

Review of Beef Cattle Value Chain in Ethiopia

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Abstract

Beef cattle are one of a few agricultural commodities in Ethiopia from which the country earn foreign currency through both live and processed forms of the commodity export and also most of rural poor are engaged in raising it to fulfill their daily needs and economic gaps. The main objective of this review is to review beef cattle fattening practices/systems and marketing, to identify main actors in beef cattle value chain and their main functions along the value chain and to review the potential opportunities of beef cattle and the overall challenges in Ethiopia and also beef cattle value chain maps. In both rural and urban areas, smallholder cattle fattening is emerging as an important source of income. In rural Ethiopia, cattle fattening is based on locally available feed resources. Beef cattle fattening practices in Ethiopia is categorized in to three major fattening systems are traditional system, by product-based system and Hararghe fattening system. Only a small fraction of Ethiopian beef is raised in feedlots-smallholders throughout the country fatten the vast majority of cattle in backyard systems. There are a number of challenges that need to be overcome in order to enhance the market success of smallholder production. On the input side, technical inputs such as feeds are scarce, relatively expensive and of poor quality, and the knowledge and expertise needed is not readily accessible. On the output side, organizational farm-to-market links are weak as are the overall infrastructure investment, enabling the policy and regulatory environment to support smallholder market access. The other challenge for Ethiopia's beef cattle chain is a shortage of animal feed, resulting from drought and land use change. Limited supply has resulted in high feed prices, which in turn has led to high domestic prices and reduced competitiveness on international export markets. Additionally, high feed costs have reduced incentives for feeding regimes, resulting in "non-uniform" lines of animals being marketed. Some of main opportunities for beef cattle value chain are the growing populations; urbanization and economic growth in developing countries are contributing to growing demand for livestock and livestock products. And also the government recognition for the importance of livestock in poverty alleviation and its emphasis on modernizing and commercializing the livestock sub-sector in recent years. Trekking declines as a share of all animal movement as one move up in the marketing channels but remains a major cost in the less-advantaged rural areas. At the other end of the value chain, air transport costs are widely reported to present a barrier to Ethiopia's competitive position on export markets; costs range from USD 700/t (Middle East destinations) to USD 2500. Formally, Ethiopia exports approximately 200,000 livestock annually. This is significantly higher than the annual official exports of cattle (12,934 head) between 1998 and 2003. In Ethiopia, recent studies estimated that annual illegal flow of livestock through boundaries reaches as high as 320,000 cattle. This being the potential for export, the actual performance has remained very low, leaving most (55 to 85%) of the projected livestock off take for the unofficial cross-border export and the domestic market. The beef cattle value chain actors are producers, collectors, feedlots, traders, cooperatives, brokers/middlemen and abbaters/butchers.

Keywords: Beef cattle, value chain, chain actors, beef cattle production and marketing

1. INTRODUCTION

The value chain concept goes beyond supply chain analysis to make a more critical assessment of performance and competitive advantage in a dynamic context, particularly in terms of opportunities of the organization. This is also true for their ability to innovate in response to supply and demand changes (Kaplinsky and Morris 2001). The value chain concept has been applied in both the crop and livestock sectors as an approach for assessing potential interventions from a development perspective (Rich *et al.* 2010). This is particularly important because the livestock development context for different livestock commodities in different regions is variable and dynamic. If sound investment choices are to be made and implemented successfully, a systematic approach to evaluating the aforementioned is critical. At the same time, most contemporary value chain studies of the livestock sector still focus on qualitative characterizations of chain actors, functions, and relationships rather than focusing on the chain as a dynamic platform for quantitative analysis, although methods to remedy this have been proposed (Rich *et al.* 2010).

The main idea of value chain is to highlight and map out specific physical commodity flows within a sector, including key stakeholders, through usually confining the analysis to domestic markets and ignoring dynamic adjustments to sector characteristics and relationships (Kaplinsky and Morris 2001). Value chain approaches have been utilized by development practitioners and researchers alike to capture the interactions of increasingly dynamic markets in developing countries and to examine the inter-relationships between diverse actors involved in all stages of the marketing channel (Giulani *et al.* 2005). A firm's value chain is "an

interdependent system or network of activities, connected by linkages. Linkages occur when the way in which one activity is performed affects the cost or effectiveness of other activities” (Porter 1990). The value chain approach provides the basic understanding needed for designing and implementing appropriate development programs and policies to support their market participation. Indeed, many development interventions now utilize the value chain approach as an important entry point for engaging small farmers, individually or collectively, in high value export markets (GTZ 2007).

Ethiopia, like most of the countries in sub-Saharan Africa, is heavily dependent on agriculture. The agricultural sector plays an important role in the overall development of the country’s economy. The sector plays a major role in the national economy and it is the source of income and employment for the rural population (Nigusse, 2001). Ethiopia’s livestock population is the largest in Africa. In 2008/09, Ethiopian sedentary private holdings were estimated at about 49 million heads of cattle, 25 million heads of sheep, 22 million heads of goats, and 38 million poultry (CSA 2009). The estimate of national livestock populations for 2008/09 was 59 million cattle, 35 million sheep, 31 million goats, and 38 million poultry. The majority of the world’s rural poor, and a significant proportion of the urban poor, keep livestock and use them in a variety of ways that extend far beyond income generation. In many cases, livestock are a central component of smallholder risk management strategies (Bailey *et al.* 1999). According to (Ayele *et al.* 2003), the economic contribution of the livestock sub-sector in Ethiopia is also about 12% of the total and 33% of agricultural Gross Domestic Product (GDP) and provides livelihood for 65% of the population.

2. Overview of Beef Cattle Value Chain in Ethiopia

2. 1. Beef Cattle Production System in Ethiopia

Based on integration of livestock with crop production, level of input and intensity of production, agro-ecology and market orientation, livestock production systems in Ethiopia is categorized as pastoral, agro-pastoral, mixed crop-livestock farming, urban and peri-urban farming and specialized intensive farming systems (Yitay 2007). However, the livestock production systems are predominantly categorized as agro-pastoral system in the lowlands, and the mixed crop–livestock system in the highlands. Traditionally, fattening of animals in both systems concentrates on male animals and on females which are either infertile or have finished their reproductive cycle. In the lowland agro-pastoral system, grazing is the most common source of feed, with limited use of crop residues, whereas in the highland system, crop residues are the most important source of animal feed. During the wet season, when crop residues are scarce in the highlands, male animals are taken to the lowland areas for grazing (Elias *et al.* 2007).

Approximately 10 million lowland pastoralists in Ethiopia cover nomadic communities as well as sedentary agro-pastoralists. Each agro-pastoralist owns between 10-15 cattle. Average distance to market in the lowland system is about 90 kilometers (IBID). The key interaction between the lowland and highland systems is the exchange of male calves, which are primarily used for draught purposes for six to eight years after which they are sold into the meat supply chain; almost entirely destined for domestic markets (Solomon *et al.* 2010). The highland Crop-Livestock system, with a total rural population of over 55 million, accounts for 60-70% of the cattle or about 34 million heads of cattle in herds averaging of two to five (LMD Research 2013). Average distance to market in the highland system is about 30 kilometers (IBID). Cattle are used primarily for draught power, with oxen making up 40-50 percent of the herd, while dairy/milking cows constitute approximately 25% of the herd.

3. Beef Cattle Fattening and beef quality in Ethiopia

In both rural and urban areas, smallholder cattle fattening is emerging as an important source of income. In rural Ethiopia, cattle fattening is based on locally available feed resources (Takele *et.al.* 2009). According to (MOA 1997b) cattle fattening practices in Ethiopia is categorized in to three major fattening systems are traditional system, by product-based system and Hararghe fattening system. In traditional system, farmers usually sell oxen after the plowing season when they are in poor condition and too old for the draught purposes. By-product fattening system is mainly based on agro- industrial by-product such as molasses, cereal milling by-product and oilseed meals. Intensive feeding of available feed supply to young oxen used for draught power could best describe the Hararghe fattening practice.

According to Sintayehu *et al.* (2013) only a small fraction of Ethiopian beef is raised in feedlots-smallholders throughout the country fatten the vast majority of cattle in backyard systems. The widely held perception is that feedlot fattened cattle generally produce softer meat, with white fat and a good proportion of red meat. This meat is preferred for steaks or Ethiopian tibbs (beef cut in strips and fried). Backyard fattened meat is reported to be tougher, with yellow fat, more fat (but less marbling) and less red meat. This is preferred for consumption as raw meat for the local stew called we’et. The backyard fattening is cheaper than feedlot operation, but cannot supply large and consistent volumes to a commercial abattoir or trader. This in turn is reported to limit both investment and commitment to individual backyard producers. However, feedlot operators

reported that they could not sell to local butchers' shops, as they cannot compete on price with backyard fattening. Moreover, a local butcher cannot absorb the large volumes available from feedlots are (averaging around 500 heads/cycle) thereby forcing large-volume export sales. Finally, butchers are reported to pay 50% of the purchase price on delivery and the remainder following sale, which would limit feedlots' purchases of replacement stock.

4. Challenges and Opportunities to Ethiopian Beef Cattle Production

4.1. Challenges

There are a number of challenges that need to be overcome in order to enhance the market success of smallholder production. On the input side, technical inputs such as feeds are scarce, relatively expensive and of poor quality, and the knowledge and expertise needed is not readily accessible. On the output side, organizational farm-to-market links are weak as are the overall infrastructure investment, enabling the policy and regulatory environment to support smallholder market access (McDermott *et al.* 2010). The primary challenge for Ethiopia's cattle chain is a shortage of animal feed, resulting from drought and land use change. Limited supply has resulted in high feed prices, which in turn has led to high domestic prices and reduced competitiveness on international export markets (Carina 2013). According to Takele *et al.* (2009) feed scarcity and quality deterioration of the feed during dry season are the main challenges facing smallholder cattle feeders. Additionally, high feed costs have reduced incentives for feeding regimes, resulting in "non-uniform" lines of animals being marketed.

Although there is some profitability among traders and retailers, it also noted that producer profitability was hampered by late payments. Feedlots reported profitable fattening operations, but the report pointed out that margins were low. "Low margins are, in theory, compensated for by high throughput, but many Ethiopian feedlots are poor users of available capacity and produce small numbers of animals," it said. Live cattle exports were further hampered by administrative and structural factors, including the lack of an internationally-recognized quarantine station, minimum weight and price regulations at the border, the inability to source a uniform line of high-quality stock, lack of access to working capital, and the necessity of late payments, the report concluded (Carina 2013).

4.2. Opportunities

Growing populations, urbanization and economic growth in developing countries are contributing to growing demand for livestock and livestock products (Hall *et al.* 2004). The government recognizes the importance of livestock in poverty alleviation and it has increased its emphasis on modernizing and commercializing the livestock sub-sector in recent years (SPS-LMM 2009). Estimates of the numbers of cattle and other livestock species in Ethiopia vary substantially. Table 1 presents regionally disaggregated Central Statistical Agency (CSA) estimates of the livestock population, which shows a cattle population of around 50 million. Similar sets of numbers have recently been assembled by ILRI specialists, for a total of 47.5 million (Fadiga and Amare, 2010), but other sources put the numbers higher or lower.

Table 1: Livestock Populations and Regional Distribution

Region	Population (in '000 heads)				
	Cattle	Sheep	Goats	Equines	Camels
Ethiopia	49,297	25,017	21,884	7,209	759
Tigray	3103	1,376	3107	476	32
Afar	473	403	801	26	171
Amhara	12,748	8,987	6022	2438	50
Oromia	2245	9,098	7439	3738	255
Somali	620	1,162	283	96	24
Benishangu Gumuz	411	84	321	49	–
SNNP	9263	3838	2626	732	–
Gambela	130	17	31	–	–
Harari	44	4	36	8	–
Dire Dawa	48	43	122	13	5

Source: CSA (2009).

5. Beef Cattle Marketing and Factors Affecting the Market in Ethiopia

Transport costs from production areas to terminal markets and slaughter facilities are thought to be the major costs of marketing for live animals, and for meat exports, estimated at 27% and 32% of the total marketing costs, respectively (Teklewold *et al.* 2009). For feedlot operators, and for large and small traders, transport from the production area comprises about 46%, 58% and 56% of their cost of marketing operation, respectively. Trekking

declines as a share of all animal movement as one move up in the marketing channels but remains a major cost in the less-advantaged rural areas. At the other end of the value chain, air transport costs are widely reported to present a barrier to Ethiopia's competitive position on export markets; costs range from USD 700/t (Middle East destinations) to USD 2500 (West Africa) (EACMS 2008).

5.1. Domestic Market and Beef/Meat Consumption

At the household level, livestock plays a critical economic and social role in the lives of pastoralists, agropastoralists and smallholder farm households. Livestock fulfills an important function in coping with shocks, accumulating wealth, and serving as a store of value in the absence of formal financial institutions and other missing markets. In the case of smallholder mixed farming systems, livestock provides nutritious food, additional emergency and cash income, transportation, farm outputs and inputs, and fuels for cooking food. In the case of pastoralists, livestock represents a sole means to support and sustain their livelihoods. Furthermore, available research suggests that with economic growth, consumption patterns tend to change towards high value and high protein foods, such as those derived from livestock (Delgado *et al.* 1999). This implies that, given the economic growth in Ethiopia and the region, the market demand for livestock and livestock products is likely to continue growing in the future. The government recognizes the importance of livestock in poverty alleviation and it has increased its emphasis on modernizing and commercializing the livestock sub-sector in recent years (SPS-LMM 2009).

Ethiopia's domestic meat consumption for 2006–07 has been estimated at 2.4 kg/capita per year for beef, 0.7 kg/ capita per year for sheep meat and 0.4 kg/capita per year for goat meat. Total meat consumption was close to 276 t in 2006–07, of which beef and mutton account for 68% and 21%, respectively. Pronounced differences have been identified between rural and urban patterns of meat consumption, particularly for beef (1.7 kg and 7.0 kg, respectively). Aside from economic factors, rural and urban consumption differences can be explained by social and demographic characteristics such as age structure and the rigor of adherence to religion-based fasting (Negassa and Jabbar 2008). Domestic markets can be classified into basic/primary 'bush' markets, primary assembly markets, secondary markets for distribution and terminal markets in demand centers. Bush markets are attended by producers both as sellers and buyers and commonly intermediated by brokers, with purchase being primarily for replacements and rarely for fattening. Traders dominate purchases at assembly markets, and sales into secondary and terminal markets. At production level, and to an unknown extent at various market levels, brokers mediate transactions. Purchases for fattening and for slaughter occur at secondary or terminal markets. Feedlots purchase for fattening on a somewhat large scale, while household fattening units (primarily in highland mixed production systems) fatten retired draught oxen without purchasing in markets. Butchers tend to buy primarily (directly or via a trader) from household fattening units (Sintayehu *et al.* 2013).

Teklewold *et al.* (2009) described the prevailing market channels as follows: Collectors buy only from producers, small traders buy 83% of stock from producers and 17% from collectors, large traders buy 44% from collectors, 36% from producers and 20% from small traders, feedlot operators buy 64% from small traders, 30% from producers and 6% from big traders, purchasing agents buy 80% from big traders 15% from small traders and 5% from producers, and live animal exporters buy 39% from big traders 29% from feedlot operators 20% from purchasing agents and 12% from small traders. Informal exports of live animals offer an alternative channel. This channel subtends from an assembly function by specialized traders with cross-border links. It is widely reported that such traders also act as suppliers of imported consumer goods. Livestock sales to such traders are the only viable source of such commodities and this factor is likely to be influential in the decision to sell to cross-border traders. Formal exports of live animals and meat have resulted in the establishment of slaughter and fattening facilities at key locations throughout the country. Such locations are influenced by feed supply, access to air transport, proximity to markets serving domestic demand (principally Addis Ababa), and at certain locations on livestock trekking routes. Domestic demand, centered on Addis Ababa, provides the major demand sink in Ethiopia and therefore heavily influences livestock flows.

According to SPS-LMM (2009) the retail price of beef in Addis Ababa and its surroundings revealed that price ranged from ETB 47 to 64/kilogram (Table 2). This translates into free-on-board price range from USD 4087 to 5565/t, which is higher than international prices.

Table 2: Meat retail prices in Addis Ababa and its satellite towns-May 2009

Place	Average price by category of meat (ETB/kg)		
	Red beef for minced beef	Beef for raw or fried meat	Beef for stew
Addis Ababa	61	64	47
Alemgena	60	65	50
Karalo	35	35	25
Burayu	33	33	30
Sululta	60	60	50
Bishoftu	60	60	50
Dukam	58	58	40

Source: SPS-LMM (2009)

5.2. Foreign Export

The livestock is an important sub-sector within Ethiopia's economy in terms of its contributions to both agricultural value-added and national GDP. Between 1995/96 and 2005/06, the livestock sub-sector's share averaged 24 percent of agricultural GDP and 11 percent of national GDP, with the highest shares recorded at 27 percent and 13 percent, respectively, at its peak (NBE 2005/06). Formally, Ethiopia exports approximately 200,000 livestock annually (Yacob and Catley 2010). This is significantly higher than the annual official exports of cattle (12,934 head), sheep (13,554 head) and goats (1,247 head) between 1998 and 2003 (Asefaw and Mohammad 2007). In Ethiopia, recent studies estimated that annual illegal flow of livestock through boundaries reaches as high as 320,000 cattle (Workneh 2006). This being the potential for export, the actual performance has remained very low, leaving most (55 to 85%) of the projected livestock off take for the unofficial cross-border export and the domestic market (Kefyalew 2011).

Table 3: Main Export Markets for Ethiopian Meat (2011)

Country	Volume (mt)	FOB value ('000 USD)
United Arab Emirates	8,721	43,001
Saudi Arabia	5,112	25,038
Angola	841	3,047
Egypt	662	2,307
Bahrain	446	1,764
Others	1,997	3,936
Total	17,779	79,093
FOB prices are calculated from the total value of exports.		

Source: Solomon *et al.* 2010

Even with this abundance of livestock and meat, Ethiopia still has one of the lowest per capita consumptions of red meat in Africa. There are several reasons for this low consumption, including low per capita incomes, high domestic meat prices and the fasting days by the Orthodox Christians which means that 43% of the population does not consume meat products for over 200 days per year. This reduces aggregate demand by 20-35%. Only neighboring Eritrea has a lower per capita consumption of meat than does Ethiopia (Solomon *et al.* 2010). Export opportunities for highland livestock and animal products have been somewhat restricted. In addition to the quality, health, size, age and price concerns already described, Ethiopia's current markets largely prefer the taste and color of lowland beef and shoats. The meat production and export value chain operates well below capacity and potential, and does not attract the level of investment that could be sustained within a thriving value chain. These value added products should be a primary objective, as generators of even greater export earnings, global market share, jobs and competitiveness. Live animal exports, formal and especially informal, are a mainstay of the economy. Ethiopia earned USD207 million from live animal exports in 2011, and exports of live animals have been increasing by 15-25% per year in recent years. Informal exports may exceed USD200 million, and may account for more than 80% of live animal exports (AGP-LMD 2013)

Table 4: Meat and live animals export performance over 2002/03-2010/11

Year	Meat Volume (ton)	Value (000 USD)	Live animal	Value (000 USD)	Total value (000 USD)
2002/03	1,700	2,400	10,372	480	2,880
2003/04	3,317	6,335	41,966	2,377	8,712
2004/05	7,754	15,598	103,905	13,081	28,679
2005/06	7,917	18,448	163,375	27,259	45,707
2006/07	5,875	15,471	233,925	36,507	51,978
2007/08	6,486	20,887	297,644	40,865	61,752
2008/09	7,468	26,581	214,683	52,691	79,272
2009/10	10,183	34,002	333,752	90,708	124,710
2010/11	16,877	63,226	472,041	147,877	211,103

Source: Solomon *et al.* 2010

Table 5: Estimates of Informal Livestock Exports (head)

Source of data	Reference period	Cattle	Shoats	Camel
Concerned Ministries 1983	1981 - 1982	225,450	758,200	N/a
Min. of Foreign Trade 1987	1985 - 1986	260,000	1,200,000	N/a
FAO 1993	1987 - 1988	150,000	300,000	N/a
World Bank 1987	1987	225,000	750,000	100,000
MEDaC 1988	1998	260,000	1,200,000	N/a
Belachew and Jemberu 2002	2001	325,000	1,150,000	16,000
Author's research 2013	2010 - 2011	575,000	1,150,000	126,500

Source: Solomon *et al.*, 2010 and LMD Research, 2013

Table 6: Meat and live animal export plan (2011-2015) compared to total agricultural export

Year	Meat (tons)	Million (USD)	Live animal (Quantity of Heads)	Million (USD)	Total Livestock (Million USD)	Total Agricultural products (Million USD)	Livestock from Agriculture (%)
2011	27,780	100	582,698	150	250	2,665	9.4
2012	55,550	200	1,048,857	270	470	3,419	13.7
2013	69,440	250	1,552,173	400	650	4,308	15.1
2014	83,330	300	1,940,217	500	800	5,391	14.8
2015	111,100	400	2,353,846	600	1000	6,688	15.0

Source: MoFED, 2010

7. Beef Cattle Value Chain

The Ethiopian meat and live animal value chains have developed over the years into a series of complex constituents involving various actors that include producers, collectors, small private and cooperative fatteners/feedlots, various (and in some places, numerous) middlemen, livestock trading cooperatives, individual traders and exporters (AGP-LMD,2013). The general value chain map for meat and live animals trade and export is depicted in Figure 1. In general there has historically not been a reliable, sustained relationship among actors within this value chain. Most relationships are casual and change often to suit the situation and the actors. Although value chain relationships work best when they are on a strict business basis, such relationships in the highlands can be characterized as “clannish”. Although these relationships are not all clan-based, trust is

built through such relationships and being native to an area gives one a significant advantage. There is very few well-developed backward-linked relationship from processors to traders and producers. An example would be where the Abergelle meat processing plant facilitated the acquisition of credit for animal collectors, yet even that arrangement did not last long because of Abergelle ceasing operation in 2012. Ashraf and Abergelle export abattoirs also established their own animal feed processing plants as a way of developing their own backward linkages, however, neither of these two export abattoirs are currently operating, suggesting that the current business model for export abattoirs in Ethiopia needs significant restructuring.

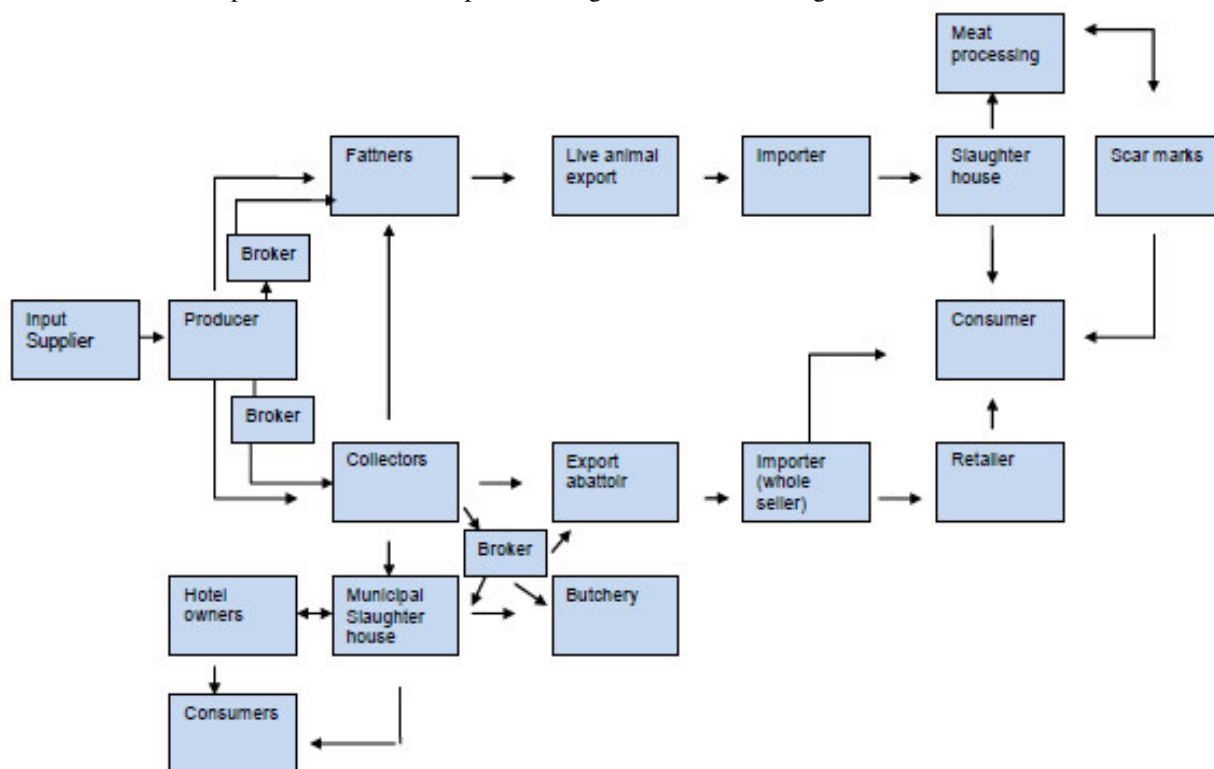


Figure 5: Value Chain Map for Meat and Live Animals (AGP-LMD, 2013)

7.1. Live Animal Value Chain Actors

According to AGP-LMD (2013), live animal value chain actors in Ethiopia are as follows:-

Producers: The largest share of meat and live animals for export are produced by lowland pastoralists: they account for 90% of all such production in Ethiopia; however, there is a growing share of highland animals entering the export supply chain. Producers rear cattle, shoats, and camel, in order of importance. They are often located in rural areas where access to market and infrastructure is insufficient. Market and pricing information is difficult and often impossible to come by. Hence pricing received by the producers, when they go to market, is either the previous week's price or not the best price they could obtain if they had access to better and more timely information. Large animal herds are considered signs of affluence and prestige, especially in pastoral areas, so many producers only go to market when they encounter financial difficulties or face drought. Not only does this keep product of the market and represents sub-optimal production management, but it also limits the ability of the producer to set a favorable price because he/she is either selling into a distressed market or he/she is not in a position to negotiate a fair price. Previous attempts to organize these traditional producers into production and marketing groups have not been successful. Shifting to a more commercially-oriented system and away from the traditional approach that has been in place for generations will require new thinking on the part of the value chain actors and the government. The process described here is also true of highland animals when the final destination is the export market. There is a minor distinction when the target market is for domestic consumption. In this case, the bulk collection of animals is not significant and usually animals fattened in backyards in the highlands enter the domestic market.

Collectors: These important market agents collect animals, usually from remote locations and gather animals to the producer areas where watering points are found. They are mostly independent operators who use their local knowledge and social relationships, family, clan and friends to collect animals. In turn, they become an important source for big and small-scale traders and livestock trading cooperatives, which lack the local

knowledge and relationships. They are usually constrained by a financial capacity that limits their operations and keeps them within a narrow geographic range. The collectors are not always good sources of market information however, and they may take advantage of a producers' limited knowledge of the markets. This can lead to distortional pricing, almost always benefiting the collector. Designing and implementing dependable information dissemination mechanisms is essential in order to develop significant levels of trust and cooperation among producers and other market actors in remote areas. Collectors may also operate as agents for exporters and traders usually on a fixed-fee or commission basis. Their commissions can range from ETB 0.25–1.50 per kg live weight, demonstrating that collectors have a built-in motive to encourage improved weight per animal and higher rates of off-take.

Feedlots: The feedlot/fattening operations include small scale private feedlots and those that operate larger facilities aimed at animal exporting. Some operate according to generally accepted SPS requirements and rules and regulations of animal quarantine, while others, particularly the smaller ones, do not. Feedlots generally purchase livestock, either through their own purchasing agents or from traders; they will also purchase from cooperatives on occasion. Feedlots generally purchase cattle; both young and older animals, fattening young animals primarily for sale to export abattoirs and older animals (more than five years old) for the domestic market. Most of the cattle that come through feedlots are the Borena breed from the lowlands yet other breeds are also serviced in the feedlots. Previous attempts to introduce the Borena breed in the highlands have not been very successful, even though abattoirs located in the highlands are demanding Borena. Feedlots are primarily located in and around urban areas. Feedlot operators noted a number of challenges to our research team, including policy-related issues that greatly affect the industry. There is not enough land available for feed production around cities and towns, and infrastructure such as roads, electric power and water are inadequate. Perhaps the most current problem facing the industry is one of rising costs as feed costs have almost tripled from 2004 to 2011. The cost of operating a feedlot has risen proportionately, while the net profits from animals have been reduced sometime by as much as half in just three years. The primary reasons for the increased prices are the inflated costs of the inputs due to a number of factors including overall inflation in Ethiopia, increase in global commodity prices and increased demand within Ethiopia.

Traders: There are both animal traders buying on average 100 animals per week and small traders usually buying on average 15 animals per week in the market. Large traders, which are few in number, are those who are permanently operating in the live animal and meat value chain business and are known for purchasing large numbers of animals from a variety of sources in order to supply their key buyers (abattoirs and live animal exporters). Usually just one or two big traders will operate in a certain area and they will often divide the markets among themselves, thereby reducing competition and increasing prices. The larger traders will use their own capital and act as a source of funding to their collectors. Most big traders are indigenous to the area in which they operate and they have extensive experience in the market in these areas. Smaller traders, on the other hand, are large in number relative to big traders. At times, they are the only outlet to markets that many smaller collectors have. Unlike the larger traders, small traders have little working capital which results in their collecting limited numbers of animals on a weekly or even biweekly basis. They often use rented vehicles to transport the animals to abattoirs. Some small traders have relations with the larger traders and will often feed animals into the larger trader networks; especially for the export market. The small traders lack access to the detailed market information that large traders possess, as have possess misinformation.

Cooperatives: Livestock cooperatives are located throughout the livestock production areas in Ethiopia; however, few exist in highland areas. Most of the livestock cooperatives operate in the shoats market because of the low financial requirement of shoats compared with cattle and camel. Livestock trading cooperatives have been established primarily to operate as a marketing arm for their members; they rarely work as a backward link for input suppliers to producers, although it was observed that some cooperatives have begun attempting to work on input supplies. A number of problems plague livestock cooperatives including dysfunctional organizational setup and management systems, dependence on few buyers, a shortage of working capital, lack of market information, inadequate training and conflicts of interest by cooperative directors, many of whom are also livestock traders themselves. The cooperative do not have an equal level of business skill; most of them lack entrepreneurial skills required to compete in the market with individual traders.

Brokers/Middlemen: An important feature of the livestock marketing system in most of the livestock markets in Ethiopia is the involvement of brokers/middlemen in many segments of the marketing chain. They match buyers and sellers and facilitate transaction, and in some cases they provide a valuable service. Throughout the field work for this study, many teams identified several situations in which the channel from producer to final market would include one to three brokers/middlemen. Each successive middleman took a larger fee and added

little if any value. In some market areas, particularly in remote rural locations, brokers not only provide an important service but are critical links to the markets for small holders. On the contrary in most urban settings, brokers do not play as important of a role, however, they are still often involved in many transactions. Brokerage fees are dependent on a number of factors including relation of the broker to the seller, location, how active a particular market area is, etc. In some places, buyers must pay a broker's fee of ETB 50-100/head of cattle whether or not a broker helped mediate the deal. This is assumed to be an assurance for a buyer that the seller will take a responsibility of finding the animal in case it is lost during trekking. For instance, after two parties agree on the terms of sale, the broker takes the money from the buyer. After taking his fee, the broker pays an amount to the seller that is less than what the buyer thought he was paying. In essence, the broker is "representing" both sides of the deal. In this situation, the broker is not providing much in the way of value added, yet he is extracting rent from a value chain system that can barely afford the added costs. In most parts of Ethiopia, livestock are sold through "eyeballing" between the seller and the buyer making the role of the broker limited to facilitation and counseling for the traders who are new to a particular market place and traders who are infrequent visitors or not familiar with the local situation.

In Ethiopia a number of producers, collectors and traders complained about "illegal traders" or unlicensed individuals without previous market knowledge who were acting as brokers. The limited market information available to the value chain actors (particularly to the small producers who visit the market once or twice a year and the small collectors) allows the unlicensed broker to "manage" information in his favor, thereby, according to several interviewed, "distorting the market in their favor." Although brokerage licenses are required, only the larger, high profile brokers have licenses and the regulatory authorities do not enforce the current licensing requirements.

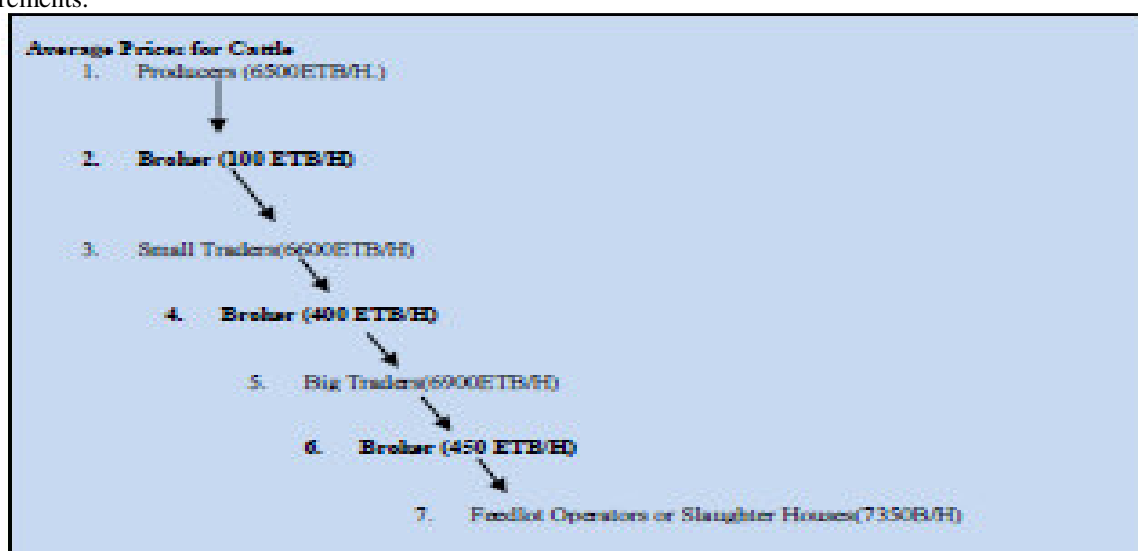


Figure 6: Live Animal Value Chain Mark-up with Broker Involvement (LMD Research, 2013)

Live Animal Exporters: There are hundreds of legal live animal traders and exporters operating throughout Ethiopia. They are also some of the most highly paid actors along the value chain, garnering profit margins ranging on average between ETB 2000-3000 per cattle. Animals are supplied mostly by traders or small scale fatteners while sometimes animals are purchased directly from producers. The primary export markets for live animals are Egypt, Somalia, Djibouti, Somaliland, Yemen, Saudi Arabia and Sudan, whereas meat is exported to a number of Middle East and African countries, mostly through normal channels, supplied mostly by small scale fatteners. In most cases importers come to Ethiopia and buy the animals. In recent years the Gulf food fair exhibition was used to get connection with potential importers. Most live animal exports from Ethiopia go through informal channels to Djibouti, Somaliland, Kenya and Sudan and most of these animals are shoats. Many of these animals (almost all lowland sourced) end up in Yemen, often as being "sourced" from Djibouti and or Somaliland. Exported animals from the highland (mostly Amhara and Tigray) almost all end up Sudan for consumption in Sudan or for re-export to Egypt and other countries in the Gulf. Exporters collect animals from secondary markets (from big and small traders, livestock trading cooperatives, collectors and producers). Importers from Yemen and Djibouti are involved in purchasing animals for export. They use the export license of Ethiopian exporters who will be paid commission on the number of animals to be exported. They also rent barns at Adama and pass their animals through the quarantine centers there.

They collect animals directly from the source markets through brokers and sometimes they purchase

animals from feedlots. Transporting animals from collection sites to feed lots and later transporting to the port of export, i.e. Djibouti is seen as a major problem by exporters. There is no designated vehicle for animal transportation and hence animals are loaded on trucks. In most cases, trucks are overloaded increasing the stress as well as causing bruises to the animals, which ultimately leads to rejection rate of 2 – 5% of such animals upon inspection at the port of export. Animals that enter Djibouti are required to go through a formal quarantine and vaccination process at the Abu Yasir International Est., quarantine facility. Complaints by animal exporters claim that this quarantine facility acts like a monopoly in Djibouti and that the exporters are required to keep their animals there for 30 days, regardless of any procedures they have previously gone through in Ethiopia.

7.2. Meat Value Chain Actors

Abattoirs/Butchers: All of the existing abattoirs have facilities for sheep and goats, but facilities for cattle are limited in all of the abattoirs and none of the export abattoirs are currently exporting beef. These abattoirs get their animals supplied by traders or through their agents. When the demand is high and the supplies are limited from their usual sources, some of them buy animals from big traders at their factory gate. Upon arrival animals undergo physical examination and are rested for two to three days in a holding area where they receive feed and water. Before slaughtering, they are held in lairage for 12 to 24 hours with access to water but not feed. During their stay in the lairage, animals undergo ante mortem or pre-slaughter examination. Animals that pass the examination are slaughtered using the Halal procedure. Afterward the carcass is chilled at -2 to 2 degrees Celsius for 24 hours. In most cases slaughtering is done when abattoirs receive orders from their customers. The only processing that local abattoirs do is put the carcass in stock net for shipping. Depending on demand and availability of freight, carcasses are loaded onto trucks fitted with coolers and transported to the airport. All of the export abattoirs have their own trucks which they use for transporting. Upon arrival at the airport, the chilled carcasses are transferred to cold stores and held there until loaded onto the airplane shortly before the flight time.

The export abattoirs all have networks in destination markets through which they sell their product. Mojo Modern even has a retail outlet in each of Riyadh and Dubai from which they sell meat directly to consumers as well as being an outlet for their wholesale business in Saudi Arabia and the UAE, respectively. Abattoirs in Ethiopia sell both meat and meat by-products. Contrary to the approach taken by abattoirs elsewhere, the abattoirs in Ethiopia try to sell as much of the by-product as they can because it is by selling the by-product of the animals – hides, skins, blood, intestines, organs, etc – that they make enough money to break even. Consistently selling the meat into the market is the road to profitability for the abattoirs in Ethiopia.

In Ethiopia, some of the by-products are being exported; however, there is an active domestic market for by-products as well. These include rumen gastro intestinal tract (GIT), liver, kidney and lung. Of these products the lung is usually sold as a pet food (dog) and other products are used in some dishes preferred by consumers in the market. Some export abattoirs have recently started exporting by-products like kidneys, brain and intestines. There seems to be a prospect for expanding the export of by-products as new markets for these products are appearing. Two by-product processing plants, which are located in Dukem (Turkish company) and Debre Zeit (Chinese Company), process intestines and other GIT products and export to various countries including Vietnam, China, Turkey and the Gulf states. It is notable that the costs of by-products have increased to 10 ETB per kg, up from just 2 ETB/kg only two years ago.

Table 7: Export of Meat from Ethiopia

	2006-2007	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
Volume (metric tons)	5,850	6,487	7,468	10,183	16,877	17,666
Revenue (millions USD)	15.4	20.9	26.6	34	63.2	78.7

Source: LMD Research, 2013

One key to developing a commercial livestock sector is to shorten the time from farm to abattoir and to make more use of commercial fattening services. Ideally, the animal's progression from birth to arrival at the abattoir would be 24 months, as the following diagram for cattle shows.

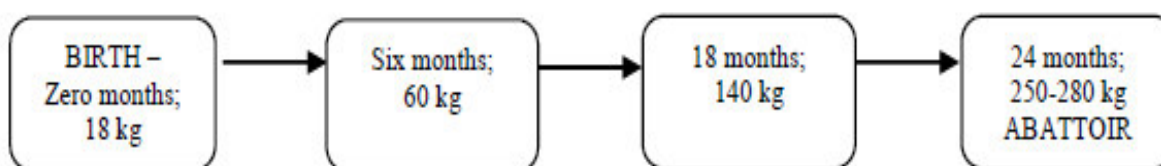


Figure 7: The animal's progression from birth to arrival at the abattoir would be 24 months (LMD Research, 2013)

If the aforementioned process was followed and if farmers could get 6,000-7,000 ETB at the farm gate for the animals, they would be able to turnover more animals and make more money. The demonstration trial conducted of dairy cattle by SPSs-LMM project indicated that it was possible to attain a weight of 500 kg weight at 24 months of age. This suggests that the weight targets indicated above for indigenous cattle are possible with improved feeding and management.

8. Conclusion and Recommendation

8.1. Conclusion

Value chains provide an excellent framework for assessing opportunities for poor people in livestock markets. They allow focus on the individual components of production and marketing chains that need to be improved, as well as the benefits of different institutional arrangements, needed public investment and enabling policies and regulations. In most developing countries livestock value chains, it is critical to improve input supplies and services as well as output market linkages. Value chain methods also provide a framework for instituting and assessing continuous improvement programs that provide performance targets, and emphasize the need for developing skills and experience, so that different actors improve their capacities to innovate, adapt and respond to changing circumstances and opportunities (McDermott *et al.* 2012). Cattle play a significant economic role in rural Ethiopia, including the generation of income for traders, service providers and butchers, and exporters. The financial accounting of this role is problematic due to non-market roles and functions of livestock and informal trade (notably in export trade). The perceived level of economic activity in the livestock sector varies substantially from year to year due to external factors (climate and disease, changing regulation and policy environment, as well as trade restrictions associated with disease). Factors internal to the live cattle and beef trading system also limit its performance as a driver of pro-poor development (Sintayehu *et al.* 2013).

Meat production and consumption drives much of the rest of the livestock value chain in Ethiopia, particularly hides, skins and leather. Ethiopia's challenge has been and continues to be that the booming formal and, particularly, informal trade of live animals across the frontiers of neighboring states keeps significant numbers of animals from reaching abattoirs in Ethiopia. This means there is less meat processed, thereby limiting the number of hides and skins that reach the tanneries. Ethiopia has the potential to make a sharp impact on the regional and global markets for meat (and leather) in the next five to ten years if the public and private sectors can create a partnership and work closely to achieve a number of successes together. A number of overlapping constraints that taken as a whole seem to have a paralyzing effect on the industry hampers realizing these market opportunities. Value chain actors and stakeholders have taken some steps to address these constraints including increasing the export of offal and becoming more aggressive in locating markets abroad, particularly the Gulf States. However, more needs to be done AGP-LMD (2013)

8.2. Recommendation

This review paper indicated that, there are several opportunities for people who engaged in beef cattle production activities in different parts of Ethiopia, especially those who live in potential areas of beef cattle production and others too. But there are also several challenges which hinder the production and productivity of the livestock sector thereby reducing the total revenue to be obtained from both domestic and foreign marketing activities to the country. Therefore, the following important points should be taken under consideration by the responsible bodies of the country at each level.

- Potential areas of livestock production should be well identified and scaled up further,
- Trainings on beef cattle production, products handling, marketing, transportation, etc should be provided,
- Different infrastructures such as road access, electricity, water, etc should be facilitated for all actors in the value chain of beef cattle production and marketing ,
- Beef cattle products processing and preservation industries should be scaled up in both technical aspects and human resource use and management via trainings accordingly,
- Value Chain for both live animals and beef foreign and domestic markets should be strengthen through awareness creation by providing short and long term trainings for all actors at each stage,
- Informal trades of live animals and beef should be avoided by controlling the informal traders and strengthening the formal traders via trainings,
- Value Chain governance for beef cattle and its products should be enhanced via trainings, etc,
- Higher institutions, research centers and other responsible sectors should undertake researches and find solutions for the prevailing problems in the beef cattle production and its products Value Chain, handling, processing, marketing, etc.

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