

# Beef and feed value chain analysis in Adama District, Ethiopia

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# Abstract

This paper offers insights on the analysis of beef and feed value chains, assesses the determinants of supply, identifies major constraints and opportunities for the beef and feed value chains, tests tools prepared for the analysis of beef value chains and provides feedback for further improvement.

This report is an output of a six-month project 'Fodder and feed in livestock value chains in Ethiopia - trends and prospects' commissioned by the Australian Centre for International Agricultural Research. The project was led by ILRI together with the Ethiopian Institute for Agricultural Research, the Amhara Regional Agricultural Research Institute and the International Center for Research in the Dry Areas.

## Introduction

### Background

Livestock production is an integral part of Ethiopia's agricultural sector and plays a vital role in the national economy. At present, livestock contributes about 20% of the GDP, supporting the livelihoods of 70 % of the population and generating about 11% of annual export earnings (SPS-LMM, 2010). As the country has a large livestock population, which ranks first in Africa and tenth in the world, it has much to gain from the growing global markets for livestock products (SPS-LMM, 2010).

Feed is a critical constraint to intensification of livestock production in Ethiopia. Ethiopia is characterized by a high livestock population but low productivity, at least in terms of conventional products such as meat and milk. Livestock is the mainstay of rural livelihoods contributing essential services such as traction and manure for arable production as well as forming a key source of financial security for many poor smallholder farmers. Although this multi-faceted form of livestock keeping dominates Ethiopia's mixed farming systems, pockets of intensification and market orientation exist and are on the increase. Developing dairy (Holeta), beef (Adama) and sheep (Menz) value chains provide interesting case studies since the commercialization of production is stimulating rapid change in feed-related elements of these value chains.

Two main drivers are leading to changes in feeding practices in the Ethiopian livestock sector. First, growing urban populations and rising incomes are fuelling increased demand for livestock products such as milk and meat. Second, rising human populations are placing increased pressures on grazing lands with much former pasture land being cultivated for cereal production to satisfy increasing demands for food production. This has led to ever greater scarcity of livestock feed, an increased use of crop residues for livestock feed and increasing reliance on purchased feed (which includes crop residues as well as more refined concentrates and supplements) to support livestock production.

The purpose of this study, a component of the ACIAR-funded Ethiopian Livestock Feed project, was to conduct VCA (value chain assessment) of smallholder-based beef value chains with a focus on their feed resources with a view to identifying potential intervention areas to enhance benefits to smallholder producers and other value chain actors.

## Objectives

The specific objectives of the study were:

1. To understand the core functions and major actors involved in the beef and its associated feed value chain in 2 case study sites in Ethiopia.
2. To identify major constraints and opportunities in beef and feed value chain.
3. To test and further refine the VCA tool for wider scale use in the future.

## Study methodology and approaches

### *Sampling methods*

Purposive sampling was used in selecting the woreda and the kebeles in which focus group discussions (FGD) were held. Adama woreda 90 km SE of the capital Addis Ababa, was selected based on the existing smallholder beef production practices and its proximity to the market. The two kebeles, Kechema and Kuriftu were selected through consultation with local experts because of prominence of fattening activities relative to the surrounding kebeles.

The selection was made by Adama Woreda Agricultural office. The participants for the FGD discussions were selected by the extension agents to be representative of the range of wealth status in the kebeles, experience on fattening animals and their crop production activities. Age and gender issues were also considered and women were encouraged to participate. Accordingly, groups consisting of 20 participants (15 men and 5 women) from Kechema and 20 participants (11 men and 9 women) from Kuriftu were selected for FGD. The other value chain actors such as traders, brokers, butchers, experts and other were also selected purposively. Willingness of the actors to participate was also a very important selection criterion since they would have to be willing to spare time and discuss with the researchers to make the exercise practicable.

### *Sources of data and methods of data collection*

The research approaches involved a combination of primary data collection using survey instruments along with review of secondary data. A combination of different techniques was applied to collect the data required to analyze beef and feed value chain in Adama woreda. Participatory rural appraisal (PRA) tools, focused group discussions (FGD), key informant interviews (KII) and visual observation were used to collect primary data. Review of different literature sources and information obtained from different government and non-governmental organizations were used to substantiate data from the primary sources.

**Focus group discussion (FGD):** Focused group discussions were conducted in Kechema and Kuriftu kebeles using a checklist prepared for this purpose. As indicated above, a group of 20 participants in each of the kebeles were selected for this purpose. The group included men and women, young and elderly, representing all the wealth groups in the area.

**Key informant interviews:** Key informant interviews were conducted with beef and feed traders, brokers, collectors, butchers, feed processors, export abattoirs and consumers.

### *Method of data analysis*

The data collected from the field through FGD, key informant interview and personal observations were analyzed using a thematic analysis approach. Quantitative data were analyzed using descriptive statistical analysis techniques to calculate the distribution of costs and margins along the shroat (sheep and goat) value chain.

### *Description of the study areas*

Adama is dominated by smallholder producers who utilize an average of 1.75 hectares of land per household. Households are composed of an average of 5 members. The area experiences three seasons: kiremt (rainy), meher (winter) and bega (spring). The main rainfall usually occurs from late bega (June) to late kiremt (September). The main crops grown are Tef (*Eragrostis tef*) and wheat (*Triticum aestivum*), Maize (*Zea mays*), Barley (*Hordeum vulgare*), Beans (*Phaseolus vulgaris*) and Peas (*Pisum sativum*). A range of fodder crops such as leucaena (*Leucaena leucocephala*), napier grass (*Pennisetum purpureum*), sesbania (*Sesbania sesban*) and naturally occurring pasture-tropical grasses are also grown. Cattle, sheep, goats, donkeys and poultry are kept by the majority of households in the area. The majority of household income comes from agriculture. Livestock and labor (off-farm) activities contribute the remaining income. The area is the major supplier of beef cattle to domestic markets of Addis Ababa and major towns of the surroundings. The major animal feed source is crop residues conserved from a farmers' own land or purchased from the market.

### *Conceptual framework*

Value chains encompass the full range of activities and services required to bring a product or service from its conception to sale in its final markets whether local, national, regional or global (Campbell, 2008). Value chains include input suppliers, producers, processors and buyers. They are supported by a range of technical, business and financial service providers. The value chain approach is particularly helpful in analyzing sectors where global buyers play the leading role in establishing the parameters of the chain, defining what, how, and under what conditions a product is produced, as well as who gets included and excluded from the chain (Gereffi and Kaplinsky, 2001).

The analysis of a value chain stresses that the market is increasingly organized through networks linking spatially dispersed market agents. The outputs in the chain are determined by the requirements of the market agents including quality, consistency, cost, variety, value-added, food safety, and ethical credential; which are, in turn, responding to the demands of their customers (Dolan and Humphrey 2000). Value chain analysis is also useful as an analytical tool in understanding the policy environment, which provides for the efficient allocation of resources within the domestic economy, notwithstanding its primary use thus far as an analytic tool for understanding the way in which firms and countries participate in the global economy (Morris, 2001).

In value chain analysis, vertical and horizontal integration are the two basic strategies that groups of farmers can use to improve their incomes. Vertical integration means taking on additional activities in the value chain: processing or grading produce, for example. Horizontal integration on the other hand means becoming more involved in managing the value chain itself – by farmers' improving their access to and management of information, their knowledge of the market, their control over contracts, or their cooperation with other actors in the chain (KIT, 2006).

# Results of the value chain analysis

## Mapping core functions and actors of the beef value chain

The core functions in a beef value chain are input supply, production, trade (marketing), processing and consumption. These core functions involve different activities as indicated in Figure 1. The details of each of the activities are described below.

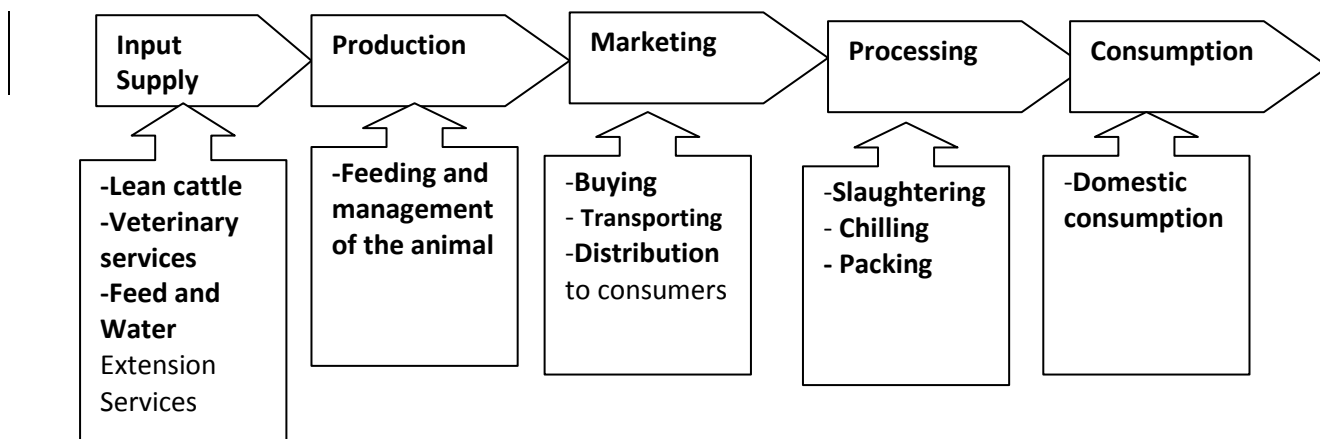


Figure 1: Map of core functions of Beef value chain

**Supply of inputs/services:** Input supply for beef production consists of the supply of animals for fattening, provision of animal health services, feed and provision of credit services.

**Supply of feeder animals:** The beef cattle used for fattening by the smallholder farmers in the study areas are mainly local culled animals from traction purposes. The average number of animals (total herd) kept by a smallholder farmer at a given time could be five animals (with a range of 1-8 animals).

Out of this, an average farmer owns two oxen. The fattening exercise is undertaken mostly when the oxen are retired from farm work/ploughing in order to replace them with younger animals.

**Feed supply:** The supply of feed includes the provision of various types of feed to the fattening animal in terms of the required quality and quantity of feed during all seasons of the year.

**Credit services:** Credit is needed to purchase animals, feed, medicaments and other necessities for fattening activities. However, it is not available to the farmers. The microfinance institutions operating in the area, as farmers explained to us, do not have a program to give credit for such ventures since the overall capital required by individual farmers to purchase animals for fattening are high.

**Animal health services:** Livestock health service is an important input for livestock production. The major support for smallholder farmers in this regard comes from local government agricultural offices. However, as explained by the farmers during the FGD, the services fall short of expectations due to shortages of drugs in the health posts. Thus farmers are thus forced to search for private veterinary services in the town which are expensive and far from their areas.

## Production

Production in the beef value chain consists of feeding the animal for the increase in live weight (meat). It involves all the husbandry practices to fatten the animal for the next core function in the value chain, i.e. marketing. Thus, it includes feeding the animal, watering, provision of veterinary services and housing the animal for better production of the required live weight (meat).

## Marketing

Marketing involves buying animals (farm gate or local markets), transportation and distribution to final destinations (in this case, butchers, group consumers, abattoirs, consumers and supermarkets). The purchasing and collection of animals is carried out by different marketing agents whose characteristics are described in the next section of this paper. Animals are collected from farm gates, primary and secondary markets and then transported to tertiary markets.

## Processing

The primary processing work is done at abattoirs and includes: de-hiding, quartering the whole carcass and transport to clients (butchers, hotels, supermarkets, universities). Butchers and hotels process the meat into different retail food commodities. Supermarkets also further process the meat for their retail outlets.

## Consumption

Beef consumers as mentioned above are domestic consumers who buy either processed meat from butchers and supermarkets or who, as a group, buy beef animals to slaughter and then share the meat. There are also farmers that buy beef cattle for further finishing at their feedlot or keep animals for upcoming festive market days prices are likely to be high.

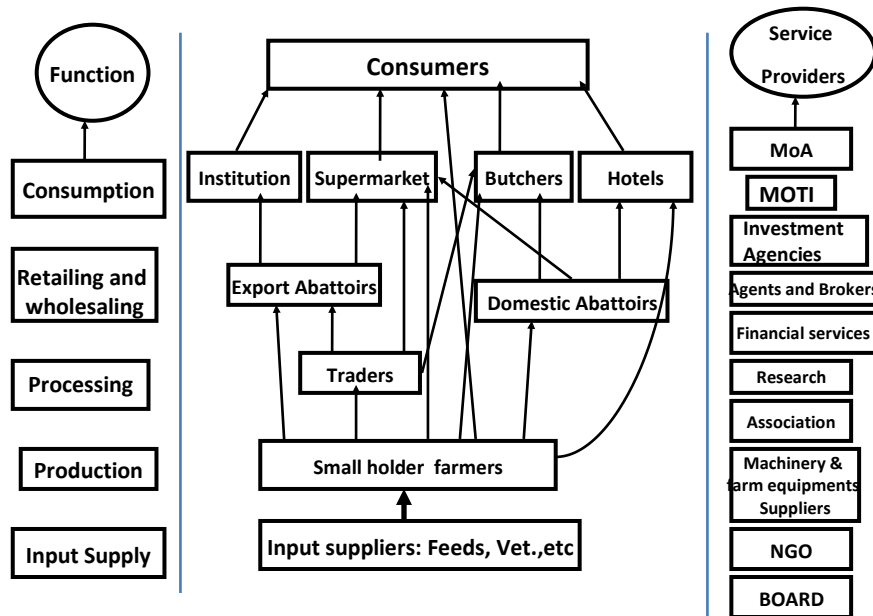


Figure2: Smallholder beef value chain in Adama woreda

## Actors in the beef value chain

The major actors in the beef value chain in the study areas are input suppliers, producers (farmers), brokers, traders, abattoirs, butchers, supermarkets, hotels and individual consumers. The characteristics of each of the actors are as follows:

**Input suppliers:** This segment of the value chain consists of the actors in the value chain that provides the starting materials for the proper functioning of the subsequent beef value chain. The actors under consideration include: feed suppliers, feeder animals suppliers, veterinary service providers, etc.

**Smallholder producers:** The smallholder producers in the Adama area are the major suppliers of beef cattle for domestic consumption for the towns along Adama-Modjo-Addis Ababa road. Particularly the smallholder feedlots of Adama supply fattened beef cattle to the terminal markets of Addis Ababa all year-round. The producers of these areas have a strong tradition in which 1-2 head of beef cattle are tethered and managed by stall feeding. In this system of production, the farmers usually use beef cattle after the final phase of their primary purposes (traction power or breeding) leading to very high cost of production at the final stage of fattening period.

**Traders:** Beef cattle producers in the area sell their 'fattened' animals to traders in the nearby markets. The traders buy the animals from primary or secondary markets, assemble and transport them to the terminal markets. In this processes, animals pass-through up to four traders' hands before reaching the final marketing agent. Based on their scale of operation, operating patterns in a given market and capital availability, traders can be grouped as small and large traders.

**Small traders:** These market agents usually operate in the primary beef markets, buy up to 5-8 animals on a given marketing day using their own capital or big traders' money and they have trade ties with affiliated large traders. These traders have detailed knowledge of the production system and related environs in cases where disputes arise with regard to transactions.

Most of the small traders favor trade ties with the large traders for three important reasons. The first is to make use of the large traders' capital which they take in advance without any bureaucratic arrangement and free of interest. The second reason is to benefit from quick transactions of animals. Thirdly, they also benefit from receiving prior market information from large traders that enables them to be safe from unforeseen bankruptcy and to have confidence in their transactions. Thus, small traders benefit both in terms of forecasted market information and advance payments.

**Large traders:** These market agents usually operate in the secondary and tertiary beef markets. They mostly procure animals from small traders, from individuals having well-fed (finisher) beef cattle and from feedlots keeping animals for domestic markets. In most cases they have their own animal-holding grounds to collect animals from small traders as well as manage them for a few days at their destination markets. They also have financial power to deal with their customers (butchers, hotels, supermarkets) on a credit basis. Thus, they are not unduly affected by a fall in demand for animals in the market.

**Brokers:** These market agents serve as mediators between buyers and sellers in the livestock market. They are usually expected to link buyers with sellers and facilitate the terms of exchange. Traders at Adama markets basically have their own affiliated brokers who facilitate the transactions. The brokerage charge is currently 50Ethiopian Birr (ETB) per head of cattle bought.

The activities of brokerage in Addis Ababa livestock markets are usually abused and buyers have to pay a minimum of ETB 50/head of cattle as a broker's fee whether they are mediated by a broker or not. In most of the cases, brokers intentionally create a communication gap between buyers and sellers (producers), and arbitrate them in the way they like. The problem is very serious for buyers and sellers who do not have much experience of such markets. Therefore, brokers are considered as market barriers both by the buyers and sellers. Thus, the problem needs serious attention from government bodies.

**Animal transporters:** Since there are no enforced rules and regulations on animal movement in Ethiopia, animals can be transported either by trekking or trucking. Smallholder farmers usually trek their animals to the market. The distance varies according to their location from the market. However, animals collected from Adama market are transported to Addis and other markets using Isuzu 5-tonne trucks. This is mainly because purpose-built livestock trucks are not easily available in the country. However, transporting animals using such trucks has several negative impacts, especially regarding the welfare of the animals.

**Domestic abattoirs:** Domestic slaughter houses that are administered by the local municipalities provide formal slaughter services to butchers and the general public. The number of slaughter houses and their capacity varies from town to town. Any animal slaughter outside these premises is illegal. However, except the butchers, the majority of the people use backyard slaughter especially for special occasions.

**Export abattoirs:** The export abattoirs involved in the processing component of the value chain are located in Modjo and Bishoftu towns. They buy beef cattle mostly at their factory gate and slaughter them for their domestic consumer markets based on the agreed price between these abattoirs and their consumer markets (supermarkets, hotels, universities and Institutes).

**Butchers and supermarkets:** According to the Addis Ababa City Trade and Industry Bureau, in the city alone there are 1369 butcher's shops and 120 supermarkets that are retailing beef and beef by-products. Moreover, there are 127 butchers in Adama, 11 in Modjo, 13 in Bishoftu, and 12 in Dukem. Butcher's shops sell on a retail basis but also serve meat on their premises as raw meat (kurt) as well as roasted products. Supermarkets mainly sell raw as well as processed beef and by-products directly to consumers for home consumption. Beef retailing supermarkets are found only in the central sub-cities of Addis Ababa. Some procure animals by directly buying cattle and agreeing a slaughter service with municipal abattoirs; others are supplied by their beef suppliers on prior agreement; still others source their products from export abattoirs (found in Bishoftu & Modjo towns). Supermarkets undertake further processing and packing activities at their premises. Since such processing and packing requires special competency, they also hire skilled persons (in processing and packing meat for retail outlets) and have them trained. For this reason they have proper cold rooms, processing and packing facilities.

**Hotels and individual consumers:** These are the final actors in the value chain. Hotels are supplied with carcasses as per their specific requirements by butchers, while individual consumers buy directly from any butcher shop that satisfies their needs. During certain holidays of the year groups of individual consumers come together and buy beef cattle to slaughter and to share the meat.



## **Market channels for beef**

The analysis of beef cattle marketing channels provides a systematic knowledge of the flow of livestock from their production areas to their final end-users. Marketing of beef in the study areas starts with the collection of animals from production areas moving on to the terminal markets (Figure 2). In such marketing chains, the animal passes successively through a number of market actors, implying a series of links in the value chain before it reaches the end-users. As mentioned above, the main actors in the beef markets include producers, traders, butchers, supermarkets and individual consumers. The number and type of market participants usually differ even among the final destination of the products. In order to depict the distribution of marketing costs and margins, some major marketing channels linking producers with the end users have been identified and described. These different channels represent the full range of available outlets through which the animals move from the different collection points in production areas and finally to the terminal markets to meet end-users needs. There are three major market channels for beef cattle produced in Adama and moving to the different terminal markets:

### *Channel 1- Beef cattle purchased by hotels, butchers and individual consumers in the Adama area*

This channel consists of the flow of fattened beef cattle purchased by hotels and individual consumers in Adama area. There is a significant increase in population, number of hotels and trading activities in towns and a significant number of fattened animals is slaughtered every day. Individual consumers (residents) buy slaughter animals mainly during the religious festivals such as Arefa, New Year, Easter, Meskel and Christmas. They go for fattened beef cattle and slaughter among a group of individual consumers at the road side of their residence. Since such consumers pay good prices, producers prefer selling to such buyers. The good presentation of butcher's shops in Adama town - including their personnel and facilities as well as the types of beef cattle slaughtered in Adama - has made it popular and attracted meat consumers from all parts of the country including the residents of Addis Ababa.

### *Channel 2- Beef cattle transported from Adama to Modjo, Zeway, Bishoftu, Dukem and Addis Ababa consumer markets*

This channel consists of the flow of fattened beef cattle to these towns all year round from Adama area. These indicated towns, including Addis Ababa city, are the major consumer markets of the country for fattened beef cattle. Traders are collecting animals from Adama markets throughout the year and supplying these towns. The majority of fattened cattle slaughtered all year round in these towns come from the Adama livestock market.

### *Channel 3- Beef cattle purchased for fattening purpose by farmers of Adama area*

Farmers in the Adama area also buy replacement stock (mainly draught oxen) and feeder beef cattle from these markets. They usually buy such animals after undertaking two important tasks: first, after harvesting their field crops and selling the culled stock, they go to buy replacement oxen because their financial position at this time allows them to do so. Second, if they secure enough finance to buy additional animal/s for fattening and also the feed to allow them to undertake fattening, then they go to buy these animals from the market. Nowadays many farmers are undertaking such activities and fetch premium profits from this undertaking by supplying fattened beef cattle to the market all year round.

## Core functions of the feed value chain

The core functions in feed value chain are input supply, production, processing, trade (marketing) and consumption. These core functions involve different activities as indicated in Figure 3. The details of each of the core functions and activities involved are described in this section.

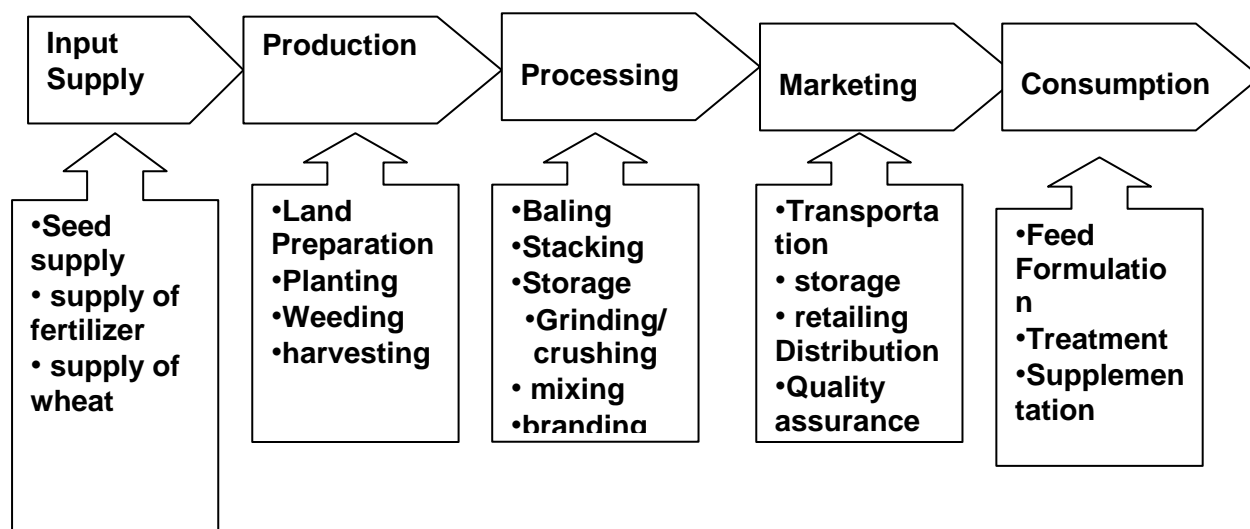


Figure 3: Map of core functions of feed value chain

### *Input supply*

Input supply for feed production includes securing land, seed, fertilizer and industrial by products used as inputs for the production of animal feed.

### *Provision of land*

This is the provision of land used for production of animal feed in the form of forage. It could be crop land supplying residues or land not suitable for crops but good enough for forage production.

### *Supply of seed and fertilizer*

This core function includes the supply of forage seed, other forage planting materials and fertilizer for proper production of animal feed.

### *Production:*

This core function in the feed value chain includes all agronomic practices that are necessary for production of feed.

### *Marketing:*

This core function involves buying feed from various sources; transporting them for better distribution or accessibility by owners of animals at various levels. The activity of marketing includes the transaction of feed in retail outlets as well as in wholesaling to consumers.

### *Processing:*

Processing of the feed includes baling of hay and straws; stacking of the feed materials for future use; grinding or crushing the feed resource for subsequent uses; mixing of the feed ingredients for various form of utilization.

### *Consumption:*

This core function mainly includes feed formulation and use; treatment of the feed for better utilization by the animal; supplementation of the feed resources and feeding practices.

## **Actors in the feed value chain**

The major actors in the feed value chain are input suppliers, producers (farmers), traders and consumers. The characteristics of each of the actors are described as follows:

### *Input Suppliers*

This segment of the feed value chain consists of the actors in the value chain who supplies the starting materials for the proper functioning of the subsequent feed value chain. The actors under consideration include extension service providers, seed and fertilizer providers, credit service providers, and technologists.

### *Producers*

The value chain actors categorized under feed producers are smallholder farmers and commercial farms which directly produce forage or other products and the byproducts of food crops used as livestock feed.

### *Processors*

The value chain actors in this category include feed processing plants and agro-processing industries.

### *Traders*

The value chain actors in this category include marketing agents who take the feed commodities from different value chain actors and sell the feeds to consumers, i.e. livestock producers.

### *Consumers*

The value chain actors in this category include consumers of various types who use the feeds at the final stage in the value chain. They include smallholder cattle fatteners, institutions of various types who keep the animals for various purposes, and urban and peri-urban livestock producers.

## Feed market channels

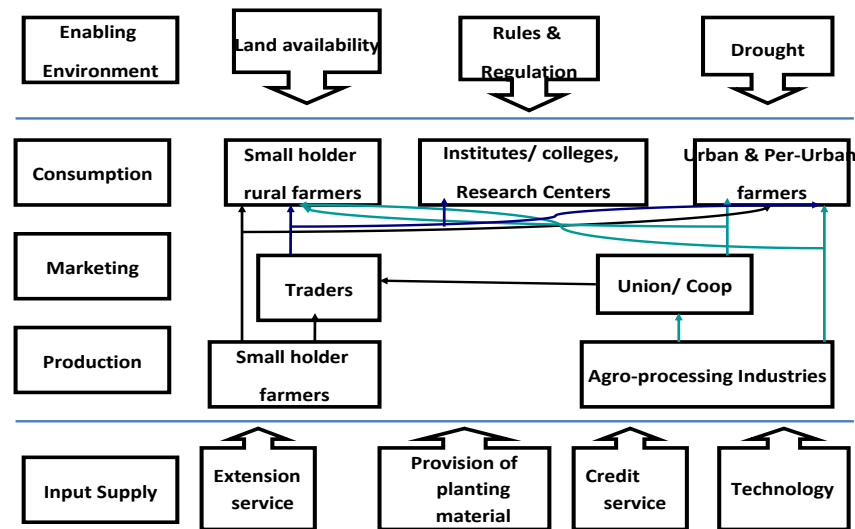


Figure 4: Feed value chain in Adama woreda

There are four major market channels for feed supplied to the market in Adama woreda and moving to the different terminal markets:

### *Channel 1- Supply of Teff straw from Bishoftu area to Adama beef fatteners*

This channel consists of the flow of teff straw from Bishoftu area to Adama area beef cattle fatteners. The teff straw bales are brought by traders and sold to animal feed retail shops found in Adama town. In Adama town, there are many feed traders engaged in selling straw to fatteners. Since it is cheaper than other types of feed, it is being used as the basal feed item for fattening.

### *Channel 2- Supply of Grass hay from Sululta and Sendafa areas to Adama*

This channel consists of the flow of baled grass hay by traders from Sululta and Sendafa areas to the beef cattle fatteners of Adama. Since the cost of grass hay is very high compared to teff straw, it is rarely used as feed source for cattle fattening in Adama area.

### *Channel 3- Supply of local oil cake and flour mill byproducts to Adama area*

This channel consists of the supply of oil cakes (Noug cake, linseed cake, cotton seed cake) and flour byproducts (wheat bran, wheat middling) from the industries found in Addis Ababa, Adama, Modjo, Bishoftu and Asela to Adama beef cattle producers by the feed traders.

### *Channel 4- Supply of crop residues (Teff straw, wheat straw, maize stover and barley straw) for fattening purpose by farmers of the study areas*

Due to the increase in the human population and the unavailability of surplus grazing land, the basal animal diet of the fattening animals in the study sites consists largely of crop residues available in that locality. The smallholder farmers of the study area conserve what is available from their harvest and purchase additional crop residues from nearby farmers or feed markets. This channel consists of the basic feed resources that the small producers of the study areas currently own to undertake the beef cattle fattening activity. The major feed resources found in this channel are crop residues such as teff straw, wheat straw, barley straw and maize stover produced in the study areas and supplied to the beef cattle producers of these areas.

## Modes of Transaction

Beef cattle transactions for domestic markets are carried out by judging the attributes of each individual animal. The transaction of a fattened animal for markets like Adama and Addis Ababa is very difficult to undertake by inexperienced buyers. The study of Jabbar and Benin (2004) revealed the marketing system in both primary and secondary markets is based on visual assessment rather than established grades and live weight. Therefore, such transactions need skills based on experience, which is most often gained through rigorous work in the domestic abattoir or livestock markets.

## Costs and margins for the different beef marketing channels

The livestock marketing system in Ethiopia is very complex, linking a number of different types of market actors as the marketed animals move from producers to the end users. The different links in the process of such market chains indicate the different services that are provided to deliver the animal or product (e.g. meat) to the various consumers. To clearly see the distribution of costs and margins among the actors, the marketing costs of beef cattle starting from the producers and the different end-users have been identified. At each stage of the chain, the value of the product increases as the product becomes more suitable for the end users.

### *Assumptions to be considered in the cost benefit analysis*

The analysis of marketing costs was based on the figures obtained from the roundtable discussion with key actors of the surveyed markets and prior expert knowledge in the sector. Thus, the following facts and assumptions are considered as the basis for estimating the cost and margins for the different beef cattle marketing channels as indicated below:

- Net marketing margins of a particular marketing agent as an indicator of the efficiency of the channel, is defined as the residual of the gross marketing margin after paying marketing costs. Hence, a net marketing margin is specified as:  
$$\begin{aligned} \text{Gross marketing margin} &= \text{Selling price} - \text{Buying price} \\ \text{Net marketing margin} &= \text{Gross Margin} - \text{Marketing cost} \end{aligned}$$
- Marketing costs are composed of the total costs incurred in marketing of produce by each agent.
- The structure of retail butcher's shops and export abattoirs: Based on the class of beef cattle they are selling and their locations, butchers are categorized into three classes:
  - **Butcher Class-I:** these are butchers retailing the meat of beef cattle class-I and found in the central part of Adama and Addis Ababa,
  - **Butcher Class-II:** these are butchers retailing the meat of beef cattle class-II and found on secondary roads around Adama and Addis Ababa;
  - **Butcher Class-III:** these are butchers retailing the meat of beef cattle class-III and found on the outskirts of Adama, Addis Ababa and on secondary roads of major towns as well as in small towns.
  - **Butcher Class-IV:** these are butchers retailing meat of beef cattle class-IV and are found on the outskirts of Adama, Addis Ababa (Eg. Karalo, Burayu, Dukem), and on secondary roads of major towns as well as in the small towns.
  - **Export Abattoirs** retailing the meat of Beef cattle class-IV to their clients at domestic markets such as supermarkets, universities and hotels. These abattoirs are found in Modjo town.
- The Beef Classes. Based on the class of retail butcher shops or export abattoirs in which their subsequent meat selling is undertaken, beef cattle are categorized into four classes:

- Beef Class-I: these are beef cattle which are very fat, yielding more retail cut, relatively more palatable; mostly sold at butcher Class-I
  - Beef Class-II: these are beef cattle which are fat, yielding moderate retail cut, relatively more palatable; mostly sold at butcher class-II
  - Beef Class-III: these are beef cattle which are moderately fat, yielding moderate retail cut, mostly sold at butcher Class-III
  - Beef Classes-IV: these are beef cattle which are lean, yielding moderate retail cut, mostly sold at butchery Class-IV & export abattoirs retailing for domestic customers.
- The Classes of Brokers. Based on the type of buyers and sellers for whom they are brokering and the level of livestock markets at which they are operating their business, brokers are categorized into three classes:
    - Broker-1: these are market actors brokering small holders and small-scale traders and are mostly operating at the primary livestock markets,
    - Broker-2: these are market actors brokering small-scale traders and large traders and mostly operating at the secondary livestock markets,
    - Broker-3: these are market actors brokering large traders and the final buyers and are mostly operating at the terminal livestock markets,

As the beef cattle are transferred through various marketing agents, the marketing costs incurred in these chains accumulate and finally determine the price in consumer markets as can be seen from the tables (Tables 1 to 6). Export abattoirs undertake beef retailing activities for their domestic clients (universities, institutions and some supermarkets) based on prior agreements.

Table 1: Costs and margins of the actors involved in selling beef cattle to export abattoirs

|                                     | <b>Producers</b> | <b>Brokers</b> | <b>Small traders</b> | <b>Brokers</b> | <b>Big-traders</b> | <b>Brokers</b> | <b>Export Abattoirs</b> |
|-------------------------------------|------------------|----------------|----------------------|----------------|--------------------|----------------|-------------------------|
| Selling price                       | 6000             | 6050           | 6500                 | 6550           | 7200               | 7250           | 9000                    |
| Marketing cost                      |                  | 10             | 245                  | 15             | 316                | 15             | 500                     |
| Marketing margin                    |                  | 50             | 450                  | 50             | 650                | 50             | 1750                    |
| Net margin                          |                  | 40             | 205                  | 35             | 334                | 35             | 1250                    |
| Producer's share of final price (%) |                  | 99.2           | 92.3                 | 91.6           | 83.3               | 82.8           | 66.7                    |

Table 2: Costs and margins of the actors involved in selling beef cattle to Butcher-IV

|                                     | <b>Producers</b> | <b>Brokers</b> | <b>Small traders</b> | <b>Brokers</b> | <b>Big-traders</b> | <b>Brokers</b> | <b>Butcher-IV</b> |
|-------------------------------------|------------------|----------------|----------------------|----------------|--------------------|----------------|-------------------|
| Selling price                       | 6000             | 6050           | 6500                 | 6550           | 7200               | 7250           | 8500              |
| Marketing cost                      |                  | 10             | 245                  | 15             | 316.00             | 15             | 450               |
| Marketing margin                    |                  | 50             | 450                  | 50             | 650                | 50             | 1250              |
| Net margin                          |                  | 40             | 205                  | 35             | 334                | 35             | 800               |
| Producer's share of final price (%) |                  | 99.2           | 92.3                 | 91.6           | 83.3               | 82.8           | 70.6              |

The class of animals slaughtered in export abattoirs and butcher class-IV is the same. However, they have different marketing costs due to the involvement of different marketing agents and the differences in their slaughtering process. Accordingly their margins are different (Tables 1 & 2).

Table 3: Costs and margins of actors involved in market channel selling beef cattle to Supermarkets

|                                     | Producers | Brokers | Small traders | Brokers | Big-traders | Brokers | Super mart. |
|-------------------------------------|-----------|---------|---------------|---------|-------------|---------|-------------|
| Selling price                       | 8000      | 8050    | 8500          | 8550    | 9100        | 9150    | 12000       |
| Marketing cost                      |           | 10      | 220           | 10      | 320         | 15      | 900         |
| Marketing margin                    |           | 50      | 450           | 50      | 550         | 50      | 2850        |
| Net margin                          |           | 40      | 230           | 40      | 230         | 35      | 1950        |
| Producer's share of final price (%) |           | 99.4    | 94.1          | 93.6    | 87.9        | 87.4    | 66.7        |

The class of animals slaughtered in hotels, supermarkets and butcher class-III is the same but due to the difference in marketing agents that undertake the marketing activities, their cost components, prices and margins also differ (Tables 3, 4 & 5). The net marginal profit of hotel generated from marketing the same class of animal products differs from its counterpart marketing agents (supermarkets and butcher class-III) by birr 100 and 800, respectively(Tables 3, 4 & 5).

Table 4: Costs and margins of actors involved in market channel selling beef cattle to Hotels

|                                     | Producers | Brokers | Small traders | Brokers | Big-traders | Brokers | Hotels |
|-------------------------------------|-----------|---------|---------------|---------|-------------|---------|--------|
| Selling price                       | 8000      | 8050    | 8500          | 8550    | 9100        | 9150    | 12000  |
| Marketing cost                      | -         | 10      | 220           | 10      | 320         | 15      | 800    |
| Marketing margin                    |           | 50      | 450           | 50      | 550         | 50      | 2850   |
| Net margin                          |           | 40      | 230           | 40      | 230         | 35      | 2050   |
| Producer's share of final price (%) |           | 99.4    | 94.1          | 93.6    | 87.9        | 87.4    | 66.7   |

The difference in marketing costs between the hotel and supermarket is because of their difference in mode of processing and associated costs of the marketable product.

Table 5: Costs and margins of actors involved in market channel selling beef cattle to Butchers-III

|                                     | Producers | Brokers | Small traders | Brokers | Big-traders | Brokers | Butchers-III |
|-------------------------------------|-----------|---------|---------------|---------|-------------|---------|--------------|
| Selling price                       | 8000      | 8050    | 8500          | 8550    | 9100        | 9150    | 11000        |
| Marketing cost                      | -         | 10      | 220           | 10      | 320         | 15      | 600          |
| Marketing margin                    |           | 50      | 450           | 50      | 550         | 50      | 1850         |
| Net margin                          |           | 40      | 230           | 40      | 230         | 35      | 1250         |
| Producer's share of final price (%) |           | 99.4    | 94.1          | 93.6    | 87.9        | 87.4    | 72.7         |

Table 6: Costs and margins of actors involved in market channel selling beef cattle to Butchers-II

|                                     | Producers | Brokers | Small traders | Brokers | Big-traders | Brokers | Butchers-II |
|-------------------------------------|-----------|---------|---------------|---------|-------------|---------|-------------|
| Selling price                       | 10000     | 10050   | 11000         | 11050   | 12000       | 12050   | 14000       |
| Marketing cost                      | -         | 10      | 255           | 10      | 450         | 10      | 800         |
| Marketing margin                    |           | 50      | 950           | 50      | 950         | 50      | 1950        |
| Net margin                          |           | 40      | 695           | 40      | 500         | 40      | 1150        |
| Producer's share of final price (%) |           | 99.5    | 90.9          | 90.5    | 83.3        | 83.0    | 71.4        |

The net marginal profit of butcher class-II is less than with the same marketing agents dealing in beef class II & III (hotels, supermarket and butchers-III) mainly due to the buying and selling price of the animal which is directly associated with the type of animal under consideration.

The class of animal marketed under butcher class-II and the customers involved differ from the rest of marketing chains described above. The breed of animals that qualify for this class and the retail butcher's shops and customers involved are different from the channels described above. The animals most qualified for this category come from areas like: Hirna, Jiru, Adama and rarely from finisher commercial feedlots. The marketing cost for this class of butcher is greater than other marketing channels described here and it is attributed mainly to the cost of labor, house rent and associated costs.

Table 7: Costs and margins of actors involved in market channel selling beef cattle to Butchers-I

|                                     | Producers | Brokers | Small traders | Brokers | Big-traders | Brokers | Butchers |
|-------------------------------------|-----------|---------|---------------|---------|-------------|---------|----------|
| Selling price                       | 13000     | 13050   | 14000         | 14050   | 15000       | 15050   | 18000    |
| Marketing cost                      |           | 10      | 260           | 10      | 460         | 10      | 1000     |
| Marketing margin                    |           | 50      | 950           | 50      | 950         | 50      | 2950     |
| Net margin                          |           | 40      | 690           | 40      | 490         | 40      | 1950     |
| Producer's share of final price (%) |           | 99.6    | 92.9          | 92.5    | 86.7        | 86.4    | 72.2     |



## Costs and margins for the different feed marketing channels

### *Crop residue (Teff straw)*

As indicated in Tables 8 & 9, costs and margins of actors involved in a market channel selling crop residue (Teff straw) and concentrate indicates that the proportion of final price reaching producers is 60%.

Table 8: Costs and margins of actors involved in market channel selling Crop residue feed (Tef straw) to users

| Price per One donkey cart (10 bales) | Producers | Small trader/user |
|--------------------------------------|-----------|-------------------|
| Selling price (Birr/10 bales)        | 120       | 200               |
| Marketing cost                       |           | 30                |
| Marketing margin                     |           | 80                |
| Net margin                           |           | 50                |
| Producer's share of final price (%)  |           | 60                |

### *Concentrate*

In case of concentrates, the proportion of final price of the product that reaches producers is 77%. This means the channel in which the concentrate is sold is more efficient relative to that of the channel in which the crop residues are sold.

Table 9: Costs and margins of actors involved in market channel selling concentrate feed to users

| Price per quintal of concentrate (Beef concentrate) | Producers | Small trader/user |
|---|-----------|-------------------|
| Selling price (Birr/ quintal)                       | 240       | 310               |
| Marketing cost                                      |           | 30                |
| Marketing margin                                    |           | 70                |
| Net margin  |           | 40                |
| Producer's share of final price (%)                 |           | 77                |

# Constraints along the value chains

This section provides an analysis of constraints along the beef and feed value chains with a view to suggesting value chain interventions.

## Constraints in the beef value chain

### *Input Supply*

Practically the beef value chain is constrained by shortage of feed supply in terms of quantity and quality during most seasons of the year. Moreover, the producers of the animals lack awareness about balancing the available feed resources. The veterinary service and supply of drugs in the study areas is inefficient and producers resort to private services which are very expensive and distant from the production site. Insufficient provision of credit and problematic collateral arrangements are also impediments to the efficient production of the beef cattle.

### *Production*

The continuous rise of feed prices in recent years has discouraged smallholder beef producers. The existing feed price coupled with the use of older animals which biologically have low feed conversion efficiency lowers the marginal profit from the commodity. The producers also lack skills and knowledge with regard to profitable beef production.

### *Processing*

The beef processing industries in the study areas employ low level technologies. The majority of the butchers and supermarkets process the beef using age-old technology. The processing activities are done under poor sanitary conditions. For the majority of the festive dates, slaughtering and processing are undertaken at the roadside and in backyards with unsanitary practices. The staff of the butchers and some of the supermarkets lack technical skill and knowledge with regard to consideration given to the beef commodities.

### *Marketing*

The brokerage activities supposed to assist the transaction in the market places operate mostly based on fraudulent conditions. Buyers and sellers are compelled to pay without obtaining the necessary brokerage services. Many inexperienced buyers are affected greatly by fraudulent brokerage. The worst problem is seen in the Addis Ababa livestock markets.

### *Consumption*

The pattern of meat demand and consumption is seasonal in nature: particularly, the Orthodox Christian believers to which the majority of the butchers in the study areas are affiliated, about 140 days out of the 365 days are fasting days where most of the butchers close their retail shops. This has a direct impact on the activities of all the value chain actors.

## **Constraints in the feed value chain**

### *Input Supply*

Intensification of livestock production requires production of feed in the required quality and quantity throughout the year. This in turn requires land where the feed is produced. However, due to population growth, grazing lands are being rapidly given over to crop production and this has now reached the level at which land for animal feed production is very scarce.

In addition, forage seeds and other planting materials for production of improved animal feed are in short supply and not accessible to the producers. Production of forage and pasture management requires hands-on-training at the farm level. Practically this is lacking at the producers' level. The raw materials for agro-industries and feed processing plants are in short supply. Their price is also escalating which directly affects the supply and price of feed.

### *Production*

As a result of overgrazing and poor management, the productivity of pasture is very low. Forage production requires practical skills and in most of the producers this is also lacking.

### *Processing*

Feed processing plants are operating under their installed capacity. This is contributing to the increasing feed prices which affect the buyers of processed feed commodities from these plants. The plants are not working in a practical way to reduce the cost issues while not compromising the quality. The feed produced by different feed processing plants are not subject to quality control. Producers are also complaining about the poor quality of the feed.

### *Marketing*

The availability of feed in the study area varied seasonally and the price varied accordingly. At harvesting seasons, the availability is moderate and the price is relatively cheaper, whereas during the dry season supply is very problematic as a result of which the price doubles or more. Feed transport cost accounts for a significant portion of the marketing cost. The number of feed traders is few and this leads to absence of competition.

### *Consumption*

Shortage and high cost of feed requires application of improved feeding instead of giving the available feed to all animals. Better understanding of the feed quality is also very important for the users of the feed.

# Lessons learned and comments on the VCA tools

## **Strengths**

VCA in its application to assess beef production in a typical Ethiopian highland was found to be quite comprehensive in problem identification all along the value chain right from the primary production to the door step of consumption. It allows for quick pinpointing of constraints for possible fast remedy and so the tool can be referred to as 'a quick problem analysis and quick fix approach'. The tool ideally compares and contrasts demand and supply, evaluates all actors involved in the VC. Besides, it is interdisciplinary and can be done with modest expertise.

## **Weaknesses**

The VCA was found to be somewhat a general approach lacking specificity to certain commodities, e.g. sheep, beef, dairy, etc. It would be more efficient if it was fine-tuned to one specific commodity. In the present study as a case in point, the two commodities, beef and feed were assessed together where disadvantages looked to outweigh the advantages of treating them together. At times it involves trend oriented questions that respondents find it difficult to keep track. It also involves surveying politically sensitive economic data that may not be easily recovered.

## **Opportunities to use**

The tool is flexible and only limited human resources are needed to accomplish the job. The data survey could be accomplished with personnel without specialization in a certain discipline as long as effective ground-based training is given prior to launching the study. Generally its holistic nature is favorable for pinpointing opportunities, constraints and devising subsequent interventions.

## Conclusions and recommendations

VCA studies on beef and animal feed were conducted in order to map and characterize the beef and feed value chain activities focusing on constraints and opportunities in and around Adama district. The study enabled the identification of the major value chain actors and core functions carried out categorized as: input supply, production, trade (marketing), processing and consumptions. We found no planted forage production of any significance.

Availability of feed is limited to purchased crop residue and native hay from distant locations. The continuous rise of feed price in recent years has created a discouraging effect for the smallholder beef producers. The feeding practice is not market-oriented. Beef fattening is simply a business based on tradition. The existing feed purchase cost coupled with the use of older animals which biologically have lower conversion efficiency lowers the marginal profit from the commodity. The producers are also lack skill and knowledge with regard to profitable beef production. The value chain actors in the study areas employed low level technologies. The brokerage activities supposed to assist the transaction in the market places operate mostly based on fraudulent conditions. The analysis also revealed that the profits are distributed mostly towards the retail end of the value chain; the income derived from the sale of the animal is concentrated at the retail end of the chain. This imbalance in the share of the profit unfavorably impacts upon the producer side of the value chain as well as on the long-term sustainability of the beef industry as a whole. As the scenario goes, the power within the local beef industry lies with the retailers (butchers, hotels, abattoirs and brokers).

In conclusion, from discussions above, it can be said that small holder beef and feed value chain practices and linkages remain weak as compared to the anticipated potential because most of the factors necessary for a successful feedlot business in the area studied are in their infancy. These include but are not limited to: inadequate input provision, procurement of older animals for feedlot, very loose attachment between actors, very old level of technology and facilities used, inadequate training, lack of investment funding, very little value addition and inadequate market development.

Therefore, the study recommends:

- Exert more effort in scaling-up of packages of improved forage production, processing, conservation and utilization technologies. Seasonality of feed availability can be solved by employing fodder collection and conservation techniques at the time. Moreover, there is a need to establish a proper land-use program that is locally applicable, economically feasible and environmentally friendly.
- Currently livestock farmers have other reasons for keeping cattle other than just to sell. Interventions should target encouraging a business attitude to livestock farming. Fattening of cattle may take from one month to three months within which period the farmer or feedlot keeper needs inputs. Project activities geared at funding and guaranteeing reward on fattening of cattle should be designed to improve cattle grades for slaughter. These activities will improve cattle supply to the market.
- Farmers should form competent marketing groups (cooperatives) which can be used as bargaining blocks. These entities would ensure better prices for inputs for the beef suppliers and would also ensure continuity in the supply of the beef.
- There is a need to train the actors at various levels to create a harmoniously operating system along the entire value chain from primary production to consumption. Particularly at the farm level, there is need for training in management of beef cattle producers as business enterprises. This will enable farmers take farming seriously in order to be able to reap more

from the enterprise. The training must be hands-on-training on techniques of preparing good quality rations that contribute for maximum body weight gain and at the same time are economically feasible.

- The need for investment funding can never be over emphasized. Investment funds could also assist the value chain actors to access adequate inputs, equipment and technology to undertake the activities profitably.
- Very few marketing studies have been undertaken in the beef industry. There is a need to conduct periodic market surveys in this regard. Such options should be further explored and the information generated should be readily availed to farmers and other beef sub-sector players. There is a need to regulate marketing channels in order to have a level playing field for all participants. This is very important since players in the beef sub-sector are micro enterprises (small scale producers, traders and butchereries).
- The respective Government bodies should identify the beef sub-sector as a very important sector and take lead in its promotion, offering a supportive infrastructure and incentive regime. This also includes developing beef development master plans. This means that the sub sector has great potential to attract the international market. Development of additional international markets will go along way in not only boosting beef production, but will also raise the standards and quality of the beef produced.

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