Report from a meeting to develop an impact pathways narrative for the Ethiopia Small Ruminants Value Chain

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Background to the problem context and underlying causes

Low productivity and the resulting insufficient meat supply are the most important bottlenecks to the development of the Ethiopia small ruminant value chain. The annual meat production from small ruminants (154,000 t) is relatively small compared to the large number of animals (50 million). Consequently, the supply of sheep and goat meat per capita and year is low (1.6 kg) and even lower than the supply of beef (4.8 kg\(^1\)). Recent estimates of the average annual off-take rate from sheep and goat herds for the years 2008 to 2010 indicate values between 30% and 38% which confirm the apparent low herd productivity. 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. A structural model of the Ethiopian livestock sector predicted 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\(^2\).

The increasing demand for sheep meat cannot be met with the current inefficient production and marketing systems. Although Ethiopian sheep and goat breeds are well adapted to the existing production environments, their full production potential is obviously not being realized due to a combination of constraints. Reasons attributed for the apparent low productivity are: inadequate and poor quality feeds, high incidence of diseases leading to high mortality, in particular in young animals, absence of organized breeding programs for smallholders, underdeveloped markets in terms of infrastructure and market information, and a lack of technical capacity in the research and extension support system. As the market systems are typically informal, individual producers have little bargaining power. Furthermore, sheep and goats have received less policy or investment attention than the beef and dairy sector.

Major diseases identified through the rapid assessments at the value chain sites are contagious caprine pleuropneumonia (CCPP), peste des petits ruminants (PPR), goat pox, coenurosis, trypanosomiasis and parasites including ticks, lice, mange mites and haemonchus. The high disease and parasite prevalence is exacerbated by the unreliable and inadequate access to quality and effective vaccines; vaccines are scarce, are often for the wrong strains or the cold chain is poorly managed affecting the quality of vaccines eventually delivered to smallholder farmers. Also, the regulations/laws for managing the distribution of veterinary products are poorly

\(^1\) (FAOSTAT, 2012; accessed June 30th 2014)
enforced and there is an overall poor oversight over private sector actors in the veterinary inputs distribution chain. The low productivity problem is also entwined with farmers’ poor access to public sector service provision. For instance, there is an over focus on producing high-end veterinary personnel instead of the lower level trained animal health workers; yet staff retention at the high levels has continued to fall and has played a major role in the lack of adequate quality skilled public animal health services at the grassroots. Moreover, veterinary service provision and supply of animal health innovations are non-equitably distributed across the country and not sufficiently informed by the geographical distribution of common diseases.

There are no organized breeding programs for smallholders; most public investment has gone into poorly planned crossbreeding programs with undefined target genotypes which did not leading to a sustainable access to improved genetic material. Other factors responsible for the shortage of quality breeding animals in smallholder herds include: 1) farmers depleting their breeding stock through early and distress sales, 2) poor selection of animals for breeding and 3) small herd size leading to inbreeding. Low productivity is also a function of the shortage of quality feeds due to seasonality and strategic use of feed supplementation. There is little integration of forage production into cropping systems which is also limited by farmers’ lack of forage planting materials. Finally, low productivity is a result of smallholder’s lack of adequate knowledge and skills of improved goat husbandry and management.

Another major contributor to the poor performance of the Ethiopian Small Ruminant value chain is the lack of innovative institutional arrangements to enhance poor farmers’ access to input and output marketing services. Several underlying causes are cited. First, the value chain is characterized with poor marketing infrastructure, ranging from a lack in physical structures, poor transportation facilities, to the absence of good quality communication infrastructure, rendering most poor livestock farmers highly inaccessible and unaware of competitive market opportunities. And in combination with other factors, the poor performance of the marketing function has been responsible for farmers receiving non-competitive prices and low market margins. Additional factors include the lack of adequate access to market information to enable farmers make informed marketing decisions, the weak linkages between farmers and other value chain actors and the inconsistent supply and demand for small ruminants products. Generally, the relaxed policy and regulatory framework is equally responsible for the overall poor performance of the overall value chain. Market regulations are often not fully implemented—which encourages unlicensed traders and brokers to freely operate. Non-regulation of the flow of animals across boarders and, clan and tribal conflicts which frequently destabilize markets, reduce poor farmers’ participation in formal markets.
Livestock and Fish Program in Ethiopia

Small ruminants value chains vision and long term goals

The vision for the Livestock and Fish CGIAR research program in the Ethiopia small ruminant value chains is:

“By 2023, people in Ethiopia benefit from equitable, sustainable and efficient sheep and goat value chains: their animals are more productive, livestock markets work for producers, consumers and business, there are more, more affordable and healthier small ruminant products, and the livelihoods and capacities of people involved in the whole chain are improved.”

To meet this vision the following goals will be met in interim:

1. Smallholder households have reliable access to inputs and services through innovative input distribution systems
2. Smallholder households have reliable access to feeding, breeding and animal health technologies for improved small ruminants productivity

Smallholders have access to inclusive, reliable and well-coordinated marketing arrangements for increased household income from meat production. The ultimate outcomes of the program’s activities will include increased access to livestock inputs and outputs services which will enhance the productivity of small ruminants’ production leading to an increased volume of high quality products reaching the markets. Besides, increased supply of quality goat and sheep products will ultimately lead to higher consumption among rural poor households and result in better household nutrition statuses. Also through improved access to marketing services small ruminants’ value chain actors will be able to make informed market decisions, improve their bargaining power and ultimately receive competitive market margins along these value chains. Better profit margins along the value chains are anticipated to ultimately translate into higher household incomes and improved nutrition through dietary diversification.

These changes in benefits and state for value chain actors will be achieved through 4 main impact pathways:

1. Innovative approaches to increase the capacity of small ruminants value chain actors,
2. Innovative models for developing small ruminants value chains markets and institutions,
3. Efficient and sustainable strategies for improving small ruminants animal health,
4. Efficient and sustainable strategies for boosting small ruminant production and supply.

There are a number of underlying assumptions for these impact pathways to deliver the changes mentioned above:

- Addressing whole value chains will improve uptake of innovations
- Work on localized solution will generate regional and global public goods
- Significant numbers of poor smallholders can become market oriented through intensifying small ruminants production
- Pro-poor development of small ruminants value chains can generate sufficient incentives to promote investment
- The poor will consume more goat and sheep meat if availability of these products improves
- Higher household incomes will lead to improved nutrition for all household members
- The program will generate significant interest to stimulate investment and buy-in of partners
- Identifying and working with the right partners will ensure impact at scale
- The program will generate convincing evidence to influence positive policy towards the sector
Impact pathway 1: Innovative approaches for increasing the capacity of small ruminants value chain actors

This impact pathway will ultimately lead to increased household income resulting from improved animal productivity and farmers’ informed participation in the small ruminants market (Figure 1). These direct benefits will be engendered through a series of knowledge, attitudes and practices changes engendered by program and partner outputs focusing on improving small ruminants’ productivity and strengthening the marketing function. First, value chain actors’ knowledge base will need to be increased through enhancement of the capacity of extension service delivery systems.

Figure 1: Impact pathway 1: Innovative approaches for increasing the capacity of value chain actors
Here, the key strategies will include: linking universities and research institutions to private, public and non-governmental extension systems, embedding extension delivery in business planning modules, developing innovative and novel models for delivering information, and training and linking extension systems with existing Agricultural and Market Information systems (AMIS). Experience has shown that increasing efficiency, reducing transaction costs, creating stable prices and improving access to information, through these strategies results in improved small ruminants’ productivity and eventually leads to higher income for smallholder farmers and many other value chain actors along the value chain.

The second route to increasing productivity of small ruminants will be through increasing value chain actor’s access to financial service by linking farmers groups to sustainable financial institutions; as this will allow farmers to expand their scales and improve productivity. However, central to improving productivity and actors’ participation in markets, through this pathway, will be the strengthening of linkages amongst value chain actors. This will be achieved either through developing innovative and sustainable multi-stakeholder organizations for sharing knowledge, experience and evidence or through developing efficient and sustainable small ruminants marketing hub models. However, the capacity to develop these organizations does not emerge spontaneously and therefore it will be important for the program to develop clearly defined interventions to strengthen these institutions. Finally, as a means of improving household income through increased market participation of actor’s, enhancement of collective action via farmers’ groups will be important.

Delivery of these outputs will largely through the works of the Value Chain Transformation and Scaling flagship of the program, especially in collaboration with the Development and Partnership unit of the flagship. Other important stakeholders will include institutions to deliver Business Development Services (BDS).
Impact pathway 2: Innovative models for developing small ruminants value chains, markets and institutions

Various approaches have been tried in Ethiopia to organize smallholder farmers for stronger collective actions including strengthening their bargaining power. Through identifying and piloting innovative institutions to enhance smallholders’ market participation, the program intends to develop innovative institutional arrangements that will enhance market participation (Figure 2). These will include marketing associations of common-interest groups that are independent, flexible, and informal groups of farmers focusing entirely on small-ruminant marketing. They will also include cooperative village breeding and marketing groups which are based on indigenous livestock management groups/institutions. Such common-interest and indigenous-institution based associations will increase market participation through, among others, collective decision making and production and marketing information sharing that will eventually result in stronger bargaining power among smallholder value chain actors.

However, another important challenge along the small ruminant value chain is the underdevelopment of the livestock input delivery system. It is difficult to find feed suppliers, processors, veterinary service providers, micro-finance institutions in close proximity to the small ruminant keepers. The human and financial capacity of the few that exist and those to be brought on board has to be built for timely and adequate delivery of inputs and services. Building on the interventions made so far and those being made by different actors, the program plans to create and build innovative livestock input marketing systems. This intervention will be designed and implemented to create the essential market infrastructure for a set of vibrant and efficient input delivery enterprises. This, in turn, will result in improved delivery of and access to livestock inputs and services along the value chains.

There is also a gap in access to relevant and timely market information. This has resulted in high transaction cost for small holder farmers in particular. There is a challenge in accessing rewarding markets as small ruminant keepers lack information on the price patterns across markets. Provision of information on the level of markets integration and patterns of price volatility would enable small ruminant value chain actors to make informed livestock marketing decisions. This would also inform the policy making process vis-à-vis the challenges the value chain actors face and have a significant contribution to the policy and investment environment.

This sequence of interventions, outputs and outcomes is expected to generate several direct and indirect impacts. The direct impacts will essentially be increased income for small ruminant value chain actors and improved access and consumption of nutritious animal source food (ASF) for poor households. In addition, there are
very useful public goods to be generated from the various research activities in these interventions that can be used to develop agricultural input and output marketing systems in the country and beyond.

The following assumptions are being made regarding the delivery of these outcomes:

1. Small ruminant value chain actors are keen to try the innovative institutional arrangements we are to develop for marketing.
2. Human and financial resources would be available to implement the interventions.
3. The policy environment favours the establishment and strengthening of local level farmers’ associations.

![Figure 2: Impact pathway 2: Innovative models for developing the value chains markets and institutions]
The following actors will be important to delivering impacts along this impact pathway:

1. ICARDA – will play a leading role in making sure that this theory of change translates into improved income and improved access and consumption of nutritious ASF by the poor households.
2. ILRI – the gender and impact assessment specialists have agreed to contribute towards the quantitative data analysis and capacity building efforts.
3. Mercy Corps - Markets ICT & Early Warning System Advisor has agreed to look into ways of covering the 7 intervention sites with the national livestock market information system (NLIMS).
Impact Pathway 3: Efficient and sustainable strategies for improving small ruminants’ health

Dealing with low small ruminants’ productivity due to high mortality rates in young animals due to high prevalence of diseases is the third pathway to improving the performance of the small ruminant value chains in Ethiopia (Figure 3). The challenge, however, is ensuring that disease preventive and treatment measures are widely developed, tested and promoted. It is envisaged that households will reduce animal mortality, improve animal productivity and eventually increase household income through various strategies aimed at improving animal health. Four strategies to reducing overall disease prevalence and animal mortality rates are proposed. First, developing innovative models to improve the delivery of veterinary inputs and services will enable farmers and other stakeholders to increase their access to veterinary inputs and services and thereby reduce overall disease prevalence and mortality among young animals.

Furthermore, the development of innovative models for delivering veterinary products and services through building the capacity of public and private community animal health workers will greatly enhance farmers’ access to veterinary services. Stronger public and private animal health systems will become the channels through which improved animal disease management practices will be delivered. However, improvement of the delivery systems has to be done in tandem with continuous research on and testing producing vaccines for the most notorious small ruminants diseases. These strategies would, first of all, rely on scaling-up the piloting of similar approaches already under test in Ethiopia. Examples of these approaches include the pilot EU-funded project in which the Ethiopian Veterinary Association (EVA) is testing the effectiveness of private delivery services in managing animal diseases. The strategy will also include the development of totally new approaches. The former may present an excellent opportunity for the program to work together with the EVA to provide an evidence base to influence policy. The program will bring scientific rigour in collecting and analysing additional data to access delivery of veterinary services and products in trial and control areas.
Similarly, combining research on vaccine production and producing evidence of the epidemiology and diagnosis of major diseases, using tested and efficient epidemiology approaches will generate new and superior knowledge and boost vaccine use in animal disease control. In combination with the adaptation of other sustainable disease control strategies the ultimate effect will be reduced disease prevalence mortality rates. For this package to be effective, however, focus will need to be placed on dealing with the most notorious diseases including PPR, CCPP, goat pox, trypanosomiasis, endoparasites (haemonchosis, coenurosis) and on the effective control of ectoparasites especially ticks, lice and mange. Selected research areas will include the use of laboratory assays to confirm rapid survey results and the
adoption of molecular epidemiology to understand the transmission patterns of diseases and sero-surveillance of control/eradication programs.

Finally, the low productivity problem is further compounded by the presence of poor quality veterinary products. The program will facilitate the design of efficient and sustainable strategies to support the regulation and monitoring of veterinary inputs and service delivery. The outputs will include increased farmers’ access to quality veterinary products and ultimately reduced animal mortalities.
Impact pathway 4: Efficient and sustainable strategies for boosting small ruminants’ production and supply

There is enough evidence that the current production of sheep and goat meat fails to meet an ever-increasing demand. Moreover, current projections also reveal that existing production and marketing systems will be unable to meet this demand gap. The challenge of meeting market demand for high quality sheep and goat meat and other small ruminants products lies in reducing the existing rampant inbreeding and negative selection, reducing seasonal and continuous gaps in feed quality and quantity, encouraging the use of tested and superior management practices, and ensuring that quality products are supplied (Figure 4). These strategies are also closely linked with the development of efficient and sustainable strategies to boost production and supply of small ruminant meat which are also partially nested in the previous impact pathways. Some of the ultimate outcomes of this impact pathway will include better household nutrition and increased household income, both being realized through increased supply of goat and sheep meat and increased animal productivity. Increased supply of quality goat and sheep products will come about via enhanced value chain actors’ knowledge, attitudes and adoption of improved husbandry practices. Eventually, it is anticipated that value chain actors, especially farmers, will be motivated to produce high quality small ruminant products. As of now, farmers mostly focus on owning large numbers of low quality animals with no motivation towards owning few but well managed high quality animals. The likelihood of this transformation happening will mostly depend on farmers having reliable access to superior and tested animal husbandry practices.
Figure 4: Impact pathway 4: Efficient and sustainable strategies for boosting small production and supply of small ruminants meat

Besides, improved productivity will also be realized via other strategies such as improving feed usage and efficiency and farmers owning locally adapted animals with high productivity potential. Again, better feed usage and efficiency will depend on whether farmers adopt and use improved feed production and feeding practices among a suit of many other animal husbandry practices. Potential additional strategies will include the testing and promotion of various feed supplementation options and building the capacity of farmers to select animals with high productivity potential. The program’s role in ensuring that farmers are empowered with enhanced ability to select animals will be to facilitate the design and testing of innovative breeding models. The most important actors to deliver these outcomes will include the National Agricultural Research System, Ministry of Agriculture departments at various levels, co-operatives and farmers’ organizations, traders, consumers and processors.