

Review on Value Chain Analysis of Dairy Products in Ethiopia

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Abstract

In Ethiopia, dairy serves as a source of income, employment, nutrition and health for the smallholder rural farmers. The main objective of this review to understand the system of dairy production, milk marketing channel in which smallholder dairy farmers sell dairy products and to examine how the market is functioning; to identify the role of women along the dairy value chain and constraints for their participation and to review challenges and opportunities for development of dairy value chain in Ethiopia. Accordingly, based on market orientation, scale and production intensity, three major dairy production systems can be identified: traditional smallholder; privatized state; and urban and peri-urban farms. Dairy value chain development comprises extension, input supply (feed, bull services, and veterinary services) milk production, dairy processing and milk and milk products marketing. To increase the shelf life of milk products, the current practice of further processing of traditional butter and cottage cheese into traditional ghee and Metata Ayib was typical for most smallholder dairy farmers of Ethiopia. Each member of a household performs various roles related to dairy production and management; female particularly are engaged in cleaning, feeding, milking a cow, processing milk and marketing dairy products. However, the benefits obtained from dairy are mainly controlled by household head and the decision making and access to milk products are rarely controlled by female. Ethiopia has a complex dairy value chain, with both formal and informal channels. In Ethiopia, fresh milk sales by smallholder producers are important only when they are close to formal milk marketing facilities, such as government enterprise or milk groups. As dairying play significant role in the lives of the urban and peri-urban poor households, promotion of the dairy sector in Ethiopia can therefore contribute significantly to poverty alleviation as well as, availability of food and income generation.

Keywords: dairy products, value addition, value chain, formal and informal market

1. INTRODUCTION

1.1. Background

In many parts of the world, agriculture continues to play a central role in economic development and to be a key contributor to poverty reduction. However, agriculture alone will not be sufficient to address the poverty and inequality that are so pervasive in today's world. It is becoming increasingly crucial for policy makers to focus immediate attention on agro-industries. Such industries, established along efficient value chains, can increase significantly the rate and scope of industrial growth. In developing countries, a significant proportion of national funds are used to support agricultural production inputs – primarily seeds, fertilizers and irrigation systems. Traditionally, little attention has been paid to the value chains by which agricultural products reach final consumers and to the intrinsic potential of such chains to generate value added and employment opportunities (UNIDO, 2009).

The Ethiopian economy is highly dependent on agriculture, which in the 2004/05 fiscal year, contributed about 48% of the GDP, followed by 39% from the service sector, and 13% from the industrial sector. The agriculture sector provides employment for about 80% of the population (The Economic Intelligence Unit 2007). The livestock subsector plays a vital role as source of food, income, services and foreign exchange to the Ethiopian economy, and contributes to 12 and 33% of the total and agricultural GDP, respectively, and accounts for 12–15% of the total export earnings, second in order of importance (Ayele et al. 2003).

It is estimated that almost 150 million farm households, i.e. more than 750 million people, are engaged in milk production worldwide, the majority of who are in developing countries (FAO, 2010). The dairy sector provides income and employment to many, often poor, people. It is estimated that 12 to 14 percent of the world population, or 750-900 million people, live on dairy farms or within dairy farming households and the production of one million liters of milk per year on smallholder dairy farms creates approximately 200 on-farm jobs (FAO, 2010).

Ethiopia holds the largest livestock population in Africa estimated to about 52.13 million cattle, 24.2 million sheep and 22.6 million goats (CSA, 2012). The total annual national milk production in Ethiopia comes from about 10 million milking cows and is estimated by 3.2 billion liters that is, 1.54 L/cow on average (CSA, 2012). In Ethiopia, dairy serves as a source of income, employment, nutrition and health for the smallholder rural farmers (Staal, 2002). The major species used for milk production in Ethiopia are cattle, camel and goats. Cattle produce 83% of the total milk and 97 % of the cow milk comes from indigenous cattle breeds (MOARD, 2004).

The major sources of milk in Ethiopia are produced from cows (83% of total milk production in Ethiopia) and the remainder from goats and camels in certain regions is particularly in pastoralist areas (LDMPS, 2007). As dairying play significant role in the lives of the urban and peri-urban poor households (Yitaye et al., 2007), promotion of the dairy sector in Ethiopia can therefore contribute significantly to poverty alleviation as well as, availability of food and income generation. In Ethiopia, dairy value chain entailed about 500,000 smallholder rural farmers who produce about 1,130 million litres of milk of which 370 million litres of raw milk, 280 million litres of butter and cheese and 165 million litres is consumed by the calves (Mohammed, 2009).

The majority of milking cows in the smallholders milk production are indigenous breeds which have low production performance with the average age at first calving is 53 months and average calving intervals is 25 months. The average cow lactation yield is 524 liters for 239 days, of which 238 litres is off-take for human use while 286 liters is suckled by the calf. But also a very small number of crossbred animals are milked to provide the family with fresh milk butter and cheese. Surpluses are sold, usually by women, who use the regular cash income to buy household necessities or to save for festival occasions (Mugerewa et.al 2009).

The total population of animals used for milk production is 13,632,161 TLU. Although milk production is increasing by 1.2% per annum, the demand-supply variance for fresh milk is ever widening and the per capita consumption is diminishing. The key development issues in dairy are low milk production complicated by widespread food insecurity, growing gap between supply and demand in urban areas, and low average milk productivity (MOARD, 2004).

Value chain analysis: value-chain analysis can play a key role in *identifying the distribution of benefits of actors in the chain*. That is, through the analysis of margins and profits within the chain, one can determine who benefits from participation in the chain and which actors could benefit from increased support or organization. This is particularly important in the context of developing countries (and agriculture in particular), given concerns that the poor in particular are vulnerable to the process of globalization (Kaplinsky and Morris 2001).

According to, (Lemma et al., 2008; Yilma, et al., 2011), reported that weak linkages among the different actors in the dairy value chain are some of the important factors that contribute to the poor development of Ethiopia's dairy sector. While the response of the private sector to the increased demand for dairy is expected to be significant, the small-scale household farms in the highlands hold most of the potential for dairy development (Mohammed et al., 2004).

Farmers add values to milk to get products such as butter, cottage cheese, skimmed milk and agwat-watery products from cottage cheese making. Milk provides a typical example with growing demand for milk value added products in Ethiopia (Berhanu et al., 2011).

The basic patterns of milk value addition such as churning soured milk to make butter, dehydrating butter to make ghee and removing whey to butter to regulate milk fermentation are common practices in Ethiopia. Milk value addition through these methods is often considered inefficient and it is associated with 'losses' of up to 12% due to low rates of butterfat recovery (FAO, 2003).

Value chain is an innovation that enhances or improves an existing product or introduces new products or new product uses (Fleming, 2005). The emerging trend for processed agricultural products in the global market creates opportunities for smallholder farmers in the developing countries to benefit from such opportunities by linking their activities to value chains through vertical and horizontal linkages (Vermeulen et al., 2008).

The major ones include: actors along the chain and their functions and linkages among themselves, governance mechanisms for the chain and roles of actors e.g. power relations and principal drivers of the chain functions, impact of upgrading products, services and processes within the chain and distribution of benefits among actors within the chain (Kaplinsky, 2000; Kaplinsky and Morris, 2001; Rich *et al.*, 2008). Jabbar (2009) stated that the analysis of a value chain encompasses wider issues than supply chain, which only shows the physical flow of goods or services from production to consumption through intermediate stages of value addition.

Ethiopia has a complex dairy value chain, with both formal and informal channels. Only 5% of the milk produced in Ethiopia is sold in commercial markets (LMD, 2012). In Ethiopia, fresh milk sales by smallholder producers are important only when they are close to formal milk marketing facilities, such as government enterprise or milk groups. Producers far from formal marketing outlets prefer to produce other dairy products instead, such as cooking butter and cottage cheese. The vast majority of milk produced outside urban centers in Ethiopia is processed into dairy products by the households, and sold to traders or other households in local markets (Muriuki et al., 2001).

It is very important in the human diet because of two important ingredients namely protein and calcium. Protein provides many of the amino acids often deficient in the cereal food grains. Dairy products provide the most important amino acids required for body building as well as tissue repairs in human beings (Osotimehin et al., 2006). Calcium is the nutrient most likely to be lacking in diets of persons who do not consume milk or milk products hence adequate calcium intake is difficult to attain in the human diet if milk or milk products are

excluded (Schmidt et al., 1988).

1.1.1. Objectives

- ➔ To understand the system of production, milk marketing channel in which smallholder dairy farmers sell dairy products and to examine how the market is functioning
- ➔ To identify the role of women along the dairy value chain and constraints for their participation
- ➔ To review challenges and opportunities for development of dairy value chain in Ethiopia

2. LITERATURE REVIEW

2.1. The role of Dairy in Ethiopian Economy

Ethiopia boasts the largest livestock population in Africa. The livestock sector currently comprises 46 million head of cattle, almost all of which are local breeds. The sector plays an important role in economic development, contributing about 12% of the Gross Domestic Product (GDP) and 26% of the agricultural GDP. The female stock (comprising 55% of the total cattle population) produces an estimated 2.76 billion liters of milk per year. This low productivity means that domestic supply cannot keep up with Ethiopia's population growth and milk consumption per head remains low. In 2009 the average Ethiopian consumed only 19KGs of milk (GOE, 2009). The distribution of different milk producing livestock species differs from one region to another. The total cattle population as well as milking cows is highest in the Oromia Region, estimated to be about 22.5 million (44.17 percent) and 4.4 million (45.6 percent), respectively of the total national population. While the lowest figures were found in Harari Region with a total cattle population of 45 400 (0.09 percent) and milking cows of 11 000 (0.11 percent). Three regions (Oromia, Amhara and SNNPR) put together, account for 89.94 percent of the total cattle population and 89.55 percent of the total number of milking cows in the country (CSA, 2010).

The Central Statistics Agency (CSA, 2008) estimates 2.76 billion liters of cow milk produced by sedentary populations annually while camel milk is estimated at 16.2 million liters annually. The estimated gross value of ruminant livestock production was Birr 32.64 billion. The estimate includes the values of: livestock off-take (Birr 9.653 billion), milk and milk products (Birr 19.471 billion) and other products, e.g. wool, dung and change in stock inventory (MOFED, 2009). Households consume approximately 85% of the milk collected, 8% of the milk is processed into products with longer shelf life, and 7% is sold (MoARD, 2007).

Table 1. Number of dairy animals, daily and average daily milk yield by region (2009/10)

Region	Cows Average daily milk yield/Litre	Camel Average daily milk yield /Lit
Oromia	1.5	-
Amhara	2.13	-
SNNPR	1.65	-
Somale	1.6	3.66
Afar	2.69	4.66
Benishangul-Gumuz	1.25	-
Gambella	2.11	-
Harari	2.09	-
Dire Dawa	1.48	2.89
Tigray	1.29	-
Ethiopia	1.69	5.1

Source: CSA (2010)

2.2. Milk production System in Ethiopia

Based on market orientation, scale and production intensity, three major production systems can be identified: traditional smallholder; privatized state; and urban and per-urban farms (Gebre Wold *et al.*, 2000).

2.2.1. The traditional smallholder system

The smallholder farmers and pastoralists produce and supply 98% of the total milk production of the country (YONAD 2009). In further it represents the rural milk production system and accounts for about 97 percent of the total national milk production and 75 percent of the commercialized milk. This sector is largely dependent on the indigenous zebu breeds of low productivity, which produce about 400–680 kg of milk/cow per lactation period. The system is not market-oriented and most of the milk produced is retained for home consumption. Milk production in this system is characterized by low yield and seasonal availability (Zegeye, 2003).

2.2.2. Privatized state dairy farms

Basically characterized by more specialized dairy farming practices by state and private commercial farms. The system mostly run with cross bred animals more than 20 heads feed on improved pastures, hays and

supplemental agro-industrial feeds. Use grade animals (>87.5 percent exotic blood) and are concentrated within a radius of 100 km from Addis Ababa.

2.2.3. Urban and peri-urban milk production system

This system developed based on the high market demand in and around major cities and towns for milk and milk products. The main feeds sources are agro-industrial by products (Oil Seed Cakes, Bran, etc) and purchased roughage. Consisted of 5167 small, medium and large dairy farms producing about 35 million liters of milk annually. Of the total urban milk production, 73 percent is sold, 10 percent used for household consumption, 9.4 percent goes for feeding calves and 7.6 percent is processed into butter and *Ayib* (a cottage type of soft cheese crumbly in texture common in many parts of Ethiopia). Seventy one percent of the producers sell their milk directly to consumers (Reda, 2001). While peri-urban milk production system includes smallholder and commercial dairy farms in the proximity of Addis Ababa and other regional towns. This sector controls most of the country's improved dairy stock and now expanding in the highlands among mixed crop– livestock farmers, such as those found in *Selale* and *Holetta*, and serves as the major milk supplier to the urban market (Gebrewold *et al.*, 2000).

2.3. Dairy value chain in Ethiopia

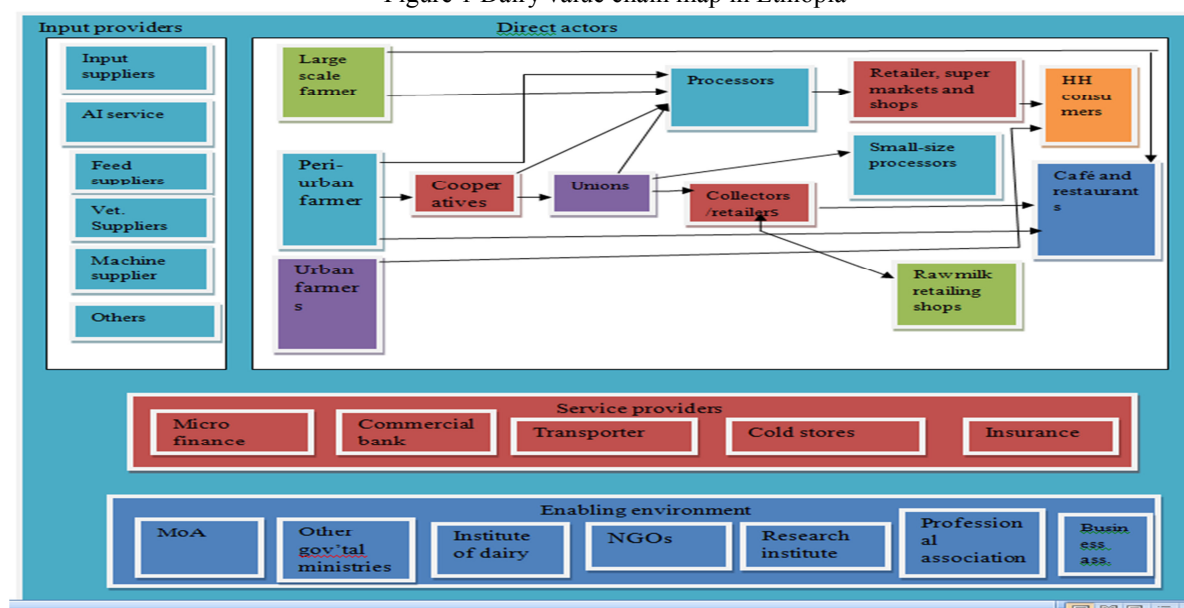
Value chain is an innovation that enhances or improves an existing product or introduces new products or new product uses (Fleming, 2005).

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The core assumption behind ‘pro-poor’ value chain interventions is that vulnerable upstream agents (such as smallholder farmers) can be ‘pulled’ into specific markets, and therefore successfully integrated into economic dynamics to which they were hitherto excluded, or, at best, only participated under very unfavorable conditions. Practitioners aim to accomplish this through: building and enhancing linkages between the ‘middle’ of the value chain (processors, traders, exporters and farmers’ organizations) and the market; strengthening the relationship between the same ‘middle’ of the value chain and smallholder farmers, and strengthening the supply capacity (ability to produce increased volumes of goods or services with particular attributes) to ensure that these goods and services are produced at a lower cost and in line with market requirements, increasing overall competitiveness(SNV,2012).

Land O’Lakes conducted a rapid assessment of the dairy value chain in October and November, 2010. The team was composed of experts in production, technology transfer, processing, distribution and marketing. Dairy value chain development comprises extension, input supply (feed, bull services, and veterinary services) milk production, dairy processing and milk and milk products marketing (Tilahun, *etal*, 2012).

Figure 1 Dairy value chain map in Ethiopia



Source: Haile, 2009

2.4. Traditional milk handling and processing practices in Ethiopia

Cows are the main source of milk, and it is cows' milk that is the focus of processing in Ethiopia (Layne et al. 1990). Dairy processing in Ethiopia is generally based on *ergo* (fermented milk in Ethiopia), without any defined starter culture, with natural starter culture. Raw milk is either kept at ambient temperature or kept in a warm place to ferment prior to processing (Mogessie 2002). Dairy processing in the country is basically limited to smallholder level and hygienic qualities of products are generally poor (Zelalem and Faye 2006).

The traditional milk processing is generally time consuming, varieties of products was limited and less milk fat recovery turned into butter per unit of milk processed (ILCA 1992). If the farmers could not produce greater varieties of products, it is most likely that farmers could not get the full value-added products from milk production. This is probably one reason for the relatively low proportion of urban dairy producers processing milk into butter. The current observation is in agreement with the report of Sintayehu et al (2008). Moreover, the proportions of peri-urban producers involved in further processing of buttermilk into cottage cheese was slightly higher than of urban producers. The latter more frequently used buttermilk for bucket-feeding of calves. Another reason for urban producers not practicing this processing might be the lacking availability of fire wood for cooking buttermilk into cottage cheese and whey. Similar results were observed by Holloway et al (2000) who stated that a vast majority of dairy farmers who live far from urban centres in Ethiopia processed milk into different by-products.

Generally, to increase the shelf life of milk products, the current practice of further processing of traditional butter and cottage cheese into traditional ghee and Metata Ayib was typical for most smallholder dairy farmers of Ethiopia (Ashenafi 1990; Gonfa et al 2001). However, most of the milk processing was done by use of traditional household utensils under unsanitary conditions; to deliver a desirable flavour, plant materials were added to the finished product (traditional ghee and Metata Ayib) might have contributed to the high microbial load. This is in agreement with the report of Ashenafi (1990), Gonfa et al (2001) and Sintayehu et al (2008). Therefore, giving basic handling and health education for producers is likely to result in a better milk quality on the market, including shelf life and aspects of consumers' health.

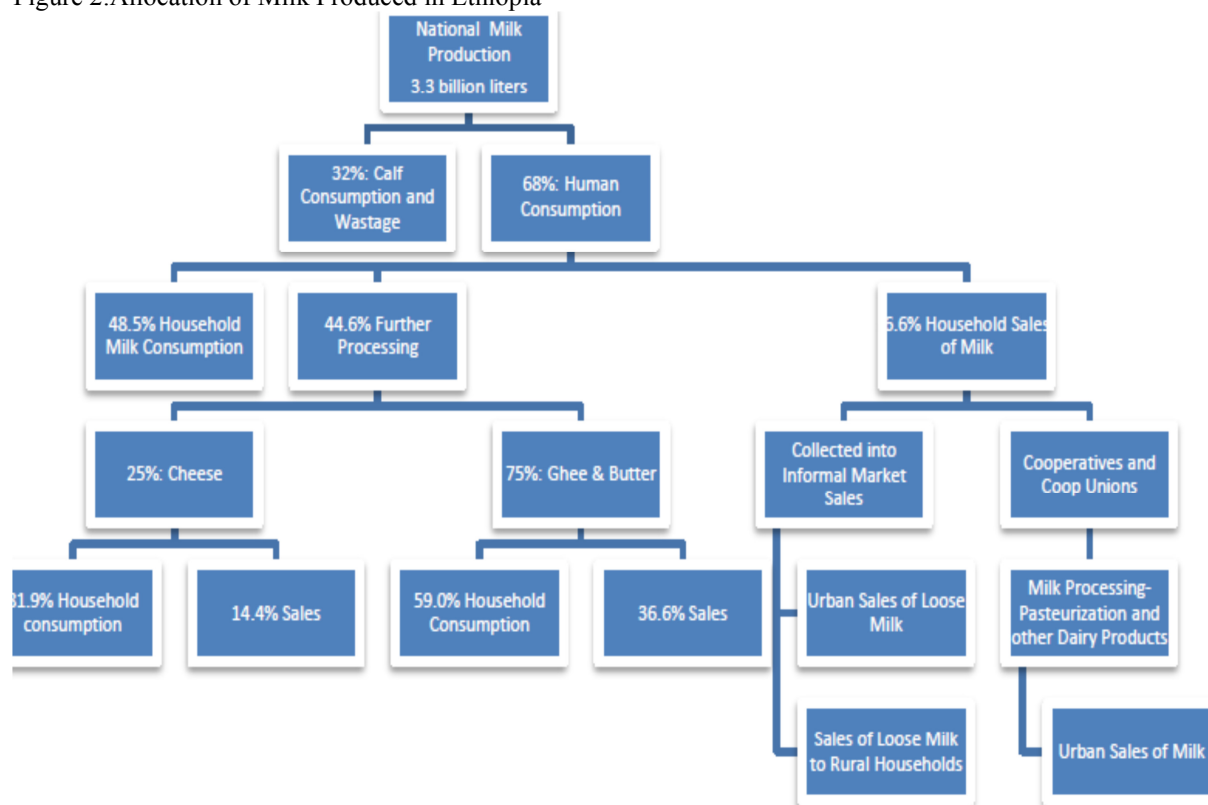
2.5. Demand of milk and milk products

Higher incomes, larger urban populations and continued population growth will fuel higher demand for dairy products (Feleke, 2010 and LMD, 2013). However, consumption during the last four decades ranged from 16 to 19 liters per capita, about half of the average African consumption rates, and well below the world average. The level of consumption has only increased slightly since 2000 (FAOSTAT, 2010).

Ethiopia consumes approximately 17 kg/capita. (GOE, LMP, 2007). Approximately 83% of the total milk produced is consumed at the household level and only 7% is supplied to the formal and informal markets. The remaining balance is distributed between in-kind wages (0.43%), and used for processing local butter, yogurt, and cheese (10.06%) primarily as a means of extending the shelf life during times of surplus. In urban area specially, in the Addis Ababa market, 5,000 commercial producers (estimate in 2002) sold 73% of their production, 10% went to household consumption, 10% to calves, and 8% was processed (Azage, et al, 2002).

Whereas, the demand for milk in rural area is mainly for fresh whole milk, which is satisfied by, own production or purchased from neighbors. Processed milk is currently not sold in rural markets. In the rural areas, producers will consume fresh milk and will convert their milk to butter. It is estimated that 40% of the milk produced is converted to butter, while only 9% is converted to cheese (GOE's Livestock Master Plan - LMP, 2007). In further pastoral milk consumption, vary according to season variation. In the wet season, milk consumed by pastoral children can account for 67% of the mean daily energy they require and 100 % of their protein requirements (Sadler and Catley 2009). Lack of availability and access to milk in the dry season decreased daily consumption amounts by almost 25% with milk contributing only 16% and 50% of energy and protein requirements respectively.

Figure 2. Allocation of Milk Produced in Ethiopia



Source; LMD, 2012

2.6. Milk and Milk products Marketing System in Ethiopia

The Ethiopian dairy production and market systems face severe constraints. The average milk production per cow is 1.5 liters per day, well below international benchmarks. Poor genetics, insufficient access to proper animal feed and poor management practices all contribute to the low productivity levels. Similarly, dairy producers and downstream actors in the value chains face many challenges in getting milk to market. For the most part, milk collection, chilling and transport are not well organized and there are few economies of scale. Transaction costs are high and up to 20-35% of milk is spoiled (Feleke et al, 2010).

As is common in other African countries (e.g., Kenya and Uganda), dairy products in Ethiopia are channeled to consumers through both formal and informal dairy marketing systems (Mohammed et.al, 2004). Until 1991, the formal market of cold chain, pasteurized milk was exclusively dominated by the Dairy development Enterprises) which supplied 12 percent of the total fresh milk in the Addis Ababa area (Holloway et al. 2000). The informal (traditional) market has remained dominant in Ethiopia. The traditional processing and trade of dairy products, especially traditional soured butter, dominate the Ethiopian dairy sector and only 5 percent is marketed as liquid milk due to underdevelopment of infrastructures in rural areas (Redda, 2001).

Recently, private businesses have begun collecting, processing, packing and distributing milk and other dairy products. However, the proportion of total production being marketed through the formal markets remains small (Muriuki and Thorpe 2001). The reasons for low capacity utilization and low volume supply of milk and milk products of Ethiopian dairy development enterprises include; management problems, financial difficulties, and unstable and low consumption levels of processed milk in the society due to fasting that prohibits the orthodox Christians (about 35- 40 percent of the population) from consuming dairy products for almost 200 days every year (Yigezu, 2000).

According to (Van der Valk and Tessema 2010) 98% of milk produced in rural area were sold through informal chain where as only 2% of the milk produced is reached the final consumers through formal chain. Share of milk sold in the formal market is insignificant in Ethiopia, less than 2%, compared to 15% share in Kenya and 5% in Uganda (Muriuki and Thorpe, 2001). This tells us that in Ethiopia there is no market for dairy, exception in few major urban areas. Absent markets, affect the overall dairy production and consumption in the country.

2.7. Contribution of dairy value chain development strategy

The formulation of the dairy development strategy focused on creating an environment for many smallholder

dairy farmers to have access to markets in an attempt to stimulate producers to increase their production to meet market demands and satisfy the market (Redda, 2001).

Development practitioners have increasingly shifted their attention from farming systems to targeting agricultural value chains to improve smallholder production and participation in markets (Rota et al, 2010). This is because small - scale producers are often unable to increase production by adopting productivity - enhancing technologies unless the value chains for their products are sufficiently developed and dynamic. More emphasis has been given, therefore, to a business orientation to stimulate agricultural production and related services rather than viewing smallholder agriculture simply as a means of survival (Webber et al, 2010).

2.8. Dairy processors in Ethiopia

The success of a milk processing plant depends on its ability to source a predictable, sufficient supply of milk, and its ability to assure a sizable market. Large scale processors are located near to urban areas to facilitate market access and available services. Institutional buyers are very important to many processors (universities, hospitals, schools or factories can provide a constant and assured customer base. But many large processors operate at less than 50% capacity, because of sourcing constraints.

2.9. Quality and standards

The dairy value chain is not carefully managed to guarantee quality and adherence to standards. The high levels of spoilage are indicative of the risks. SNV lists several quality-related constraints and challenges (Felleke et al, 2013):

- ☞ High disease prevalence of zoonotic livestock disease
- ☞ Lack of aggressive livestock disease control
- ☞ Lack of effective quality control at the various stages of milk production and transaction
- ☞ Lack of efficient liquid milk collection
- ☞ Lack of cooling facilities
- ☞ Inefficient transportation processing sites
- ☞ Under developed milk processing and marketing system
- ☞ Lack of enforcement of quality control regulations and standards
- ☞ Lack of mandatory standards (SNV, 2010).

2.10. The role of women along dairy value chain in Ethiopia

There is an increasing awareness of important and traditional role of female in dairy production. Dairy production provides female with a regular daily income, vital to household food security and family well being. In past, development interventions targeted male and changes introduced frequently resulted in higher labor input by female while their control over production and output diminished. Gender differences are now more often taken into account at all stages of development planning and management (Almaz, 2000). Each member of a household performs various roles related to dairy production and management; female particularly are engaged in cleaning, feeding, milking a cow, processing milk and marketing dairy products (Berhanu *et al.*, 2006). However, the benefits obtained from dairy are mainly controlled by household head and the decision making and access to milk products are rarely controlled by female.

Gender analysis is needed to explain why particular chains are dominated by men or women, in what circumstances women have been able to become successful at creating employment, and how women can be supported to make a more effective economic contribution. Thus, gender analysis is, however, generally also the weakest point in most value chain analyses, and largely ignored in most value chain manuals (Mayoux et al, 2007).

Dairy is an important marketable commodity in Ethiopia. Women have close engagement in the production and marketing of milk and milk products. They perform most of the production activities such as feeding, watering, animal hygiene, day to day management, milking and processing. Women in rural areas sell and control income from butter, while women in peri - urban and urban areas sell and control income from milk. Increasing demand for dairy products creates good opportunities to increase women's role in dairy value chain development and hence to raise their income (www.ipms-ethiopia.org).

The performance of livestock and livestock products value chains offers interesting avenues of approach (Rich et al, 2010). A core feature of this theme is that it will build on experiences to date (Baker et al 2009) to continue developing a methodology platform for tailoring value chain development methods to animal products, and its application to value chains often in the informal sector that benefit the poor.

2.11. Challenges and constraints of dairy value chain in Ethiopia

The structure and performance of livestock and its products including dairy products marketing both for domestic consumption and for export is generally perceived poor in Ethiopia (Ayele et al. 2003) due to:

- ☞ Underdeveloped and lack of market-oriented production,
- ☞ Lack of adequate information on livestock resources,
- ☞ Inadequate permanent trade routes
- ☞ Facilities like feeds, water, holding land ,
- ☞ Lack or non-provision of transport,
- ☞ Ineffectiveness and inadequate infrastructural and institutional set-ups,
- ☞ Prevalence of diseases, illegal trade and inadequate market.

2.12. SWOT analysis

The SWOT analysis is done from the perspective of investors in the dairy sub-sector to highlight key issues only. It is used to identify strengths, weakness, opportunities and threats along the dairy value chain in order to take intervention (SNV, 2012).

2.12.1 Strengths:

- Ethiopia has large cattle population. Dairying is practiced by the majority of the rural population.
- Suitable ecological condition for dairying..
- Growing milk demand in urban centres, particularly among the younger generation due to urbanizations, education, increase in income and change in life style.
- The major highland areas and districts are marked as milk shed areas for dairy development. The milk shed areas overlap with high population density, urban centre concentration, good road and Communication network and access to electric power grids.

2.12.2. Weaknesses:

- ❖ Insufficient raw milk supply for milk processing plants. This has forced the milk processing plants to operate with only 40% capacity and limited the production of pasteurized milk and other dairy products.
- ❖ Inadequate know-how with regard to good hygiene practices in processing of milk and milk products. This results in higher wastage of milk and public health hazards.
- ❖ Cultural indifferences to milk consumption (traditional attitude that milk is for children, cats and the sick people).
- ❖ Strong preference for local products, especially butter and ayib, which compete with selling the milk.
- ❖ There is insufficient or/ lack of private sector inputs, such as artificial insemination technicians,
- ❖ Community animal health workers, business development service providers, animal feed suppliers, etc. for milk value chain actors.
- ❖ Poorly developed dairy market infrastructure for collection and distribution of milk. This has limited accessibility (physical) to market/collection points.
- ❖ The milk value chain players are not actively working together.
- ❖ Milk collecting utensils and buckets used for up lifting the whole milk from the supply centers, where many smallholders are doing their sells, are not enough to collect and keep the quality of milk arriving to the collection centres of the processing plants.
- ❖ The milk collection centers are few in number, now well equipped, and limited in function to collection only rather than serving as center for dairy education, services and innovation.
- ❖ Insufficient baseline data of the actors involved in processing.
- ❖ The smallholder dairy farms barely employ appropriate and state-of-the-art production technology to produce quality milk in demanded by processors and consumers.

2.12.3. Opportunities:

- ❖ There is an increase in milk demand and to some extent consumption.
- ❖ Possibilities/capacities for improvement are available (*Natural and genetic resources*)
- ❖ New product development to increase customer selection (lifestyle products, pro-biotic yogurt, cottage cheese).
- ❖ Distribution into multiple market channels to reach more consumers.
- ❖ Institutional market segments (schools, hospitals).
- ❖ Improve packaging (e.g. out of home usage).
- ❖ There is political stability and conducive investment climate, government policy reforms, market orientation that are favorable for dairy investment.
- ❖ The cost of production for livestock products is generally low in the country. For milk production cost, Ethiopia is ranked among the countries with lowest cost of production in the world. The cost of labor is also low as compared to all the developed and many developing countries.

2.12.4. Threats

- ✚ Natural disaster (drought, flooding).
- ✚ Insufficient insights of the dairy farmers/ farms on the effect of increased milk off take on the farming system and family consumption.

- ✦ Dairy farmers are resistant against improved breeds.
- ✦ There are more than 200 days that the believers of Orthodox Christians abstain from eating and drinking any animal products whether processed or raw.
- ✦ Weak finance base of the rural and small urban/ per-urban dairy farmers to invest on improvement and expansion their dairy enterprises.
- ✦ Competition for milk from informal/local market systems.
- ✦ Absence of regulation which prevents sales of raw milk and thus pasteurized milk has to suffer until rules are set in place.
- ✦ Pasteurized milk consumption is not accustomed in local markets and people prefer boiled whole milk.

3. CONCLUSION and RECOMMENDATION

The livestock subsector plays a vital role as source of food, income, services and foreign exchange to the Ethiopian economy, and contributes to 12 and 33% of the total and agricultural GDP, respectively, and accounts for 12–15% of the total export earnings, second in order of importance (Ayele et al. 2003).

As dairying play significant role in the lives of the urban and peri-urban poor households (Yitaye et al., 2007), promotion of the dairy sector in Ethiopia can therefore contribute significantly to poverty alleviation as well as, availability of food and income generation. In Ethiopia, dairy value chain entailed about 500,000 smallholder rural farmers who produce about 1,130 million litres of milk of which 370 million litres of raw milk, 280 million litres of butter and cheese and 165 million litres is consumed by the calves (Mohammed, 2009).

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Ethiopia has a complex dairy value chain, with both formal and informal channels. Only 5% of the milk produced in Ethiopia is sold in commercial markets (Livestock and Livestock Characteristics, 2012). Based on market orientation, scale and production intensity, three major production systems can be identified: traditional smallholder; privatized state; and urban and per-urban farms (Gebre Wold *et al.*, 2000).

Cows are the main source of milk, and it is cows' milk that is the focus of processing in Ethiopia (Layne et al. 1990). Dairy processing in Ethiopia is generally based on *ergo* (fermented milk in Ethiopia), without any defined starter culture, with natural starter culture. Raw milk is either kept at ambient temperature or kept in a warm place to ferment prior to processing (Mogessie 2002). Dairy processing in the country is basically limited to smallholder level and hygienic qualities of products are generally poor (Zelalem and Faye 2006).

The reasons for low capacity utilization and low volume supply of milk and milk products of Ethiopian dairy development enterprises include; management problems, financial difficulties, and unstable and low consumption levels of processed milk in the society due to fasting that prohibits the orthodox Christians (about 35- 40 percent of the population) from consuming dairy products for almost 200 days every year (Yigezu, 2000).

As is common in other African countries (e.g., Kenya and Uganda), dairy products in Ethiopia are channeled to consumers through both formal and informal dairy marketing systems (Mohammed et.al, 2004). The SWOT analysis is done from the perspective of investors in the dairy sub-sector to highlight key issues only. It is used to identify strengths, weakness, opportunities and threats along the dairy value chain in order to take intervention (SNV, 2012).

Milk consumption can be increased, by promoting consumption as well as by making processed milk more available to urban areas, value chain actors should be encouraged to invest throughout the value chain in improving productivity, in improving logistics, in multiplying processing capacity, in working to ensure supply, in capturing economies of scale, in furnishing services and inputs. The dairy value chain would also attract more ready interest from financial services providers as a less risky, higher growth opportunity with many entrepreneurial and well established investors. In further, Quality is cherished, because it delivers higher sales and prices, and reduces waste. Moreover, the public sector and private sectors aware of and supportive of the actions to achieve dairy sector competitiveness. Generally, horizontally and vertically within the value chain, actors collaborate to achieve efficiencies and improved value chain competitiveness. Women often play a large role in decision-making regarding the processing and marketing of milk, in fattening, management and breeding but they don't have control and full rights control over resources like land, income and marketing of animals. Since the value chain concept is relatively new in Ethiopia, understanding the role of men and women in the area is very important. Gender analysis and assessments are required to collect information that can aid in the facilitation of women as accepted operatives in value chain activities. Targeting women for training and knowledge sharing along dairy value chains can move women from subsistence to semi commercial producers.

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