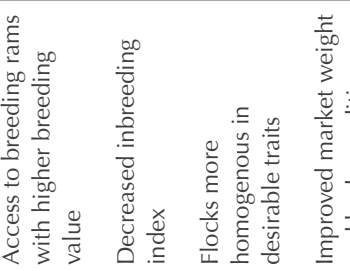
Not surprisingly, the share of the retail value captured by sheep producers is small and could be increased by developing and organizing the sheep markets in all important aspects—market access, structure, and transparency in transactions and price information. One root of the problem is the failure of producers to coordinate and collaborate with each other to increase their bargaining power by supplying more attractive quantities to the buyers at the time of peak demand. But it is difficult for such collective action to spontaneously occur in these traditional rural communities. Innovations in rural organizations and cooperation among different market players (producers, traders, fatteners, abattoirs, and retailers) are needed. The following Table summarizes the key development challenges, knowledge gaps and areas of intervention envisaged for the value chains in pilot areas of Ethiopia.

Variable product quality of both live animals and meat are additional drawbacks to satisfying qualities that are demanded by the domestic and export markets; although both offer better prices they are also increasingly demanding higher product safety and quality consistency. For example, the export markets which mainly trade in sheep carcasses demand more rigorous meat inspection systems, thus cold chains are prerequisites to accessing such markets. Combined, these constraints limit the sheep producers' capacity to maximally benefit from their sheep and to further invest in this industry.

Studies by IPMS and the community-based sheep breeding project across different regions in Ethiopia showed that women share responsibilities with men in the production of sheep and are mainly responsible for feeding, maintaining hygiene and day to day management. Children are often responsible for supervising the grazing during rainy season. However, men dominate the marketing of sheep and control the income from sales. It was found that the workload of women and children may increase due to market-oriented development of the commodity, but men tend to benefit more in terms of income obtained.

Opportunities and constraints in the sheep meat value chain in Ethiopia and the research and development actions to overcome them

Value chain components	Developmental challenge	Researchable issues and Supporting actions	Indicative partners[1]	Outcomes
Inputs and services	How to organize efficient and sustainable input services for smallholders (independent from development projects in the long term)? How to organize long-term functional and affordable animal health delivery services for remote areas?	*Researchable issues* What is the most efficient strategy/ model for organizing input delivery systems for smallholder: Required partnerships (government, private partners, development projects) Required investments by smallholders (micro-credits) Required supporting training/extension program for smallholders Supportive, policies, organizational and institutional arrangements for improved sheep production Differences in men's and women's and poor and rich households' access to inputs, preference for inputs, use of inputs, roles in input supply. *Supporting actions* Assess current institutions and policies; identify gender sensitive and equitable options to better support breeding programs, resource management and marketing Undertake actor analyses and evaluate the existing animal health services (vaccines, and drugs), delivery systems (including private) and design efficient and affordable delivery options systems to cover in particular women and the poor, including training community basic veterinary workers and linking them with governmental veterinary services Assess the existing forage species, their potential in the various production systems and design forage seed/seed material delivery systems and the agronomic practices that would ensure sustained yields Design adequate training programs for male and female sheep owners Facilitate linkages to micro-credit and other financial services operated through other partners with a focus on women and poor	Research NARS-Ethiopia IPMS ESGPIP Supporting actions, in particular organizing input delivery: Private veterinarians or governmental services Seed companies Feed enterprises Micro-credit schemes	Inputs and services (including vaccination campaigns) accessible and delivered in time to male and female smallholders Increased knowledge of male and female smallholders about useful inputs and services Functional institutions and conducive policy environment

Value chain components	Developmental challenge	Researchable issues and Supporting actions	Indicative partner	Outcomes
Production	How do we increase sheep meat production and flock productivity to meet current and future market needs?	*Researchable issues*	Research	Access to breeding rams with higher breeding value
		What design of breeding programs and strategies would be appropriate for the existing and emerging production systems/ environment (incl. appropriate data recording and feedback system)?	NARS-Ethiopia BOKU-Vienna INTA	Decreased inbreeding index
	How to avoid inbreeding and negative selection of rams?	What are the best strategies to reduce mortality, particular in young animals and avoid decreased productivity caused by diseases?	CIRAD	Flocks more homogenous in desirable traits
	How to overcome seasonal or continuous gaps in feed quantity and quality?	How to design optimized feeding systems?	IPMS	Improved market weight and body condition
	Which preventive measures and treatments are essential to increase productivity?	Are there options to introduce forages and the economics of their production?	ESGPIP	Reduced mortality
			Supporting actions	Increased offtake rate
		Are there differences among men's and women's motivation to engage in the enterprise, in anticipated benefits, roles in production, skills/capacity needs, sources of knowledge/technology, influence of policies and institutions?	MoARD-Ethiopia IPMS	Increased meat consumption in the households
		Are there any aspects of production that are hard for women or socially discouraged?	ESGPIP[2]	
		What changes are required in sheep management systems to overcome specific constraints that women face, e.g. herding?		
		How will improved resource use and sheep productivity affect household livelihoods, especially women and children taking into consideration the spillover into other parts of the farming system?		

Value chain components	Developmental challenge	Researchable issues and Supporting actions	Indicative partners	Outcomes
		Supporting actions		
		Implementing best bet breeding programs, incl. performance recording, selection strategies to enable sustained genetic improvement in the key breeding objective traits, while maintaining reasonable levels of genetic diversity, including minimizing inbreeding and its effects at herd and at population level.		
		Developing and facilitating institutional (e.g. by-laws and guidelines) and organizational arrangements through farmer group approaches and collective action		
		Optimize animal health and disease control, through		
		investigating the epidemiology of parasites and pathogens, and designing preventive/control strategies in accordance.		
		promoting simple preventive measures such as access to adequate feed, clean water, clean housing, spraying/dipping		
		Optimize feeding systems and increase feed resources, in particular		
		Testing forages varieties (food-feed varieties) and integrate them into cropping systems		
		Optimizing use of currently available feed resources, (strategic supplementation, feed preservation, purchase of most limiting nutrients).		
		Promoting feed processing options (simple hand chopping; village based motor-driven choppers; commercial but decentralized feed processing units)		
		Planting fodder trees in private and community managed plots		

Value chain components	Developmental challenge	Researchable issues and supporting actions	Indicative partners	Outcomes
Transport and processing	How to deliver reliable quantities of more homogenous, safe and quality products (meat or live animals) from smallholder systems? How to increase the supply of quality skins (slaughter at both private places and abattoirs)	*Researchable issues* Is a carcass grading system required and what would be an appropriate grading and pricing system? Does the market prefer/segregate carcass parts or cuts and if so, how can this be mainstreamed in the breeding strategy and pricing system? How to reduce meat quality losses caused by transport and inadequate handling of animals? How to avoid darkening of meat from highland sheep impeding their export? What are the causes of most common pre and post mortem skin defects? Is there any difference in quality of products supplied by men and women? Are there differences in access to transport and processing services? *Supporting actions* Establish grading / quality systems for carcasses if appropriate Capacity building on transport, handling and slaughter of sheep with all involved stakeholders Study factors causing pre- and post mortem skin defects and design handling and processing strategies to improve skin quality accordingly Design of traceability system for sheep meat (longer term)	Research NARS-Ethiopia IPMS SPS-LMM *Supporting actions* MoARD-Ethiopia and SPS-LMM for sanitary regulations, e.g. meat inspection Abattoirs (Elfora) Butchers (meat shops)	Meat quality criteria defined with traders and consumers Higher quality carcasses and skins produced Higher prices and incomes for sheep producers

Value chain components	Developmental challenge	Researchable issues and supporting actions	Indicative partners	Outcomes
Marketing	How to organize markets (both demand and supply) for equitable benefits along the chain? How to ensure access for the Ethiopian people to safe meat at an affordable price?	*Researchable issues* Market/Consumer demands: what do markets pay for (breed, region, specific liveweight or size, quality)? Market structures: relations/transactions between local, regional and export markets including transboundary trade issues (e.g. food safety) to be addressed for increasing exports Market access: is it preferable to organize the farmers for accessing markets or to improve marketing systems and infrastructure (e.g. infrastructure of markets)? Market transparency: what market information is available / needed, and how could it be better disseminated (information systems)? Differences in men's and women's access to markets and market information Intra-household decision making on sales (where, when, how many) and control of benefits Are there any aspects of trading that are difficult or socially discouraged for women and poor? How can women owning sheep better participate in, and benefit from small ruminant markets?	Research NARS-Ethiopia IPMS Supporting actions MoARD-Ethiopia and USAID-SPS-LMM for regulatory framework ELFORA-Ethiopia (abattoirs) and trade organizations for defining product standards and arranging marketing channel	Increased margins for smallholders in the value chain Sales of sheep with appropriate weight and size according to market demands Organized marketing of sheep at good prices Sheep owners well informed about marketing opportunities Abattoirs operate near their full capacity

Value chain components	Developmental challenge	Researchable issues and supporting actions	Indicative partners	Outcomes
		Supporting actions		
		Analyze the market structure, constraints and opportunities for sheep and mutton, covering all agents and actors involved in sheep marketing including traders, middlemen, transporters and exporters.		
		Evaluate and test options for coordinating and transporting bulk group sales of animals.		
		Test marketing arrangements through breeders cooperatives		
		Assess the performance of different marketing services including provision of market information, facilitation of market linkages, provision of marketing facilities, transport of sheep and mutton and identify ways of improving them		
		Identify and respond to demand-driven market opportunities for value addition, through improved product quality		
		Facilitate linkages to market information systems operated by other partners.		
		Gender-disaggregated analysis of market and services access		

Value chain components	Developmental challenge	Researchable issues and supporting actions	Indicative partners	Outcomes
Crosscutting issues	How to organize a value chain to considerably increase the output – what are essential components and partnerships?	*Researchable issues* Impact of value chain development on workloads and on control over the income within the household Who benefits from new technologies in households and communities (equity)? What are incentives for various key actors (farmers, input providers, traders and animal health providers etc.) to invest in small ruminants? And how can these actors cooperate? Is it feasible to design (a) common model(s) for value chain development through analysis of the lessons learnt from the diverse value chains, in particular comparing the SR value chains in Mali and Ethiopia? *Supporting actions* Characterization of complete value chains and production systems in the target locations (own surveys and other studies) at the start Develop indicators of success Capacity building at all stages Compare the approaches applied for the different value chains Develop an easy monitoring system for home consumption of meat	Research NARS-Ethiopia, IPMS Boku, Vienna Supporting actions MoARD-Ethiopia IPMS ESGPIP	Contribution of sheep production to livelihoods increased considering tangible and intangible benefits

1. Compare Table below
2. The project was supposed to end in 2010 but it may be extended for one or two more years

Geographic focus

Diverse sheep breeds and ecotypes are kept in different regions and ecologies—from the mountainous highlands to the arid pastoral lowland areas. Nine indigenous sheep breeds have been identified by phenotypic and molecular characterization methods (Gizaw et al. 2007). The community based sheep breeding programs is being implemented in four areas in Ethiopia, namely Horro, Bonga, Menz and Afar. Based on the project related studies and the experience during the last four years we are proposing to initiate sheep production value chains for Horro, Menz and Afar sheep in their home areas of the same name.

Human population in Menz area is estimated at 324,720. However, the breed is being used out of its original home region by an estimated 2 million people and is widely distributed. Horro sheep are reared by about 6,874,480 people. Population of Afar sheep is estimated at 2,499,640 and is kept by 1.4 million Afar people and other neighbouring communities (CSA 2008b).
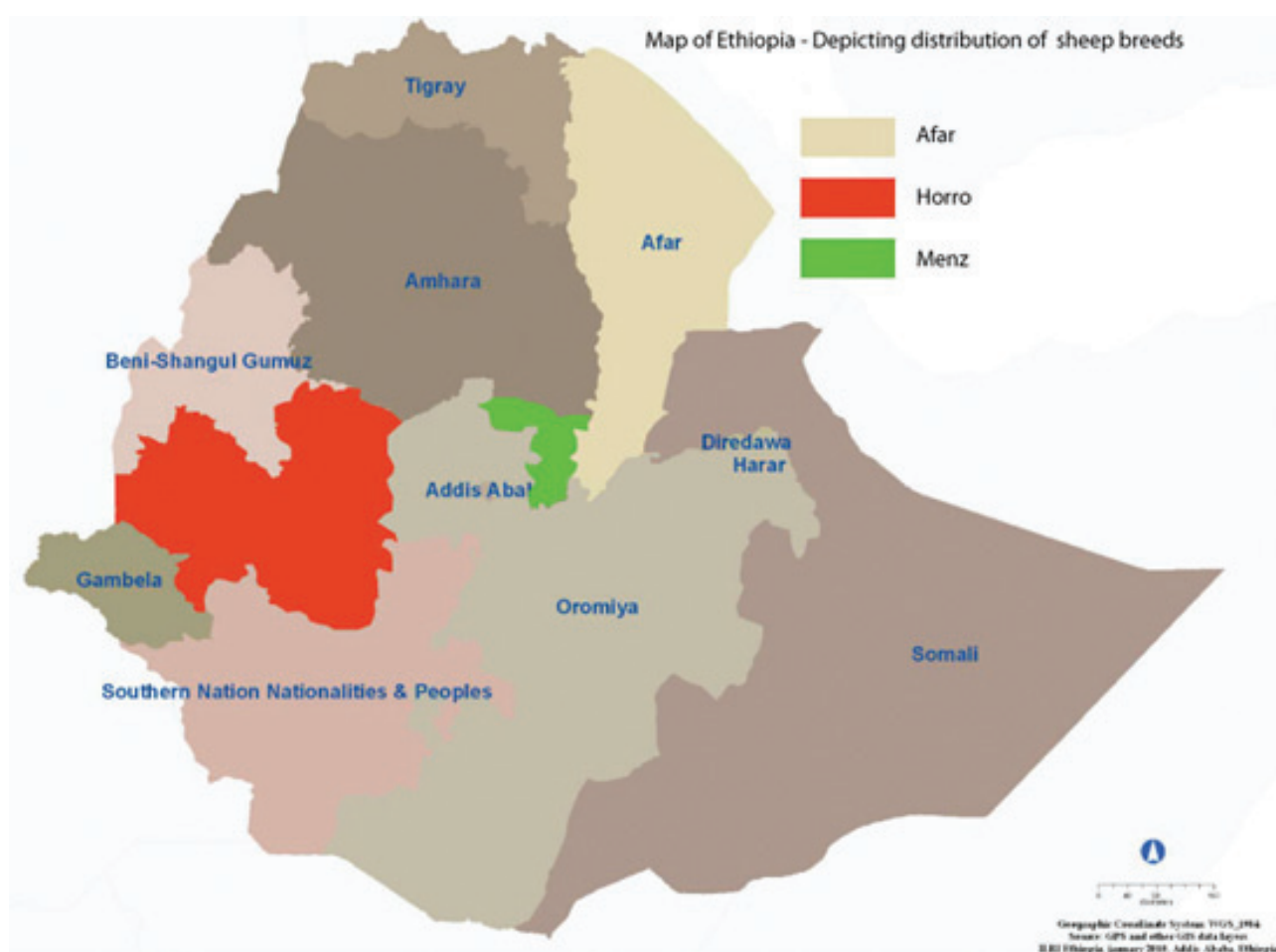
Map of Ethiopia depicting Horro, Menz and Afar region

The arguments to select Horro and Menz area as pilot sites for value chain development include:

- Horro, Menz and Afar sheep are the most populous breeds in Ethiopia (population is estimated at more than 2 million for each breed) with a wide area coverage
- Pilot community based breeding programs have been established in two communities of each region that can be used as learning and demonstration sites
- Regional research centres with well-educated and interested staff are found in Menz and Horro region

- Reasonably good information is available on the breeds and the production systems as base for future research and development work[4]

- The three areas are comparatively easy accessible

- Afar and Menz sheep are major contributors to the households' incomes: Menz is a highly degraded highland area mostly not suitable for other crop and livestock production. Thus, there is trend towards specialization in sheep production and this will help us to achieve impact. Afar sheep are kept in the lowlands by pastoralists, livestock production being the mainstay of the population. Horro region is characterized by crop–livestock production systems with more diverse farming activities; nevertheless the communities also depend to a relatively large extent on sheep for livelihood and as security measure against crop failure.

Based on an ILRI classification of recommendation domains within Africa (Omolo et al. 2009) the three sites represent three different domains: Horro is located in an area mainly characterized as having high agricultural potential, good market access and low potential density, while Menz area shows low agricultural potential, good market access and high population density and Afar low agricultural potential and population density with partly good and partly poor market access. Thus, this diversity will enable across site learning and a more precise definition of recommendation domains for certain technologies.

Potential for impact

The general principles of the value chain approach that we intend to apply in this Program and the envisaged impact pathway were explained earlier in the proposal. A key principle is to enhance the competitiveness of all value chain components, combining research and development activities in strategic partnerships. This is considered as the most promising option to achieve the envisaged impact—higher sheep meat production levels and increased living standards of the involved households. The pathway to impact will be through increasing offtake rates from sheep flocks and easier access for smallholders to markets with higher producer margins, resulting in higher incomes for rural households and thus enabling the required investment in sheep production to further enhance production levels.

However, developing a comprehensive strategy and a model approach for organizing the sheep meat value chain will be a challenge—one that has not been achieved for smallholder systems in developing countries up to now. Research and development projects tend to focus on individual components of the value chain or specific technologies only. Our approach aims at integrating research and development efforts to provide solutions and strategies to overcome the existing system deficiencies *along the whole value chain* in a comprehensive and synergistic manner. The level and scale of impact will depend on our ability to build the essential partnerships along the value chain and attract investments from development partners.

Based on simulation models for the breeding program (Tadele et al. 2010) and current productivity levels it is expected that by 2017 the number of weaned lambs per ewe can be increased by 10% and yearling weight can be improved by about 20% (from about 24 kg to 27 kg per year on average across the three regions) which would result in an increased annual production per ewe by 20% (an increase of about 7 kg per ewe and year). Flock sizes per household are relatively small: 15.2 productive ewes in Menz, 5.6 in Horro and 10 in Afar.

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4. The Community based Sheep Breeding Project focuses on genetic improvement and related aspects. Initially other constraints such as feed availability and quality and animal healthcare and access to efficient markets that are equally important were not addressed. Acknowledging the importance of these constraints for achieving impact, during its last year the project has started to introduce interventions addressing some of these constraints.

The number of households that will benefit from the focus on this value chain, and thereby the per cent increase in sheep meat production, will ultimately depend on the investment that can be made by the Program and its partners. About 1.46 million households keep Horro, Menz or Afar sheep in Ethiopia. If we assume that 5% of these are impacted by this Program, through activities that strengthen the sheep value chain, this means that some 70,000 households will enjoy enhanced livelihoods, and this will in result in production of an additional 5,000 t of sheep meat annually.

In contrast to the dairy, pig and fish value chains we expect only a small increase in home sheep meat consumption of the rural households: sheep meat is not consumed on a regular basis in rural communities. Instead the increased sheep meat production will benefit urban consumers and export markets. The major impact of developing the value chain on livelihoods of rural smallholders and poor households is expected to be achieved through increased income from sales.

Inputs and services / Production	Intermediate outcome	Ultimate outcome	Impacts
	• Priority VC constraints lessened or resolved	• 100% sheep meat producing households in three pilot regions directly participating in the program	• 5000 tonnes additional sheep meat produced annually
	• Partnerships with major stakeholders established and additional investments aligned	• Increased meat production (plus 72t) in 1000 households which is efficiently marketed	• 70,000 households involved in the value chain program improve their standard of living
	• Flock productivity increased by 20%		

Components	Value chain outcomes
Inputs and services	• Inputs and services (including vaccination campaigns) accessible and delivered in time to male and female smallholders • Increased knowledge of male and female smallholders about useful inputs and services • Functional institutions and conducive policy environment
Production	• Access to breeding rams with higher breeding value • Decreased inbreeding index • Reduced mortality • Increased offtake rate • Improved market weight and body condition • Increased consumption of ASP in the households through increased income
Processing	• Meat quality criteria defined with traders and consumers • Higher quality carcasses and skins produced • Higher prices and incomes for sheep producers
Marketing	• Increased margins for smallholders in the value chain • Sales of sheep with appropriate weight and size according to market demands • Organized marketing of sheep at good prices • Sheep owners well informed about marketing opportunities • Abattoirs operate near their full capacity

Summary of indicators along the impact pathway that we believe can achieve these impacts.

Stakeholders in Ethiopia and their possible role

Stakeholder	Type	Role	Remark
ELFORA Agro-industries PLC.	Private	Could create market outlet for the community sheep and export of mutton, live animal and skins	Consulted
Luna	Private Abattoir in Modjo	Exports small ruminant meat to the Middle East; ILRI has been working with Luna in IPMS and have developed a strong linkage	To be consulted
Improving Productivity and Market Success of Ethiopian farmers (IPMS)	ILRI project	Cooperate on the whole sheep value chain development	Consulted
Ethiopian Institute of Agricultural Research (EIAR)	Government	Implement the field research activities in Afar	Consulted
Amhara Regional Agricultural Research Institute	Regional Agricultural Research Centre, Government	Implement the field research activities in Menz	Consulted
Oromia Agricultural Research Institute	Regional Agricultural Research Centre, Government	Implement the field research activities in Horro	Consulted
USAID–Ethiopian Sanitary and Phytosanitary Standards and Livestock and Meat Marketing Program (SPS-LMM)	NGO	Cooperate on marketing of mutton, sheep, skin	To be consulted
USAID–Ethiopian Sheep and Goat Productivity Improvement Project (ESGPIP)	NGO	Cooperate on breeding at field level	To be consulted
Pastoral Community Development Program	Government-project	Research and tailored training in Afar	To be consulted
Ministry of Agriculture and Rural Development (MoARD)	Government	Support the field activities in all the project sites	Consulted
Netherlands Development Organization (SNV Ethiopia)	NGO	Experience sharing on value chain development	Synergies to be discussed and agreed upon

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