VALUE CHAIN STUDY ON “DAIRY INDUSTRY IN ETHIOPIA”

FINAL REPORT

TO

ADDIS ABABA CHAMBER OF COMMERCE AND SECTORAL ASSOCIATIONS

BY:
TAP CONSULTANCY SERVICES

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ADDIS ABABA
Acknowledgment

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<td>AACCSA</td>
<td>Addis Ababa Chamber of Commerce &amp; Sectoral Associations</td>
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<td>AGP-LMD</td>
<td>Agricultural Growth Program-Livestock Marketing Development</td>
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<td>AI</td>
<td>Artificial Insemination</td>
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<td>ALPPIS</td>
<td>Addis Livestock Production and Productivity Improvement Service</td>
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<td>ARARI</td>
<td>Amhara Region Agricultural Research Institute</td>
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<td>ATA</td>
<td>Agricultural Transformation Agency</td>
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<td>B2B</td>
<td>Business to Business</td>
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<td>CPA</td>
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<td>EIAR</td>
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<td>EMDIDI</td>
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<td>EMB</td>
<td>Ethiopian Birr</td>
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<td>FEED</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>GTP</td>
<td>Growth &amp; Transformation Plan</td>
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<td>HHS</td>
<td>Households</td>
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<td>ILRI</td>
<td>International Livestock Research Institute</td>
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<td>IMF</td>
<td>International Monetary Fund</td>
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<td>KM</td>
<td>Kilo Meter</td>
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<td>LEO</td>
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<td>LMP</td>
<td>Livestock Master Plan</td>
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<tr>
<td>ltr</td>
<td>Litre</td>
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<td>MoI</td>
<td>Ministry of Industry</td>
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<td>MoLF</td>
<td>Ministry of Livestock and Fishery</td>
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<tr>
<td>NAIC</td>
<td>National Artificial Insemination Centre</td>
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<td>Non-Governmental Organizations</td>
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<td>NZDB</td>
<td>New Zealand Dairy Board</td>
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<td>OARI</td>
<td>Oromia Agricultural Research Institute</td>
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PC - Private Companies
PVCA+G³ - Participatory Value Chain Analysis with Gender, Green and Governance Lens
qty - Quantity
RARI - Regional Agricultural Research Institutes
SARI - Southern Agricultural Research Institute
SMP - Schemed Milk Powder
SNV - Netherlands Development Organization
TARI - Tigray Agricultural Research Institute
UAE - United Arab Emirates
USD - United States Dollar
VC - Value Chain
VCA - Value Chain Analysis
WB - World Bank
WMP - Whole Milk Powder
Executive summary

**Background:** AACCSA has been implementing a three years’ project entitled “Strengthening the Private Sector in Ethiopia” with a budget obtained from Royal Danish Embassy. The overall objective is to undertake an in depth value chain analysis to generate sufficient information on the main opportunities and bottlenecks in the export and local market value chains of Dairy industry.

**Methodology:** To conduct the study Participatory Value Chain Analysis with Gender, Green and Governance Lens (PVCA+G³) was used as a frame throughout the process. Review of secondary information made to assess existing value chain situation, national level trends and other country experiences, global benchmarks. The primary data collection was done in main segment of the value chain. Representative samples were taken with multistage purposive sampling technique. During the study both quantitative and qualitative data collection tools was employed. Interview and key informant discussion were made with primary value chain actors, existing different private and public service providers using semi-structured questionnaire.

**Main findings**

**Market demand:** At global level demand for milk and milk products in developing countries is growing with rising incomes, population growth, urbanization and changes in diets. In addition to the increase in the local production, imports of dairy products had an increasing trend in the past. Over the last five years the country is spending more than 15 million USD on average for imported dairy products the main share of the spending is for milk powder. As per LMP projection milk consumption of the country will reach 5,466 million litres in 2019/20. Ethiopia exported an amount less than 300,000 USD per annum during the last five years. Majority of the export destined to Somalia and traditional spiced butter export for Ethiopian community and other consumers to USA and other countries. With the expansion of the sector the volume exported to Somalia can be increased and other destinations like Sudan, South Sudan and Djibouti can be expanded.

**Production/supply:** The total volume of milk produced in Ethiopia increased over the last 15 years from less than 1 billion litres to 3.06 billion litres in 2015/16. The overall country milk production expected to surpass existing milk demand as per GTP II period (2015–2020) projection with about 2501 million litres that is 47% above (LMP, 2015). In milk shades like Addis and its surrounding there are small scale dairy semi-commercial farms that supply significant volume of milk to Addis Ababa and other nearby towns.

**Input and service supply:** At national level most of the feed is coming from green fodder (grazing) while in the study area 52% of the respondents’ practices stall feeding. Feed availability and price is the most critical issue raised by almost all the dairy farmers. Veterinary services are primarily delivered by the government with emerging private service provision in some locations. Getting good quality cross breeds or local dairy cow from the market is also an issue. Government and NGOs are engaged in direct provision and facilitating the training and advice service development but about 51.6% of the respondents are not received training related to dairy production, marketing and dairy products processing. The formal financial service provision to dairy production is limited and only 8.7% of the respondents’ accessed loans from different sources that includes Addis Credit and Saving Share Company, Cooperative Union, NGOs revolving fund scheme and private companies. Insurance for dairy cows and other agricultural practice are still more at pilot in some areas not reported use of the service by the respondents. Packaging and good quality container is an important issue for the industry and assurance of the product quality.
Production practice: most of the respondents (75%) practice traditional hand milking by washing teats before milking, in 19% of the cases hand washing of teats before milking not practiced. The interviewed households produce on average 31 litre per day, most of the households produce small quantity of milk about 15 litre (median). There is variation of scale and production volume among the interviewed dairy farmers. Butter production is not a common practice for most of the respondents, on average producing 1-2 Kg butter per week with a maximum production of 3-4Kg per week. Most dairy farmers (93%) supply their milk to the market. From the milk they produce less than 10% consumed at household level (0.5-2 litre own consumption).

Collection and market supply: Most of the dairy farmers (69%) sell their milk at home or within 1 Km distance, 16% within 1-5Km distance and 5% will go above 5Km distance to sell milk. The main buyers of their milk are local collectors/traders, milk processing, cooperative unions, cafes and individual consumers in their importance order taking the number of cases. Most of the milk produced supplied to the market as fresh milk including the evening milk. Most of the respondents (about 77%) feel they are not getting fair price with high feed and other costs of production. Dairy cooperatives play a major role in milk collection. On average 5,241 litres milk collected by the current dairy processing companies ranging from 150ltr to 40,000 ltr per day. Milk price ranges from area to area from buyer types on average 1 litre of raw milk are sold at Birr 13 on average from minimum price of 9 to maximum price of 20 with some price reduction during fasting season (1-2 Birr/ltr) reduction on average.

Processing: There are at about 35 active dairy processors in the country. The processors collect raw milk from dairy farms, private milk collectors, cooperatives and unions. Except one company extended shelf life milk and UHT milk are not supplied to the market currently by existing processing companies. There is no Ethiopian company processing milk powder, although some processors are planning to invest in such facilities. Recently Anchor, New Zealand’s leading milk brand has begun producing fortified milk drink in Ethiopia with quick gain of market share. Most of the companies work under capacity for most of the product types. On average the companies are working 18-43% on average for the different products as indicated in the following graph.

Wholesaling and retailing: The processed dairy products are distributed to retail shops, supermarkets, schools, hospitals, restaurants, cafes and hotels located in major urban centres. The main market destination is Addis Ababa market for most of the processed products with share of 50-65%. Raw milk is sold through retailers or door to door distributors in Addis mainly in areas where there are crowded houses and common living apartments (e.g. condominium houses). Raw milk shops are also opened by individual traders, dairy farms and cooperatives in different village corners in Addis and other towns. Most traditional cooking butter and cheese are supplied through the informal market channel, the main one in Addis Ababa is Markato butter market (Kibe Berenda).

Gender, Environment and governance: Dairy business engages both men and women in the different segment of the value chain. Improving the dairy business will benefit the whole family in terms of nutrition and additional income. Dairy value chain is the focus point in the carbon emission, at national level the strategy is to decrease the head count and increase the productivity per cow. The other strategy needed is to look the manure management aspect which reduces the carbon emission and contributes in the energy supply. The dairy farmers saying can be improved by increasing their collaboration and by engaging them in wider value chain platforms.
Other countries’ experiences: Taking their dairy industry level, three countries are picked (Kenya from Africa, India from Asia and New Zealand from developed economy) and their experiences in the sector are reviewed.

Main constraints: Feed (price and availability), absence of green forage and frequent hay consumption that leads the animals to disease, lack of space (for expansion and waste disposal), Working capital shortage, absence of good productive breeds in the market, low quality AI service and heating hormone shortage, inefficient quality veterinary service (e.g. delivery) and chronic veterinary medicine critical shortage (particularly for calcium) with high ineffective rate are the main constraints in dairy sector.

Recommendation: AACCSSA would promote for local product and fresh milk consumption for the sector development, facilitate getting better breeds with joint venture activities with foreigners, provide training for the actors, create linkage with feed providers, support in availing loan (access to credit facilities), arrange experience sharing discussion for the sector actors and consult other countries experience so as to minimize the challenges in the production system. In addition to this a joint venture activities and technology transfer process vitalized through AACCSSA for members and AACCSSA should negotiate with government on the levied VAT would be avoided from feeds sells. The last but not least recommendation is that market regulation policy and adulteration control system should be in place.
1. Introduction

1.1. Background to the study

AACCSA has been implementing a three years’ project entitled “Strengthening the Private Sector in Ethiopia” with a budget obtained from Royal Danish Embassy. One of the key interventions planned under this project includes conducting value chain analysis (VCA) with a view to outline the manufacturing sector in Ethiopia. The study output will be used (i) as a need assessment for the provision of support services which are planned to enhance overall capacity of the target groups, including members of the chamber, for greater contribution in the development process of the country (ii) to design the entire monitoring and evaluation process of the action, (iii) to gauge AACCSA advocacy efforts on the particular challenges and bottlenecks that shall be identified.

The overall objective of the assignment was to undertake an in depth value chain analysis to generate sufficient information on the main opportunities and bottlenecks in the export and local market value chains of Dairy industry. Moreover, the value chain study aimed to assess whether or not an intervention by AACCSA is likely to contribute significantly to increase production, profit and export for manufacturers in Ethiopia with the following specific objectives:

(i) To collect information regarding Dairy production value chain in general
(ii) To undertake an analysis of the major problems and constraints that the Dairy industry and business operators are facing in Ethiopia with particular focus on those who are based in Addis Ababa
(iii) Collect and compile views of the respondents as recommendations in addressing the identified needs for AACCSA and other actors to act upon

1.2. Essence of value chain approach

Value chain concept is framing most industries competitiveness assessment and intervention formulation. The value chain concept reshaped in the business world in 1985 when Harvard Business School Professor M.E. Porter introduced the concept of value chains in his book, “Competitive Advantage: Creating and Sustaining Superior Performance.” With time, the concept was also applied to analyses of the chain of activities that occur beyond a single firm, as commodities move from the production line and are marketed to consumers. Value chain analysis has been used to study entire business supply chains and distribution networks to understand the complex web of stakeholders involved in poverty reduction and inclusive economic development.

As indicated in Fig 1, even though there is some adaption to different organizations focus and style of presentations, in general the value chain approach now framed to systemic approach than a linear relationship. In a book written from Ethiopia value chain development experience book “Pro-Poor Value Chain Development” (Visser et. al, 2012), to foster pro-poor development the critical principle characters indicated are (i) A holistic approach that stresses systemic constraints and opportunities
derived from the configuration of market and extra-market relations (networks); (ii) The notion that economic development is achieved through joint action by all relevant actors; (iii) Recognition of the private sector as a key engine of growth and a willingness to strengthen the action of lead firms, particularly with regard to their linkages with more vulnerable agents in the value chain; (iv) A shift in the ‘centre of gravity’ from the creation of supply capacity to the creation of market linkages and the establishment of business relationships.

A value chain may be at embryonic, or infant or moving to maturity level in which it has different characters and requires different level of intervention to move to the next level.

As documented in recent agricultural value chains practitioners and academia, systemic changes demand both private and public engagements. USAID, through its Leveraging Economic Opportunities (LEO) project, defines a market system as a “dynamic space, in which public and private actors collaborate, coordinate and compete for the production, distribution and consumption of goods and services” (Campbell, 2014). The behaviour and performance of these market actors are influenced by other market actors, informal and formal rules, financial and non-financial incentives, and the physical environment.

As indicated in Fig. 3 the support function has two big elements the infrastructure part and service component. At global level more role of government expected the infrastructure part while the private sector in the service aspects.

In practice, in Ethiopia and other countries both public and private sectors has a role in both type of services. These entities sometimes they are competing and other time in more complementing modality. The core value chain actors are also engaged in embedded service for their suppliers/customers and provide service for others in fee bases. Value chains can only develop and survive if there are supporting functions: services, resources and infrastructure. The value chain might rely on factors, such as access to transport, irrigation services, agricultural inputs and credit and a wider network of related services and infrastructure – such as transport services, materials supply-chains, electricity, banking services. The existence and quality of these supporting functions have a major impact on the benefits of poor people that derive their living from core value chain exchanges. Members
based organizations like AACCSA will set membership rules in their respective organization, negotiate and influence the enabling environment as a whole and provide different services for better functioning of the value chain. In dairy value chain there were government and non-governmental actors’ interventions in the different aspects. For better and sustainable industry development the main actors and their representative organizations like AACCSA should have clear understanding of the value chain to formulate better intervention and support services for their members.

1.3. Organization of the report

The report has four chapters. Chapter one presents the introduction session that includes background information, conceptual and methodological aspects. Chapter two briefly explains the methodology used. In chapter three the main value chain findings explained and in the final chapter the proposed upgrading and facilitation required presented.
2. Methodology

2.1. Data collection and analysis frame

Participatory Value Chain Analysis with Gender, Green and Governance Lens (PVCA+G³) was used as a frame in the literature/secondary information review, data collection, data collection instrument/tools preparation and throughout the process. PVCA is a process conducting a VCA through the participation/consideration of different actors in the value chain. There are different activities and actors with different levels of understanding of the market and points of view. This makes it necessary to involve all stakeholders to have a clearer picture of the market. PVCA involves: Mapping, Quantitative and qualitative research.

2.2. Main Data Sources and Collection Method

Primary sources:
Interview and key informant discussion were made with primary value chain actors, existing different private and public service providers using semi-structured questionnaire. Representative respondents selected during the secondary data review stage, members list received from AACCSA and other sources.

- Small and commercial level dairy farms
- Input and service providers
- Cooperative and unions
- Processing companies
- Other value chain actors: collectors, traders, supermarkets, exporters and importers
- Service providers (certification, transport), other secondary actors and enablers
- Financial service providers
- ACCSSA with active members, partner project staffs and other relevant partners discussion – experience and challenges
- Public offices and other supporters

Secondary sources:
Review of secondary information made to assess existing value chain situation, country specifics and trends, global benchmarks. The review includes:
- Livestock Master Plan and Road Map,
- Survey reports (e.g. CSA production and consumption survey of different years, CSA survey,
- FAOSTAT database
- WB competitiveness study report
- Agriculture sector and dairy value chain studies by government and international organizations
- Studies conducted by projects and NGOs (e.g. SNV, Land O’ Lakes, AGP-LMD)
- Studies by sector associations and their supporters

2.3. Sample Size Determination and Geographical Focus

The data collection was done in main segment of the value chain. Representative samples were taken with multistage purposive sampling technique. The steps followed are highlighted below:
1. Small dairy producers: the main focus area for the primary household respondents will be the main dairy production areas in Addis Ababa and its surrounding vicinity milk shade where AACCSA members are based and sourcing. Following the routes of the milk shades the study area categorized into six clusters: (i) producers in Addis Ababa, (ii) producers in Sebeta route/town surrounding (iii) producers in Dukum-Bishoftu route/town surrounding (iv) producers in Sululta route/town surrounding (v) producers in Holeta-Ambo route/town surrounding, (iv) Sendafa-Sheno route/town. In each cluster 2-3 Kebeles/towns selected purposefully in consultation with the local organizations. In selected Kebeles/towns 5-10 dairy producers randomly selected and a total of 123HHs interviewed in the six clusters.

2. Medium and large producers: commercial farms that are engaged in dairy production interviewed. Two-three commercial farms interviewed in each cluster.


4. Dairy product processing factories: majority of existing active member and other non-member companies interviewed and their situation assessed.

The data collected triangulated and complemented from the different sources and secondary information. Findings of the study will be validated during the joint workshop.

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<th>Table 1: Sample Size and Distribution</th>
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<td><strong>Cluster</strong></td>
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<td>Addis Ababa</td>
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<td>Sululta route/town</td>
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<td>Holeta-Ambo route/town surrounding</td>
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<td>Dukum-Bishoftu route/town</td>
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<td>Sendafa-Sheno route/town</td>
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<td>Sebeta route/town surrounding</td>
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<td><strong>Total</strong></td>
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2.4. Data collection tools and analysis

During the study both quantitative and qualitative data collection tools was employed. For data collection at producer and local actors semi-structured questionnaire was developed and used for quantitative and qualitative data collection. Checklist developed used for support actors interview and focus group discussion.

For producers level production system data analysis SPSS software employed for analysis. For other actors data aggregation and estimation excel sheet employed. Analysed data put in the value chain map in the different quantitative data analysis and confirmation discussion (number of actors, volume/qty, price, cost, value addition, gross margin). Actor dynamics and relationship issue analysed using graphs. Qualitative data and information generated during the different discussion synthesized and complemented with the quantitative data for the intervention identification and conclusion of the analysis.
3. Dairy Value Chain

3.1. Market (Supply and Demand)

3.1.1. Main Market Segments Trends and Driving Factors

The future of the dairy sector in Ethiopia is more positive with different driving factors, which includes positive economic outlook and lifestyle changes. Ethiopia has an estimated population of approximately 99.4 million in 2016, up from 2015’s estimate of 98.9 million, the second-most populous country of Africa after Nigeria (CSA, 2013). National real GDP growth averaged 10.1% per annum during the period of GTP I and real GDP growth during the last 12 years averaged 10.8 percent per annum. The economy expected to remain robust from 2016 to 2019 at 7.6% as per IMF projection and above 11% as per GTP II. In line with the economic growth, the emerging middle class consumer segments are willing to embrace new products and services that include agricultural products. According to the 2014 GDP per capita statistics, 0.4% of the population has consumption of 10-20 USD/day, 4.3% of the population 4-10 USD/day and 24.6% of the population 2-4 USD/day per capita. With the increase in income, it is expected that consumption pattern shifts to high value food items that demands encouraging supply of livestock products.

In addition to the purchasing power increase, urbanization, population growth and consumer awareness will increase the demand for quality, volume, graded and standardized products and traceability of sources. Life style changes call for more of fresh and finished ready to eat products with appropriate packaging and labelling. As per research findings of Land O’ Lakes in 2010 showed that the top 10% earners in Addis Ababa consumed about 38% of milk, while the lowest income group, approximately 61% of the population consumed only 23%. The high milk price for pasteurized milk in supermarkets, considered high to afford for middle and low-income consumers. Survey results conducted by LMD project show the average per capita consumption for four towns (Addis, Bahir Dar, Hawassa and Dire Dawa) to be 28.86 litres per annum. The consumption in Addis Ababa is very high (51.85 litres) as compared to the national and other towns’ figure.

As per LMP projection milk consumption of the country will reach 5,466 million litres in 2019/20.

Fig. 5: Consumption Projection (2015-2019/20)

![Cow milk consumption (million lts)](chart.png)

Source: Livestock Master Plan

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1. LMD VCA Dairy
Imports: Imports of dairy products have an increasing trend except for 2013 that may be related to hard currency access. Over the last five years the country is spending more than 15 million USD on average for imported dairy products with the main share of the spending for milk powder. Presently the value of exported dairy products is very low.

Fig. 6: Import CIF Value (USD)

<table>
<thead>
<tr>
<th>Year</th>
<th>CIF Value (USD)</th>
<th>Linear (CIF Value (USD))</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>13,301,057.00</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>15,871,778.95</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>11,407,637.75</td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>16,711,776.45</td>
<td></td>
</tr>
<tr>
<td>2015</td>
<td>18,413,676.85</td>
<td></td>
</tr>
</tbody>
</table>

Source: ERCA Import and Export Data

Foreign market and Ethiopian Export: at global level demand for milk and milk products in developing countries is growing with rising incomes, population growth, urbanization and changes in diets. This trend is pronounced in East and Southeast Asia, particularly in highly populated countries such as China, Indonesia and Vietnam. The growing demand for milk and milk products offers a good opportunity for producers (and other actors in the dairy chain) in high-potential, peri-urban areas to enhance their livelihoods through increased production. Global milk production is estimated at approximately 735 billion litres annually. The largest producers are Europe (EU) countries at ~156 billion litres annually, India at ~131 billion litres and the United States (US) at ~91 billion litres. New Zealand is the 8th largest producer at 21 billion litres annually. These top eight represent ~407 billion litres or ~55 per cent of global production.

Fonterra\(^2\) estimates that annual global trade in dairy ingredients is approximately 9 per cent of total milk production and was ~65 billion litres on a milk equivalent basis in 2014. Of the major dairy producing countries, a number of these countries including New Zealand, Europe, United States, Belarus, Argentina, Australia and Uruguay export ~55 million tonnes\(^3\) annually, or around 84% per cent of global dairy exports. The main exporting countries with product types are:

- New Zealand - Powder (SMP and WMP) and milk fat (Butter/AMF)
- Europe – Powder (SMP and WMP) and cheese
- United States – SMP, cheese and whey powder
- Belarus – SMP, cheese and fluid and fresh dairy
- Argentina – WMP and cheese
- Australia – Powder (SMP and WMP) and cheese
- Uruguay - WMP and cheese

\(^2\) Fonterra Co-operative Group Ltd is a leading dairy company in New Zealand and one of the top ten dairy companies in the world

\(^3\) Fonterra Co-operative Group Ltd is a leading dairy company in New Zealand and one of the top ten dairy companies in the world
Global dairy demand is estimated at ~15 million tonnes of product annually. The top 5 are China, Russia, Mexico, Japan and the USA. The US is the only major importer that is also a major net exporter. China imports ~2 million tonnes of dairy products annually, Russia ~1.4 million tonnes, Mexico and Japan over 500 thousand tonnes each. In addition, the US, Indonesia, Philippines, Saudi Arabia and Algeria import over 400 thousand tonnes with Singapore, Iraq, Malaysia, Venezuela and UAE importing over 300 thousand tonnes annually. These 14 countries account for over eight million tonnes or 55 per cent of global dairy imports.

Ethiopia exported an amount less than 300,000 USD per annum during the last five years. Majority of the export destined to Somalia and traditional spiced butter export for Ethiopian community and other consumers to USA and other countries. With the expansion of the sector the volume exported to Somalia can be increased and to other destinations like Sudan, South Sudan and Djibouti can be expanded.

3.1.2. Production and supply

From the 2015/16 CSA survey estimate of 57.83 million total cattle, the female cattle constitute about 55.38 percent (CSA, 2016). When classified with purpose it is estimated that there are 6.74 million dairy cows and 11.34 million milking cows\(^3\). The total volume of milk produced in Ethiopia increased over the last 15 years from less than 1 billion litres to 3.06 billion litres in 2015/16. The dairy sector contribution to the national Gross Domestic is expected to increase in the years to come too. The overall country milk production expected to surpass existing milk demand as per GTP II period (2015–2020) projection with about 2501 million litres that is 47% above (LMP, 2015). As per the plan the surplus of milk could then be substituted for imported milk products and used domestically for new or additional industrial uses (e.g. in the baking industry), or exported as milk powder or UHT to raise foreign exchange earnings.

The milk is produced by 11.34 million milking cows are kept within five different dairy farming systems: (i) Urban and peri-urban systems that is the emerging smallholder dairy farming; (ii) Specialized commercial intensive dairy farming; (iii) Mixed crop livestock system, the traditional highland mixed farming; (iv) Pastoral livestock Farming, (v) Agro-pastoral system, that is the lowland mixed livestock farming. The rural dairy system, which includes the last three groups, contributes 98% of total production, while the first two groups contribute only 2% of the total national milk production but main sources for big cities milk consumption.

From the nine milk sheds (Fig 7), (i) Addis and its Surrounding, (ii) Adama-Asella and (iii) Ambo-Woliso milk sheds are the main sourcing areas for most dairy processing companies and commercial dairy farms that are members of AACCFA. Addis Ababa and its surrounding milk shed is the most developed milk shed. Most of the dairy processing industries that include members of AACCFA are located within this

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\(^3\)Milking cows – that are currently providing milk while dairy cows kept for dairy that are providing or expected to provide milk
milk shed. The milk shed big target is Addis market and the area has good potential for semi-commercial producers with high percentage of crossbreds. Even though now struggling with the commercial farms expansion and urbanization the area has good conditions for fodder production and use of by-products.

The Adama-Asella milk shed is the largest in the country in terms of the potential volume of raw milk production as well as the number of milking cows. This milk shed is 200 km long and is located east of Addis, connecting Dukem-Debre Zeit-Adama-Assela with very good road connection to Addis. The area also has high potential for roughage production, access to feed from nearby feed factories (Alema Feeds, Ethio Feed and others) and factory by-products are also widely available. The number of crossbreds and exotic cows are relatively high and artificial insemination (AI) services are functioning well (DairyBizz, 2015).

In the Ambo-Woliso milk shed, which consists of West and South-West Shoa in the Oromia region, market potential is high because of access to nearby places like Addis. Fodder production conditions are good, by-products are available and AI and veterinary services are of moderate quality compared to the other two milk sheds. Milk production is low compared to the number of milking cows, since most of them are local breeds with low average daily production.

3.2. Functions and actors in the value chain

As indicated in the value chain map (Fig 5), most of the milk and milk products supplied from small scale dairy farmers. In milk shades like Addis and its surrounding there are small scale dairy semi-commercial farms that supply significant volume of milk to Addis Ababa and other nearby towns. The main function and actors’ role are described in next sections.

Fig. 8: Milk and Milk Products Value Chain Map in Addis and Surrounding Milk Sheds
3.2.1. Input supply and services

The main inputs and service required for the dairy sector are feed, water, breed stock, AI and health service, training/advice and finance.

Feed

At national level most of the feed is coming from green fodder (grazing) while in the study area 52% of the respondents’ practices stall feeding. Others use a combination of open grazing, cut-and-carry system and stall feeding. From the respondents 45.2% of them depend mainly on improved forage and supplementary feed while others using by complementing with natural pasture. The main supplementary feeds are crop residue that includes failed maize or sorghum and industrial by-product. Most dairy farmers buy feed from nearby town feed suppliers within 1-3Km distance. The average distance the farms travel for feed is 8-9Km because some of the commercial farms are traveling from 60-80Km distance to get big volume with reasonable price.

<table>
<thead>
<tr>
<th>Table 2: Feed purchasing distance (Km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max distance (Km)</td>
</tr>
<tr>
<td>-------------------</td>
</tr>
<tr>
<td>Average</td>
</tr>
<tr>
<td>Minimum</td>
</tr>
<tr>
<td>Maximum</td>
</tr>
<tr>
<td>Mode</td>
</tr>
<tr>
<td>Median</td>
</tr>
</tbody>
</table>

Source: Survey results

Using and planting of forage plants is not a common practice for the dairy farmers interviewed. There are few farmers that grow Alfalfa, Elephant grass and Sesbania. From the dairy farmers interviewed 61% practice feed conservation for dry season feeding using simple shade and their own house. They are storing products like dry hay and industrial by-products. Others are not doing conservation for dry time with the limited exposure they have, limited working capital and space.

Feed availability and price is the most critical issue raised by almost all the dairy farmers. The main reasons for the feed shortage as per the respondents are expansion of crop land, urbanization, commercial farms expansion, livestock number increase, lack of forage seed, poor feed conservation practices and lack of space for feed storage.

AI and veterinary services

Veterinary services are primarily delivered by the government with emerging private service provision in some locations. From the respondents 96% of them confirmed presence of veterinary service in nearby areas. Above 50% of the respondents take their cow 2-3 times per year to get health service, 5% of them only once in a year and 41% more than 4 times a year (17.4% 4to5 times; 4% 6to7-6; 17.5% 7 times and more). They get the service from private or public vet service centres. They pay 100 to 300 Birr on average per cow per treatment. There is also a big concern on the quality the service provided by private AI service providers and on time availability of government assigned veterinarians.

For supply of AI, the National Artificial Insemination Centre (NAIC) is producing and distributing semen from genetically improved bulls. The semen produced is distributed to AI technicians. A group of private livestock professionals owned service provider called ALPPIS (Addis Livestock Production and Productivity Improvement Service), is the leading private AI service-provider in Ethiopia. The company
imports and distributes semen from the US exporter World Wide Sires. The present quality of veterinary services is considered to be poor by many independent experts. There is also a drug supply problem for veterinary service-providers both in terms of quality and availability as confirmed during the survey.

**Improved breeds**
Getting good quality cross breeds or local dairy cow from the market is also an issue. The average improved and local cows buying price varies depending on the status/productivity of cow and location. The average price in Addis and surrounding milk shed for indigenous dairy cow costs on average Birr 9,000 and for cross breed about Birr 36,000 as indicated in Table 3.

**Table 3: Buying price of dairy cow (Birr)**

<table>
<thead>
<tr>
<th>Buying Price</th>
<th>Indigenous breed (Birr)</th>
<th>Cross breed (Birr)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>8,902</td>
<td>35,715</td>
</tr>
<tr>
<td>Minimum</td>
<td>4,500</td>
<td>8,500</td>
</tr>
<tr>
<td>Maximum</td>
<td>26,000</td>
<td>55,000</td>
</tr>
<tr>
<td>Mode</td>
<td>9,000</td>
<td>37,500</td>
</tr>
<tr>
<td>Median</td>
<td>7,500</td>
<td>36,500</td>
</tr>
</tbody>
</table>

Source: Survey results

**Training and advice (extension service)**
Training and advice is a critical part of the service, Government and NGOs are engaged in direct provision and facilitating the service development. From the respondents only 45.2% confirmed receiving of training and advice from their respective cooperative union, government extension workers and NGOs (e.g. SNV, Land O Lake and others). The other 51.6% not received training related to dairy production, marketing and dairy products processing. The quality of training and advice provided is not continuous, not quickly responsive for their problem and not tailor-made as commented by experts and users.

At national level, development agents that are based at farmer training centres are the main providers of extension services. Development agents can receive support from subject-matter specialists who function at woreda (district) level and partner organizations. NGOs that are working in the sector provide complementing service by their own technical staff and/or outsourced experts for specific subjects. The private service providers are few and their service charge is not affordable for small dairy farmers. Specialized services and tailored support to commercial farmers is an area which needs to be encouraged. For most dairy farmers skills on farm management, feeding, housing, health, hygiene, postharvest handling, marketing and business management need to be enhanced with acceptable service business model.

**Financial service**
The formal financial service provision to dairy production limited only 8.7% of the respondents’ accessed loans from different sources that includes Addis Credit and Saving Share Company, Cooperative Union, NGOs revolving fund scheme and private companies. More than 86% of the respondents didn’t access loan service. The reason mentioned for the low access are financial institutes collateral requirement, loan processing time and steps, farmers awareness level, risk averting behaviour and interest fearing culture. Insurance for dairy cows and other agricultural practice are still more at pilot in some areas and not reported use of the service by the respondents. Financial services for other dairy industry actors mentioned as a critical issue to expand their business and to run day to day operation with enough working capital.
Infrastructure and other service

Most of Addis surrounding dairy farmers are not far from road and market centre, based on the study findings the dairy producers on average 4 and 1 KM far from market and all weather roads respectively.

Table 4: Dairy Producers Distance from Market, Development Centre and Road

<table>
<thead>
<tr>
<th></th>
<th>Market Distance (KM)</th>
<th>Development Centre Distance (KM)</th>
<th>Road Distance (KM) – all weather road</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>4</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Minimum</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Maximum</td>
<td>40</td>
<td>12</td>
<td>15</td>
</tr>
</tbody>
</table>

Source: Survey results

Packaging and good quality container is an important issue for the industry and assurance of the product quality. Milk collected using mainly plastic containers and aluminium cans. At retail level using good packaging could offer longer shelf life, less spoilage on the shelf or after purchase, and greater possibility of catering to consumers’ usage patterns and price awareness. With the current products in the market milk is usually sold in ½ litre plastic bags. Cheese is usually sold by the slice, not in packages. Yogurt is sold in plastic containers. Almost all packaging materials are imported; largely from UAE, Kenya and Israel. Based on the discussion made with processing companies and some studies, packaging costs alone may add from 25% to 35% of the cost of processed milk depending on the type of packaging used. Because of using the same mould the labelling qualification for each company and accountability for things described in the label is very weak.

3.2.2. Production

Enterprise

As indicated above in section 3.1.2., the production of milk and milk products at national level is coming from smallholder farmers using the local milking cows. In Addis and its surrounding milk shed semi-commercial and small peri-urban producers also make significant contribution for the overall production. As per the study findings the current main suppliers are mixed farmers, few others that are engaged in civil service, trade and skilled labour. Dairy business serves as complementing business source for their family living. The business seems a business of more adult people than the young generation with average age of 45 with age range of 19-84. The average herd size is 4 local breed and 6 cross breeds for the interviewed dairy farms that is skewed as compared to all farms average in the area and at national level. At Woreda level in the milk shed with a range of 5-41% of improved breeds with big variation like the case of Ad’aa and Bereh Woreda.

Table 5: Dairy Herd Size

<table>
<thead>
<tr>
<th></th>
<th>Total Livestock No</th>
<th>Indigenous Cow</th>
<th>Improved cow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>14</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>Minimum</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Maximum</td>
<td>82</td>
<td>34</td>
<td>40</td>
</tr>
</tbody>
</table>

Source: Survey results

SNV, Study on Dairy Investment Opportunities in Ethiopia, 2008

Cases of Ada’a Woreda and Bereh Woreda Indigenous6500 and Improved 4,600, Cows; Indigenous 29,747 and Improved - 1,717 respectively
Feeding, cleaning and milking practiced by family members or hired labour based on the scale of the dairy farm and with some variation in management practice.

**Milking**
Most of the respondents (75%) practice traditional hand milking by washing teats before milking, in 19% of the cases hand washing of teats before milking not practiced. In 5.6% of the cases calves are allowed to suckle their dams before (to initiate milk let-down) and after milking (to drain whatever is left in the udder). Milking is done by men (43.7% cases), women (25.4%) or combination of the family (30.4%). No one is using modern technology for milking from interviewed dairy farmers. Milking is done almost in all the cases (97.6%) twice a day, morning and evening time. Day time milking is not common (not used to), marketing is not practiced and feel that is not that much productive. If the farmers feel the cow or calve are sick they reduce milking frequency.

**Productivity**
The most common lactation period for the local breed with their current management is 5-7 months in few cases extended to 10 month and more. For the cross breeds 46.8% of the cases provide milk for 5-7 months, 21.4% of the cases for 7 to 9 months, 10.3% for 9 to 10 months and 8.7% of the cases they provide milk for more than 10 months. The productivity level also varies in the different periods. As indicated in Fig 9, the local cow gives on average 4, 3, and 2 litre per day in the 0-3 month, 3-6 month and 7-9 month lactation period respectively while improved ones gives 15, 10 and 7 litre per day in the same lactation periods. The productivity level gap is quite big in all the periods which narrow at the end of the lactation period.

**Fig. 9: Milk per day per cow (ltr)**

![Fig. 9: Milk per day per cow (ltr)](image)

Source: Survey results

**Milk production**
The interviewed households produce on average 31 litre per day, most of the households produce small quantity of milk about 15 litre (median) as indicated in Fig 9. There is variation of scale and production volume among the interviewed dairy farmers.
Table 6: Daily Production (per HH per day)

<table>
<thead>
<tr>
<th></th>
<th>Cow milk per day per HH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>31</td>
</tr>
<tr>
<td>Minimum</td>
<td>0</td>
</tr>
<tr>
<td>Maximum</td>
<td>330</td>
</tr>
<tr>
<td>Mode</td>
<td>1</td>
</tr>
<tr>
<td>Median</td>
<td>15</td>
</tr>
</tbody>
</table>

Source: Survey results

Butter and other milk products
Butter production is not a common practice for most of the respondents, on average producing 1-2 Kg butter per week with a maximum production of 3-4Kg per week. They are getting about 1Kg butter from 9-10ltr of local cow milk and to get 1Kg butter they need more than 30ltr milk on average in the case of cross breed. Producing other milk products from the cross breed is far less profitable for the dairy producers. They use local cheese (Ayib) and other by-products for own consumption or supply to the market.

Table 7: Butter productivity and production

<table>
<thead>
<tr>
<th></th>
<th>Productivity (butter gm/ltr)</th>
<th>Production per week per household (Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Local breed</td>
<td>Cross breed</td>
</tr>
<tr>
<td>Average</td>
<td>110</td>
<td>29</td>
</tr>
<tr>
<td>Minimum</td>
<td>25</td>
<td>15</td>
</tr>
<tr>
<td>Maximum</td>
<td>200</td>
<td>50</td>
</tr>
<tr>
<td>Mode</td>
<td>50</td>
<td>#N/A</td>
</tr>
<tr>
<td>Median</td>
<td>103</td>
<td>27</td>
</tr>
</tbody>
</table>

Source: Survey results

Market supply and marketing
Most dairy farmers (93%) supply their milk to the market. From the milk they produce, less than 10% consumed at household level (0.5-2 litre own consumption). Most of the produced milk supplied to the market, on average the one who supplied to the market supply 30-36 litre on average depending on the
season, most with 8-10 litre supply per day with a range of 1 litre to 250 litres per day supply variation among the suppliers. Above 53% of the respondents believe the supply is increasing with feed while about 30.2% of the respondents believe it is decreasing with market and space problem. Most dairy farmers (67%) confirmed the possibility of supplying more milk if issues like price of milk, market fluctuation, space (for expansion and waste disposal), feed (price and availability), working capital, good breeds availability and AI service constraints are addressed.

**Other constraints:** raised from the producer as union collection capacity (Quota), product spoilage, market information, water, electricity, labour, heating hormone, delivery service, medicine (e.g. calcium).

**AACCSA member dairy commercial farms main challenges:** AACCSA member commercial farms are also face the same challenges and business practice mentioned above. Some of them left the industry and others shrink their production capacity with constraints mentioned above. They are operating at different scale, from less than 100ltr to more than 600 litre milk supply on daily basis according to the interview respondents. The main constraints they raised are: absence of good productive breeds in the market, feed cost becomes very expensive, fresh milk is costly and which leads to low demand from consumers’ side and low milk demand in fasting seasons, chronic veterinary medicine shortage with high ineffective rate, critical particularly for calcium, quality veterinary service availability, land to expand the business, feed cost becomes unaffordable, there is no credit access for producers, scale of production is low in turn leads to high market cost then to low market demand, labour cost is very expensive, in absence of green forage frequent hay consumption leading the animals to disease (“Samba Beshita”), less demand for locally produced cheese than imported one, See annex for detail for selected cases.

### 3.2.3. Collection, bulking and transporting of milk:

**Market distance:** Most of the dairy farmers (69%) sell their milk at home or within 1 Km distance, 16% 1-5Km distance and 5% above 5Km distance. Seventy three percent of the farmers walk on foot to the collection point or deliver to collectors at home, 12% use cart and 4% use motorbike and 2.4% use donkey, mule or horse.

**Buyer types:** The main buyers of their milk are local collectors/traders, milk processing companies (e.g. Genesis, Holland Dairy, Mama, Loni, Shola, Biftu Berga and others), cooperative unions, cafes and individual consumers in their importance order taking the number of cases. Most of the milk produced supplied to the market as fresh milk including the evening milk. Above 59% of the households supply their evening milk automatically and 24.6 of them keep in cold material and supply to the market in the next morning, only 6.4% not market the evening milk due to lack of market for evening milk and lack of proper utensils. Seventy percent of the producers sell as fresh milk only, 14.4% as fresh milk and other dairy products and only 4% sell as other dairy products (butter, fermented milk and cheese). In most of the year sold as fresh whole milk and butter and cheese supplied in fasting season and culturally fermented milk happening only in rare cases at producer level. Regular butter consumption is also small in quantity less than 0.5Kg per week and farmers who produce butter from fasting season milk supply to the market but the volume supplied from the study areas is quite limited. The butter usually sold to individual trader or individual customer in nearby market. More than 51% of the respondents are not happy with the current milk and milk products marketing with market fluctuation and limited shelf life of the products. Seventy seven percent of the respondents feel they are not getting fair price taking the feed cost and other cost of production.
**Cooperatives:** Dairy cooperatives play a major role in milk collection. After collection, the milk is sold to commercial dairy processors or as raw milk to customers, or processed by the cooperatives themselves. SNV data reports that milk transporters operate under very strong margins of 51% generated from buying from farmers and selling into the formal and informal markets. Cooperatives have been important in helping dairy smallholders to market their milk and lower their operating costs, providing scale economies. Some cooperatives performing well and others challenged with their technical, managerial and financial capacity.

**Processing companies:** the collection made mainly by most processors in the morning, from the total milk they collect about 90% is coming from the morning collection. Half of the processing companies’ collect evening milk but the amount is small. On average 5,241 litres milk collected by the current dairy processing companies ranging from 150ltr to 40,000 ltr per day. From the case assessed it is found the processing companies collecting milk from tens of dairy farmers (20) and thousands of small holder dairy farmers (1,800) from less than 10ltr per day and above on average from 54.76Km distance some travelling up to 185Km. Parts of them are collecting through cooperatives and unions, others from their own and other private dairy commercial farms. The processing companies have collection points at factory gate and selected areas ranging from 1 – 32 collection points, on average about 6 collection points that is owned by mainly by themselves, sometimes rented, owned by famers cooperatives. Part of them housed and most open air. The processing companies’ assessed own part of the basic facilities that are required at collection points, Lactometer (all), Lacto scan (40%), Alcholgun (almost all), chillier (35%), Hydro Power and water (50%), using solar power not common. The average distance of collection point is about 12.91Km from main road. Having formal written contract is not that much common but few did with cooperatives and part of their suppliers.

**Producers selling price:** Milk price varies from area to area and from buyer types. One litre of raw milk is sold at Birr 13 on average that ranges from minimum price of 9 to maximum price of 20 with some price reduction during fasting season (1-2 Birr/ltr reduction on average). Butter sold at Birr 150 to 160 prices on average ranging from 95 to 240 Birr per Kg depending on the season and location.

**Table 8: Selling Price of Milk and Butter at different seasons**

<table>
<thead>
<tr>
<th></th>
<th>Milk (Birr/ltr)</th>
<th>Butter (Birr/Kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Dry season</td>
<td>Wet season</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td>13</td>
<td>13</td>
</tr>
<tr>
<td><strong>Minimum</strong></td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td><strong>Maximum</strong></td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td><strong>Mode</strong></td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td><strong>Median</strong></td>
<td>12</td>
<td>12.5</td>
</tr>
</tbody>
</table>

Source: Survey results
Container: plastic bucket is the most common container used for milking, keeping in the house and for transporting to the collection centre or market. Few individuals use Aluminium can or stainless steel utensil. Evening milk which is not supplied to the market automatically will be kept with a plastic container in water or refrigerator until it supplied to the market.

Milk collected from the collection centre contained mainly using aluminium cans (82%), in some cases plastic container, fibre glass or bulk milk tank. 53% transporting milk using own truck from which 22% (12% of total) with refrigerated truck. Others using their suppliers (cooperatives) truck, rented service, motorbike or Bajaj.

Quality and safety issues during collection: In some of the cases adulteration (addition of salt to increase PH, addition of non-food and non-healthy additions) are reported by processing companies based on their lab tests. These processing companies may also reject the collected milk from suppliers due to other factors like hygiene level of container and late or early day milk delivery. Most of the processing companies keep their suppliers contact and basic information.

Payment mode and relationship: Processors made payments mainly on every two week basis (71%), few do on monthly basis (24%), rarely on daily basis. Twenty four percent (24%) of the processing companies provide embedded services for their suppliers. The most common one is selling of feed and milk containers and provision of training. Companies like Life-Agro Industry PLC also provide AI and other animal health services on payment basis. While famers sell dairy products (especially milk), they do on cash basis for day to day customers and on monthly payment basis for frequent customers.

3.2.4. Dairy processing:

There are about 35 active dairy processors in the country. The processors collect raw milk from dairy farms, private milk collectors, cooperatives and unions. As described above, the raw milk is collected at the collection centre and transported to the processing plant. It is processed into pasteurized milk, cheese, butter and yoghurt. The companies are supplying different combination of dairy products that includes, Pasteurized milk (full cream), Pasteurized milk (skim), Raw milk (full cream), Cream, Table butter, Cooking butter, Cosmetic butter, Ayib (local cheese), Traditional yogurt, Mozzarella cheese, Provolone cheese, Gouda cheese, Feta cheese, Ricotta cheese, Smoked cheese, Cream cheese, (Fermented ), and Flavoured yoghurt. Except one company extended shelf life milk and UHT milk are not supplied to the market currently by existing processing companies. There is no Ethiopian company processing milk powder, although some processors are planning to invest in such facilities. Recently Anchor, New Zealand’s leading milk brand has begun producing fortified milk drink in Ethiopia with quick gain of market share.

Most of the companies work under capacity for most of the product types. The daily processing capacity of the largest processor, Lame Dairy, is 60,000 litres per day, now it operates at a maximum of 40,000 litres. Eight companies have a processing capacity of over 10,000 litres per day. With the capacity assessment done for 17 companies that operate at different scale, even though few are operating with their full capacity most are functioning under capacity, on average the companies are working 18-43% on average for the different products as indicated in the following graph.
The main factors mentioned for the under capacity operation are lack of collection facilities (chillier, vehicles, refrigerator), machinery spare part access, capital, power, low demand in fasting months, productivity versus profitability from producers and processors side, lack of experience in the market as new entrants and lack of quality raw milk. Some companies claim there is more demand than the current supply. On the other side some farmers perceive that there is a lack of demand which prevents them from expanding production and their production cost is higher than the market price.

3.2.5. Wholesaling and retailing

The processed dairy products are distributed to retail shops, supermarkets, schools, hospitals, restaurants, cafes and hotels located in major urban centres. The main market destination is Addis Ababa market for most of their processed products with share of 50-65%. Adama/Nazret, Bishoftu/Debre Zeit, and Ziway are the other main destinations for processing companies in Addis Ababa and its surrounding. In other big towns like Hawassa and Bahir Dar there are processing companies supplying to their towns.

Pasteurized milk and other milk products pass mainly through supermarkets and retail shops channel. Restaurants and distributors are the next important outlets for the processed products. For Ayib (local Cheese) and butter customers that come to the processing companies, factory gate or others own shops are the important outlets. The bigger supermarkets like Showa, Safeway, AllMart, and Bambis have dedicated refrigerated shelves/corners for different type of dairy products for locally produced and imported ones.

Raw milk is sold through retailers or door to door distributors in Addis mainly in areas where there are crowded houses and common living apartments (e.g. condominium houses). Raw milk shops are also opened by individual traders, dairy farms and cooperatives in different village corners in Addis and other towns. Most traditional cooking butter and cheese are supplied through the informal market channel, the main one in Addis Ababa is Markato butter market (Kibe Berenda).
3.2.6. Supporters and enablers

To support the dairy industry there are public and non-governmental organizations who are supporting the different actors.

Regional and Woreda agriculture/livestock offices: organizations like Woreda livestock and fishery offices, Addis Ababa city agriculture sector provide veterinary and other extension services. The service includes, (i) treatment, vaccination and laboratory services; (ii) AI services; (iii) Competency certification for AI services and Veterinary service providers; (iv) facilitate forage seed and feed market linkage, equipment supply for producers; (v) provide training services for producers; (vi) provide advice and support for producers in their dealing with other sector offices like environmental protection agency, Health bureau, trade and industry bureau, land management office etc.; (vii) Provision of Support to producers in feed composition, Animal handling and management (ex. Health, hygiene, housekeeping, waste management).

National Artificial Insemination Centre: the centre established to collect and distribute improved breeds and to provide training for AI service providers. Currently it has 60 bulls and collects 1,000,000 Siemens per year. It supply Siemens for AI service providers either private or government. Private AI service providers should be registered with regional agriculture bureau to get the Siemens. Training service provided free for government employees and private service providers should pay 10,000 ETB.

Research Institutes: organizations like Holeta Research Centre and regional research institutes that are mandated to coordinate the dairy research in the country and in their respective regions are working to improve the local breed, forage packages, development of alternative technologies and testing (e.g. how to provide Calcium supplement foods, milk processing). In line with the research the institutes are also engaged in provision of training in cattle management, feed and forage production, animal health and milk processing, AI services.

3.3. Analysis of policy environment, Institutes and Initiatives

3.3.1. Policies Review

Policies and strategies that focused on agricultural and livestock development include the Growth and Transformation Plan (GTP), the Agriculture Growth Program (AGP), the Policy and Investment Framework (PIF), the Food Security Program (FSP). Ethiopia also participates in the Comprehensive Africa Agriculture Development Program (CAADP) which strives to increase economic development through agriculture-led growth.

As indicated in the CADDP, PIF and other documents to achieve sustainable increase in agricultural productivity and production priority investment areas are, Irrigation development, Skill development (including DAs & farmers), Seed and fertilizer supply, Soil fertility management, Livestock development and Research. To accelerate agricultural commercialization and agro-industrial development, the focus investment areas are, Market system and infrastructure, Cooperative development, Agricultural credit, Private sector support.

Specific to livestock development, the government of Ethiopia released a five-year Livestock Master Plan (LMP) in July 2015. In the master plan different investment and policy interventions are proposed. The ones related to dairy, briefly highlighted here:
To improve dairy cattle development, invest in breeding and artificial insemination programs.

For local breed animals' productivity enhancement, genetic selection (recording schemes, etc.), vaccinations, and parasite control programs.

For improvement of feed and animal management, range and pasture lands rehabilitation programs.

In provision of veterinary service, streamline public-private roles in veterinary service rendering and expand public oversight and quality regulations.

To promote private sector establishment of flour and oil mills to produce feeds using agroindustry by-products and introducing protective policies against importation of flour and cooking oil.

Promote land lease and offer tax incentives for animal production by providing land at subsidized rates and tax benefits to incentivize private entrepreneurs.

To promote feed production efficiency by eliminating double taxation and excessive customs duties on feed mill ingredients and introducing quality control measures.

Promote increased private sector investment in livestock sector by supporting value added processing by creating enabling environment for agribusiness investment and streamlining regulations and procedures.

In the Growth and Transformation Plan (GTP) by promoting crossbred dairy cow development aimed to increase in national total cow milk production from 3.072 million liters to 5.929 million liters in the second GTP period (2015-2020).

3.3.2. Institutes:

**Ethiopian Institute of Agricultural Research (EIAR):** EIAR is a national research institute coordinating all activities of 15 federal and 7 regional institutes and advising the government on agricultural research policy formulation. The Research Centre of Holetta deals with dairy research. Within the dairy sector the institute is involved in the mass synchronization and insemination program and in crossbreeding indigenous breeds with bulls from the Holstein-Friesian, Jersey and Simmental breeds. Research is also carried out on feeding, health, milk processing and development of value chains for the dairy sector.

**Regional Agricultural Research Institutes (RARI):** Each Region has its own agricultural research institute with its own facilities: OARI for Oromia, ARARI for Amhara, SARI for SNNPR, TARI for Tigray, etc. These regional institutes cooperate with EIAR, but do their own programming.

**International Livestock Research Institute (ILRI):** ILRI works to improve food security and reduce poverty in developing countries through research for better and more sustainable use of livestock. Current ILRI projects with a dairy component are:

- LIVES: Livestock and irrigation value chains for Ethiopian smallholders, concerns technologies and innovations to develop high-value livestock and irrigated crops
- FEED II: Feed enhancement for Ethiopian development, is about improving access to and use of animal feed to support livestock productivity.
- Livestock Master Plan (LMP): developing value-chain action plans to contribute to LMP.

**Agricultural Transformation Agency (ATA):** ATA is a government agency that aims to promote agricultural sector transformation by supporting government and the private sector in addressing systemic bottlenecks to achieve growth and food security. Livestock is one of the prioritized value
chains. One of the studies ATA carried out for the livestock sector was the aforementioned in-depth study of the impact of import taxes on feed ingredients on the development of the livestock sector.

**Ethiopian Meat and Dairy Industry Development Institute (EMDIDI):** EMDIDI aims to strengthen the emerging food-processing industry in Ethiopia through training, research and support to innovations. This institute, under the Ministry of Industry, is tasked with facilitating private-sector investments in the livestock sector. EMDIDI runs the training facilities in Debre Zeit handed over by ILRI.

**Food, Medicine and Health Care Administration and Control Authority of Ethiopia (FMHACA):** This authority has a mandate to regulate the 4Ps: (i) Practice: healthcare practices; (ii) Premises: healthcare facilities, food establishments, medicine facilities, port inspection sites and health related facilities; (iii) Professionals: all health professionals; (iv) Product: production up to consumption of medicines, medical equipment and trade devices, food and food supplements, herbal products, cosmetics, complimentary and traditional medicines.

### 3.3.3. Existing Initiatives and projects

**EDGET-program by SNV (2012–2017):** EDGET, which stands for Enhancing Dairy Sector Growth in Ethiopia, is aiming at doubling household incomes from dairy activities and improving the nutritional status of children through increased consumption of dairy products. The project, which is funded by the Embassy of the Kingdom of the Netherlands, is focussed on smallholder dairy farmers with crossbred dairy calves, and gives special priority to women who do most of the calf-rearing and caring for cows. The project seeks to increase milk production through improved calf-rearing and animal feeding, and promote increased consumption of dairy products through the development of new dairy-based nutritional products, innovative milk-processing methodologies and marketing strategies.

**DairyBIZZ (2015–2018):** It is a three-year project that aims to establish a dairy business platform to initiates and monitors activities in business development, capacity building, and business information development. Proof of concept will be introduced for technical and organizational innovations such as private farm advice, innovative housing systems, and forage production. Results will improve both business practice and long-term sustainability of the sector. DairyBIZZ is implemented by Wageningen University and is funded by the Embassy of the Kingdom of the Netherlands.

**Livestock genetics improvement program by Land O’Lakes (starting 2015):** Land O’Lakes will start a new livestock genetics improvement program funded by the Bill and Melinda Gates Foundation aiming at public-private partnership for AI in Ethiopia and Tanzania. The program’s goal is to increase private-sector investment in artificial insemination goods and services.

### 3.4. Economic analysis and relationships mapping

#### 3.4.1. Actors number and transactions volume

There are thousands of farmers that are engaged in dairy business. Most of them are agreed on that feed and mineral cost is the major cost of the business. Veterinary service, labour and utility costs also have a significant share on the dairy business cost structure.
### 3.4.2. Costs and profitability analysis

**Cost elements:** The graph below shows about 60% of the cost is related to feed and mineral. In the gross margin, if the replacement cost of the milking cows included, the profit will shrink further.

**Dairy farm profitability:** Average daily gross margin of existing dairy farmers is Birr 141 per day with 20 Birr gross margin per cow per day. Dairy farms at higher scale incur higher costs to run the business more professionally with higher scale they have better selling price that leads to better gross margin as indicated in Table 10.
**Table 10: Daily Sales and Cost (Profitability)**

<table>
<thead>
<tr>
<th></th>
<th>Total Sales Value</th>
<th>Feed and mineral</th>
<th>Vet and medical cost</th>
<th>Other costs</th>
<th>Total direct costs</th>
<th>Total Gross margin per day</th>
<th>Gross margin per milking cow</th>
<th>Gross margin per total cow</th>
<th>Daily Cost per cow</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average</td>
<td>408</td>
<td>252</td>
<td>12</td>
<td>3</td>
<td>266</td>
<td>141</td>
<td>25</td>
<td>20</td>
<td>37</td>
</tr>
<tr>
<td>Minimum</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>-2375</td>
<td>-237</td>
<td>-121</td>
<td>0</td>
</tr>
<tr>
<td>Maximum</td>
<td>6600</td>
<td>4658</td>
<td>263</td>
<td>90</td>
<td>4658</td>
<td>6600</td>
<td>194</td>
<td>165</td>
<td>184</td>
</tr>
<tr>
<td>Median</td>
<td>168.5</td>
<td>65.75</td>
<td>2.65</td>
<td>0</td>
<td>82.74</td>
<td>45.19</td>
<td>15.40</td>
<td>13.69</td>
<td>25.23</td>
</tr>
</tbody>
</table>

Source: Survey result

As indicated in graph below there are farms that are running the business with loss, that may be related to scale of operation, technical and business management skill coupled with the weak service and limited profit margin.

![Fig. 14: Daily gross margin of dairy farmers - Birr/day](image)

Source: Survey result

3.5. **Gender, environment and governance situation**

**Gender**: dairy business engages both men and women in the different segment of the value chain. Improving the dairy business will benefit the whole family in terms of nutrition and additional income.

**Environment**: dairy value chain is the focus point in the carbon emission, at national level the strategy is to decrease the head count and increase the productivity per cow. The other strategy needed is to look the manure management aspect which reduces the carbon emission and contributes in the energy supply.

**Governance**: the dairy farmers saying can be improved by increasing their collaboration and by engaging them in wider value chain platforms.
## 3.6. SWOT analysis

<table>
<thead>
<tr>
<th>Strength</th>
<th>Weakness</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Big cattle population (57.83 million total cattle, 55.38% female)</td>
<td>• The production is not commercial based</td>
</tr>
<tr>
<td>• Ambitious master plan, institutes supporting the sector, projects and partners supporting dairy sector</td>
<td>• Most producers are not well connected</td>
</tr>
<tr>
<td>• Processing companies and new actors joining the sector</td>
<td>• Consumers still use the informal market chain</td>
</tr>
<tr>
<td></td>
<td>• Adulteration</td>
</tr>
<tr>
<td></td>
<td>• Water and power supply</td>
</tr>
<tr>
<td></td>
<td>• Limited financial services</td>
</tr>
<tr>
<td></td>
<td>• Weak AI and veterinary service</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Opportunities</th>
<th>Threat</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Positive economic outlook,</td>
<td>• Safety and quality trust loose</td>
</tr>
<tr>
<td>• Population of approximately 99.4 million and increase for additional consumption</td>
<td>• High feed price</td>
</tr>
<tr>
<td>• Emerging middle class consumer segments that are willing to embrace new products and services</td>
<td>• Lack of clear policy support on land allocation for producers in Addis Ababa</td>
</tr>
<tr>
<td>• Urbanization, that is expected to increase processed dairy products consumption</td>
<td></td>
</tr>
<tr>
<td>• Export and foreign market possibility (Somalia, Sudan, South Sudan &amp; Djibouti are potential foreign markets)</td>
<td></td>
</tr>
</tbody>
</table>
4. Review of other countries experiences

The dairy industry needs to learn how other countries improved the sector and how they addressed the challenges they faced. To become competitive at domestic and international markets, the industry needs to address factors like productivity, scale of operation, cost of production, product and brand development and other issues.

Table 11: Selected benchmark factors

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Level of practice</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Productivity:</strong></td>
<td></td>
</tr>
<tr>
<td>productivity is far below the global practice. Existing productivity Ethiopia is below 390Kg and 3,600Kg per year from local and improved breeds while other countries produce more than 24 times of the local breeds and 2.6 times of the improved breeds.</td>
<td></td>
</tr>
<tr>
<td><strong>Cost of production:</strong></td>
<td></td>
</tr>
<tr>
<td>with the productivity and other factors, the cost of production of milk is quite high in case of Ethiopia.</td>
<td></td>
</tr>
</tbody>
</table>

Data Reference from GDS Dairy VC Report, 2012
Indicators

Consumption: the level of consumption is low in Ethiopia as compared to many other countries that may be related to lack of awareness on the nutritional aspect, high price and extended fasting seasons.

Source: GDS Dairy VC Report

Taking their dairy industry level, three countries are picked (Kenya from Africa, Indai from Asia and New Zealand from developed economy) and their experiences in the sector are reviewed. The points that found as relevant are summarized below.

1. Kenya

Kenya has one of the most developed dairy sub-sector in Sub-Saharan Africa and it is the single largest contributor to agricultural GDP of Kenya. The contribution of dairy sub-sector is higher than Tea and Horticulture. About 80% of Kenya’s total milk production is produced on small scale farms. Dairying is a life line for the majority smallholder family farmers and entire pastoral communities of Kenya as sources of food, employment, cash income, manure to support crop production, and financing cash needs for social status. Commercial dairying was introduced into Kenya in the early twentieth century, but indigenous Kenyans were not involved in it until the mid-1950s. After independence, most dairy cattle were transferred to the indigenous people, marking the beginning of smallholder domination of the dairy industry. Currently at the farm level, dairy activities are estimated to generate about 23 full-time jobs for the self-employed, 50 permanent full-time jobs for employees, and three full-time casual labour jobs, making a total of 77 direct farm jobs per 1 000 litres of daily production. The sector is dynamic with high growth figures of marketed milk and investments by dairy societies and processors mainly in the cold chain, production of long life milk and milk powder.

The overall strength of the sector comes from: Private sector-driven processing industry built in only 20 years, Nation-wide availability and increasing variety of dairy products for all consumer groups, On-going investments in value added products including long-life milk and milk powder, An emerging dairy export sector, High demand for processed milk and milk products due to a growing urban (lower-) middle class.

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8 Dairy Development in Kenya, By Frans Ettema, SNV-Kenya
The processing industry is a pull factor for higher milk production, Year round milk collection by traders, dairy societies and processors in all main dairy production areas from 100-thousands of small scale farms, Emerging segment of commercial dairy farmers with ability to invest and being innovative, A wide distribution network and good access to commercial input suppliers/service providers, Conducive government policies (zero rating, import duties on dairy products), Basic dairy genetics are available which can be improved through proper breeding policies.

In neighbouring Kenya, with an advanced dairy sector, poor management of the supply chain has resulted in surplus milk production in early 2010 without the demand to absorb it. Nearly a million litres of milk and ten metric tons of milk powders were wasted. The net result has been a drop in the price of raw milk. The lesson for Ethiopia is that development of the dairy sector cannot be one-sided and supply heavy. A multi-pronged approach is needed to increase consumer awareness of the nutritional benefits of milk, thus creating demand for milk and dairy products.

2. New Zealand

New Zealand (NZ) dairy products account for around one third of the international dairy trade. With its 5.8 million dairy cows has annual volume export earning of NZD$11 billion. NZ exports six categories of dairy products: Milk and cream (not concentrated); Milk and cream (concentrated); Buttermilk and related products; Whey and related products; Butter and related products; and Cheese and curd. Concentrated milk (particularly whole milk powder and skim milk powder) is the largest product category. New Zealand is one of the lowest cost producers of milk in the world due to a suitable environment for dairy farming and having technological and business savvy farmers. The evolution and performance of the NZ dairy industry is strongly shaped by a number of key factors including favourable endowment of natural resources for grass production and farmers’ strong ideology towards control and ownership of downstream manufacturing and marketing activities, which led to vertical integration and continuous organisational changes.

The key strengths of New Zealand’s dairy industry include its all-grass farming system, large-scale processing and high levels of investment in research and development, which have increased the efficiency while maintaining the quality of dairy production. The industry become more successful with the industry actors and support organizations committed engagement. As per research findings of AERU\(^9\) the eight critical success factors identified by the industry stakeholders for NZ dairy success are:

- **Successful development of international markets**: The successful sale of NZ dairy products around the globe has been critical to industry success. The development of brands and relationships has been especially important.
- **Political support in international markets**: The dairy industry has had to cope with subsidized competitors. The NZ government has had an important role in trade negotiations with the EU, the WTO and other governments and agencies.
- **Political support within NZ**: The NZ dairy industry has relied on political support to ensure legislative support for the industry as associated with allocation of research funds and the establishment of Fonterra.
- **The evolution of industry structure to facilitate growth**: The dairy industry has evolved to establish family corporates, a dominant large integrated cooperative, and specialised and sophisticated support industry.

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\(^9\) Agribusiness and Economics Research Unit (AERU) operates from Lincoln University
Farmer engagement in the development of industry policy, strategy, structure and operations: Farmer participation has been critical in the testing of industry proposals, building industry loyalty

Continuing technological advance: Technological progress has enabled the industry to grow through increased productivity. This has been on the farm, in processing and along the supply chain.

Major disease-free status of national herd: Disease free status has reduced barriers for international trade and reduced compliance costs.

Development of economies of scale: Economies of scale has resulted in improved management and progress in cost reduction.

A push towards adding value: One major challenge faced by the NZDB during the late 1980’s and early 1990’s was how to motivate manufacturing co-operative to engage in new product development and be more market oriented without the Board losing its grip on co-ordination. First, there was recognition that the world's consumers were moving towards buying branded products. The domestic milk market in NZ was only deregulated in the '80s and with that consumers went from buying milk in plain glass bottles to branded cartons and plastic bottles. The rise of supermarkets and pre-packaged, branded products changed traditional shopping habits. Second, owning the FMCG brands and processing facilities were perceived as providing more market security for selling NZ's dairy products than having to sell commodities to global players or in open markets. The pressure to move away from commodities and towards increasing value added products started when the UK announced it would join the EC. The move to fast moving consumer goods in South East Asia resulted in brand developments such as ANCHOR, ANLENE, and ANMUM.

Fonterra leading company: The New Zealand dairy industry is dominated by the Fonterra Co-operative Group Ltd, complemented by Westland and Tatua Co-operative dairy companies. Fonterra was established as a co-operative of more than 12,000 dairy farmers. One of the top ten dairy companies in the world, Fonterra is the leading NZ exporter of dairy products and is responsible for a third of international dairy trade, supplying 140 countries around the world. There are also many smaller businesses competing in the domestic and international markets. Fonterra exports around 95 per cent of the dairy products it manufactures and is the world’s largest exporter of dairy products. It is responsible for over 30 per cent of international dairy trade across open borders. It is a major world player in dairy ingredient exports such as milk powder and casein and in consumer products, including through brands such as Fernleaf and Anchor. Speciality products such as ANLENE and ANMUM are leaders in their markets. Fonterra has a wide range of international marketing subsidiaries, joint ventures and other arrangements, including in the US (with Dairy Farmers of America), North and Latin Americas (with Nestle), in the UK and Europe (with Arla Foods) and in India (with Britannia Industries). Fonterra’s global supply chain encompasses shareholder farms in New Zealand through to customers and consumers in 140 countries. It collects more than 13 billion litres of milk a year and manufactures and markets over 1.8 million tonnes of product annually, making it a world leader in large scale milk procurement, processing and management. It has around 20,000 staff in 40 countries, with over half of its staff being outside New Zealand. Fonterra is New Zealand’s biggest private sector investor in R&D. Its shareholders are world leaders in on-farm efficiency and productivity, and its processing efficiency is also world class. Its new product development capability is significant, with considerable potential for future growth and performance delivery.

3. India

India ranks number one in the world in terms of milk production and milk consumption. The programme “Operation Flood” adopted by Indian government from the year 1970 made India the largest milk
producing nation of the World. India also has the distinction to be the lowest cost milk producer in the world. The country has been able to provide on an average 302 gm per person per day milk which is more than the minimum quantity recommended by the World Health Organisation (WHO). The majority of the milk production is by farmers through the cooperative societies further propelled by many private players and multinational companies to tap the dairy potential of the country. Dairy business provides livelihood to 600 million people in India. The activity of the private companies is the process of converting the unorganised dairy sector into organised industry. Only 10% of all the milk is delivered to some 400 dairy plants. A specific Indian phenomenon is the unorganised sector of milkmen, vendors who collect the milk from local producers and sell the milk in both, urban and rural areas, which handles around 65-70% of the national milk production. In the organised dairy industry, the cooperative milk processors have a 60% market share. The cooperative dairies process 90% of the collected milk as liquid milk whereas the private dairies process and sell only 20% of the milk collected as liquid milk and 80% for other dairy products with a focus on value-added products.

India reveals an exceptional success story as the milk production increased remarkably from 17 million tons in 1950-51 to an estimated 140 million tons in 2013-14 and emerged at the largest milk producer in the World far ahead of the second largest producer after the US. Moreover, India’s milk production is expected to grow to 176 million tons by 2022 and far exceed the total milk production of the entire European Union. This has been achieved through ingenious organisations of a large number of small milk producers spread across the rural areas of the country. The Operation Flood, one of the world’s largest dairy development programmes, played a crucial role in achieving transformation of dairy industry in India. In addition to being the largest milk producer, India also has the distinction to be the lowest cost milk producer. This phenomenal growth in milk production has been due to demand side development on one hand and supply side promotions on the other. The per capita availability has also increased from 112 gram/day in 1970-71 to 297 gm/day in 2012-13.

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10 Dr. C. M. JAIKANTH, 2016, Global Marketing Strategy and Constraints of Indian Dairy Industry
12 Rakesh Mohan Joshi, India’s Dairy Exports: Opportunities, Challenges and Strategies, Research and International Collaborations, Indian Institute of Foreign Trade
5. Conclusions and Recommendations

5.1. Conclusions

The future of the dairy sector in Ethiopia is more positive especially taking the domestic market growth, potential and production enhancement initiative in the country. The total volume of milk produced in Ethiopia increased over the last 15 years. The overall country milk production expected to surpass existing milk demand in the near future if the production target set for GTP II is achieved. If that is the case, expanding milk products usage will be needed. The existing export in the sector is only about 2% as compared to the import. Increasing the export to Somalia and other destinations like Sudan, South Sudan and Djibouti are the possible options.

The productivity and quality of dairy product supplied are below the expected benchmark. The productivity level gap between the local and improved cow is quite big. Most of the milk produced is supplied to the market as raw milk. There is quality problem and adulteration practice that need to be addressed. The main contributing factors for the less performance of the sector are shortage of feed availability and its price increase, the low quality of veterinary services, drug supply problem, problem of getting good quality cross breeds or local dairy cow, limited financial services, market fluctuation, lack of working space, the poor quality of training/advice and its non-continuity with less responsiveness and not tailor-made for the existing problems. Specialized services and tailored support to commercial farmers is an area which needs encouragement. Skills on farm management, feeding, housing, health, hygiene, postharvest handling, marketing and business management need to be enhanced with acceptable service business model. Since feed is a significant cost of milk production, working on it will improve profitability of dairy business.

Processing companies are collecting milk from tens up to thousands of small holder dairy farmers starting from less than 10 ltr per day. Dairy cooperatives and collection points play a great role that need to be enhanced. Most of the processing companies work under capacity for most of the product types and competing with imported products. Promotion of processed products and supply of long shelf life products is needed to handle the market fluctuation.

5.2. Constraints

Table 12: Summary of Constraints

<table>
<thead>
<tr>
<th>Main segments</th>
<th>Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input supply</td>
<td>• Feed (High cost, Poor quality, availability), absence of green forage and frequent hay consumption leading the animals to disease</td>
</tr>
<tr>
<td></td>
<td>• Space (for better management, expansion and waste disposal)</td>
</tr>
<tr>
<td></td>
<td>• Working capital shortage</td>
</tr>
<tr>
<td></td>
<td>• Absence of good productive and improved breeds in the market</td>
</tr>
<tr>
<td></td>
<td>• Quality AI service</td>
</tr>
<tr>
<td></td>
<td>• Heating hormone</td>
</tr>
<tr>
<td></td>
<td>• Efficient quality veterinary service (e.g. delivery) and chronic veterinary medicine shortage with high ineffective rate, critical particularly for calcium</td>
</tr>
<tr>
<td></td>
<td>• Financial service for dairy farmers and others</td>
</tr>
<tr>
<td></td>
<td>• Labour cost for small dairy farms</td>
</tr>
<tr>
<td>Main segments</td>
<td>Constraints</td>
</tr>
<tr>
<td>---------------</td>
<td>-------------</td>
</tr>
</tbody>
</table>
| **Production** | • Scale of production is low in turn leads to high market cost then to low market demand,  
  • Product spoilage,  
  • Market information,  
  • Water and electricity,  
  • Productivity versus profitability from producers and processors side |
| **Collection** | • Cooperatives collection capacity (Quota based)  
  • Lack of collection facilities (chiller, vehicles, refrigerator),  
  • Capital for investment  
  • Power  
  • Lack of enforcement of quality control regulations and standards |
| **Marketing** | • Low consumption, market fluctuation and low milk demand in fasting seasons  
  • High price of milk for low income groups  
  • Less demand for locally produced cheese than imported one  
  • Limited experience in the market for new entrants  
  • Lack of quality raw milk  
  • High taxes on imported packaging and difficulty in obtaining foreign exchange |

5.3. **Proposed Recommendations and Policy Implications**

**Feed supply development:** To increase private feed suppliers and existing companies’ efficiency, lobby for better incentives from government in the feed industry and promote the business venture to potential investors. Eliminate double taxation, VAT payment and excessive customs duties on feed mill ingredients. Provide land at subsidized rates and tax benefits to incentivize private entrepreneurs in feed supply. Enhance production efficiency of feed mills by improving technical and business management, increasing scale of feed production through increased bulk contracting, increasing bulk purchasing by cooperatives and farmers organizations and by increasing purchases of by products by feed manufacturers. Improve the utilization of crop by-products with different nutrient and digestibility improvement treatments. Foster high yielding forage crops technology, increase forage crop production, including enclosed areas in mountainous areas and river basins. Train and demonstrate optimum use of feed and improved management systems.

**Improved AI and Health services:** Working with organizations in the sector and lobby to improve the business incentive, increase availability of quality semen and providers of crossbred cows, encourage private AI service providers, encourage private cross breed heifer production with joint venture and other business arrangements, encourage and support cooperatives capacity in demand aggregation and supply arrangement. Improve public sector AI and animal health service provision and increase private provision of veterinary services.

**Milk consumption and product development:** promote consumption of milk and milk products with mass-media campaign, encourage different more affordable, better, more diverse packaging and product size. Facilitate joint effort of processing companies for better logistics to reduce costs through
increased volume and greater supply chain efficiencies. Reduce the fluctuation in demand (seasonality, fasting periods) for milk products, by producing and packing products for longer shelf life.

**Production and productivity practice at producer and other actors level:** promote better use of improved breeds, AI, health service and management skill at producers level. Improve feed and dairy different level management practices. Improve processors under capacity operation by improving their business and technical management. Improve management practices at different level to reduce spoilage and waste. Develop cooperatives and new private dairy farms and processors business management exposure and experience.

**Collection and distribution mechanism:** Improve technical and management skills of cooperatives. Improve collection centers and buying arrangements to enable more milk to reach formal market. Encourage better business linkages between producers and processing companies with additional services like provision of feed and other services. Increase numbers of cooling centers and use of refrigerated transport.

**Quality and product spoilage:** create more awareness on milk quality issues and improve milk handling practice by coordinating processing companies implement quality-based pricing arrangements. Produce long shelf life milk products. Improve quality testing and control kits and capacity at collection centers. Promote consumer awareness on milk quality issues. Lobby for better enforcement and development of mandatory quality standards and control adulteration practices. Encourage local production of packaging.

**Financial services:** work with financial service providers to refine products for dairy sector and implement value chain financing for better financial access to different actors for investment and working capital. Reduce lending risk by developing better and replicable business models with support organizations and improving companies’ business management.

**Sector coordination and enabling environment:** to improve the business enabling environment in continuous manner, work with sector actors to have effective platforms for public-private dialogue for identified critical issues. Promote shared public-private vision among the dairy industry actors. Provide training for the actors. Facilitate coordination and collaboration between the various value chain actors in dairy value chain.
References

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# Annexes

## Annex 1: Validation of Issues and Recommendations

### A. Issues confirmation

<table>
<thead>
<tr>
<th>Issues</th>
<th>Severity and Impact (High, Medium, Low)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Feed supply development</td>
<td>High</td>
</tr>
<tr>
<td>2 Improved AI and Health services</td>
<td>High</td>
</tr>
<tr>
<td>3 Milk consumption and product development</td>
<td>Medium</td>
</tr>
<tr>
<td>4 Production and productivity practice at producer and other actors level</td>
<td>High</td>
</tr>
<tr>
<td>5 Collection and distribution mechanism</td>
<td>High</td>
</tr>
<tr>
<td>6 Product spoilage and quality control</td>
<td>High</td>
</tr>
<tr>
<td>7 Financial services</td>
<td>High</td>
</tr>
<tr>
<td>8 Sector coordination and enabling environment</td>
<td>High</td>
</tr>
<tr>
<td>9 Land access and incentive for dairy investment</td>
<td>High</td>
</tr>
<tr>
<td>10 Milk Utensils, equipment and technology</td>
<td>High</td>
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<td>11 Utility service (power and water)</td>
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</table>

### B. Interventions confirmation

<table>
<thead>
<tr>
<th>Interventions</th>
<th>Contribution (H, M, L)</th>
<th>Proposed lead organization</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Feed supply development</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Increase private feed suppliers and existing companies’ efficiency</td>
<td>High</td>
<td>MoLF &amp; AACCSA</td>
</tr>
<tr>
<td>• Lobby for better incentives</td>
<td>High</td>
<td>AACCSA &amp; PC</td>
</tr>
<tr>
<td>• Eliminate double taxation, VAT payment and excessive customs duties on feed mill ingredients.</td>
<td>High</td>
<td>AACCSA &amp; ERCA</td>
</tr>
<tr>
<td>• Provide land at subsidized rates and tax benefits</td>
<td>High</td>
<td>MoLF &amp; AACCSA</td>
</tr>
<tr>
<td>• Enhance production efficiency of feed mills by improving technical and business management,</td>
<td>Medium</td>
<td>MoLF &amp; AACCSA</td>
</tr>
<tr>
<td>• Increasing scale of feed production</td>
<td>High</td>
<td>AACCSA &amp; PC</td>
</tr>
<tr>
<td>• Improve the utilization of crop by-products</td>
<td>Medium</td>
<td>AACCSA &amp; PC</td>
</tr>
<tr>
<td>• Foster high yielding forage crops technology</td>
<td>High</td>
<td>MoLF</td>
</tr>
<tr>
<td>• Increase forage crop production,</td>
<td>High</td>
<td>MoLF</td>
</tr>
<tr>
<td>• Train and demonstrate optimum use of feed and improved management systems</td>
<td>High</td>
<td>MoLF</td>
</tr>
<tr>
<td><strong>2. Improved AI and Health services</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Lobby to improve the business incentive</td>
<td>High</td>
<td>MoLF &amp; AACCSA</td>
</tr>
</tbody>
</table>
- Increase availability of quality semen and providers of crossbred cows, **High** MoLF
- Encourage private service Proviers (AI service, veterinary services, cross breed heifer production) **High** MoLF & AACCSA
- Encourage and support cooperatives capacity **High** CPA
- Improve public sector AI and animal health service provision **Low** MoLF

3. **Production and productivity practice at producer and other actors level**

- Promote better use of improved breeds, AI, health service and management skill at producers level. **High** MoLF
- Improve feed and dairy management practices **High** MoLF
- Improve processors under capacity operation **High** MoLF & AACCSA
- Improve management practices to reduce spoilage and waste. **High** MoLF & AACCSA
- Develop cooperatives and new private dairy farms and processors business management exposure and experience **High** MoLF & AACCSA
- Promote better use of improved breeds, AI, health service and management skill at producers level. **High** MoLF & AACCSA

4. **Milk consumption and product development**

- Promote consumption of milk and milk products with mass-media campaign, **High** AACCSA & PC
- Encourage different more affordable, better, more diverse packaging and product size. **High** AACCSA, MoI & PC
- Facilitate joint effort of processing companies **High** AACCSA & PC
- Reduce the fluctuation in demand **High** AACCSA, MoI & PC

5. **Collection and distribution mechanism**

- Improve technical and management skills of cooperatives. **High** CPA
- Improve collection centers and buying arrangements **High** AACCSA, MoI & PC
- Encourage better business linkages between producers and processing companies **High** AACCSA, MoI & PC
- Increase numbers of cooling centers and use of refrigerated transport **High** AACCSA, MoI & PC

6. **Quality and product spoilage**

- Create more awareness on milk quality issues and improve milk handling practice **High** MoI & PC AACCSA
- Produce long shelf life milk products **Medium** MoI & PC AACCSA
- Improve quality testing and control kits and capacity at collection centers. **High** MoI & PC AACCSA
- Lobby for better enforcement and development of mandatory quality standards and control adulteration **High** AACCSA & PC
## Practices.

- Encourage local production of packaging | High | MoI & PC AACCSA

### 7. Financial services

- Work with financial service providers | Medium | AACCSA & PC
- Reduce lending risk by developing better and replicable business models with support organizations and improving companies’ business management | High | AACCSA & PC

### 8. Sector coordination and enabling environment

- Work with sector actors to have effective platforms for public-private dialogue for identified critical issues. | High | AACCSA, MoI, MoLF & PC
- Promote shared public-private vision among the dairy industry actors. | Medium | AACCSA, MoI, MoLF & PC
- Provide training for the actors | Low | MoI & MoLF
- Facilitate coordination and collaboration between the various value chain actors in dairy value chain | High | AACCSA, MoI, MoLF & PC
Annex 2: Dairy Producers Questionnaire

Note for Enumerator:
Introduce yourself and start by recognizing their willingness and time to respond for the interview. Explain objective of the study, how they are selected and use of data:
- Chamber of Commerce conducting the study to know required interventions to improve the dairy sector and the benefit for all actors.
- You are selected randomly from dairy producers
- The information collected from you will be used as a summary to inform the study
- You are free to ask clarification questions or not to respond questions which you are not comfortable.

Interviewer Reference
Assistant researcher name: ________________________________
Cluster: ________________________________________________
Lead Consultant: __________________________________________
Date: ________________________ Time ______________________
Questionnaire no/Code __________________________

Respondent General Information
Name of Respondent: ______________________________________
Sex of the respondent/head of HH:
☐ Male
☐ Female
Age of the respondent: __________ years
Name of region __________ Zone ____________
Name of woreda __________ Name of kebele ___________
Distance of your residence from the nearest market center: ____ KM _____ hrs walk
Distance of your residence to the nearest development center: ______KM_______ hrs walk.
Distance to all weather road: ________km or ________ hours walk
Current occupation of the respondent _____________________________
Telephone _______________________________________________
A. Livestock holding and composition
1. What is the total livestock holding of respondent household? --------------------------------------------

2. Type and number of dairy animals that the respondent owned?

<table>
<thead>
<tr>
<th>No.</th>
<th>Dairy animal holding</th>
<th>Number owned per household</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Cow</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indigenous</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improved breed</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Heifer</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Indigenous</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Improved breed</td>
<td></td>
</tr>
</tbody>
</table>

B. Animal Feeding management
1. What are animal feeding systems are practiced by the respondent to fed its animals?
   a. ☐ Grazing and browsing on communal or private natural grazing land
   b. ☐ Cut-and-carry system
   c. ☐ stall feeding
   d. ☐ All of the above

2. Which of the following types of feed used by the respondent to fed its animals? (can select more than one)
   ☐ Feed on natural pasture or pasture on non-arable land maintained under rain-fed conditions.
   ☐ The primary feed sources are the open rangelands composed of indigenous species of grasses, shrubs and fodder trees.
   ☐ Using improved forage and supplementary feed

3. If the respondent use additional /supplementary feed resources, which of the following types are used?
   ☐ Crop residue (Kera)
   ☐ Mineral soil (haya)
   ☐ Grain (sorghum)
   ☐ Industrial by-product
   ☐ Failed maize or sorghum
   ☐ Other conserved feed e.g., hay

4. If the respondent use improved forage, what types of forages are used? And from where the seed of forage obtained? What is unit price of seed by type?

5. Does the respondent also practice feed conservation for dry season feeding?
   ☐ Yes
   ☐ No

5.1 If yes what method is used to conserve feed for dry season ?---------------------------------------------

5.2 If no why?------------------------------------------------------------------------------------------------

--------------------
6. At what price you can get if you want to buy dairy animals now?
   Indigenous cow: from -------------- to ------------- birr
   Cross breed cow: from -------------- to ------------- birr
   Indigenous heifer: from -------------- to ------------- birr
   Cross breed heifer: from -------------- to ------------- birr

C. Milking management
1. What type of milking practice is practiced by the respondent?
   ☐ Traditional hand milking by washing of teats before milking is practiced
   ☐ Traditional hand milking but hand washing of teats before milking is not practiced
   ☐ Traditionally calves are allowed to suckle their dams before (to initiate milk letdown) and after milking (to drain whatever is left in the udder)
   ☐ Uses modern technology
   ☐ Other (specify)----------------------------------

2. What is the division of labor for milking?
   ☐ Milking of cows is done mainly by women
   ☐ Milking of cows is done only by men
   ☐ No division of labour any one including children can do

3. Milking frequency of cow per day
   1. During wet season
      A. ☐ Once     B. ☐ Twice     C. ☐ Thrice
   2. During dry season
      A. ☐ Once     B. ☐ Twice     C. ☐ Thrice

4. What are possible determining factors for milking frequency in the area?
   ☐ If a calf seems weak or becomes ill, its dam will be milked less frequently
   ☐ Milking frequency in the area also depends on feed availability.
   ☐ Milking frequency increase if market for milk is high.
   ☐ Other (specify)----------------------------------------------------------------------------------

5. Do you supply milk to market?
   ☐ Yes
   ☐ No

6. At what time you market the evening milk?
   ☐ Automatically supplied to market in the evening time
   ☐ Milk produced kept in cold material is marketed in the next morning
   ☐ Milk produced in the evening always used for home consumption due to lack of proper utensils and no market in the evening

D. Productive and reproductive performance
1. What is the lactation period of the milk cow in months per year?
   1.1. Lactation length of local cow
   1.2. Lactation length of improved cow
   ☐ 3 to 5 months     ☐ 3 to 5 months
   ☐ 5 to 7 months     ☐ 5 to 7 months
   ☐ 7 to 9 months     ☐ 7 to 9 months
2. Milk yield performance of local cows in different stages of lactation (Daily milk yield per head (litres))
   a) First stage of lactation (0-3 month): a) Local --------- ltr/day b) Improved --------- ltr/day
   b) Second stage of lactation (3-6 month): a) Local --------- ltr/day b) Improved --------- ltr/day
   c) Third stage of lactation (7-9 month): a) Local --------- ltr/day b) Improved --------- ltr/day

3. Quantity of cow milk produced by a household at present?
   3.1 Cow milk----------- litres per day per household

4. Quantity of butter produced from one liter of:
   Local cow milk? ---------------------------
   Improved cow milk ---------------------------------------------

5. Quantity of butter produced per household per week
   5.1 During wet season _________________ kg per week
   5.2 During dry season _________________ kg per week

**E. Milk consumption and marketing**

1. What are the most common products produced and consumed?
   - Fresh milk,
   - fermented milk,
   - butter
   - cheese (ayib)
   - All

2. What type of milk and milk products being sold for the market by the household?
   - culturally fermented milk
   - cow fresh whole milk,
   - butter,
   - cheese (ayib)
   - All

3. The proportion of milk and milk product consumed per household
   3.1 The proportion of cow milk consumed per day per household during wet season
       - 1/2 of the amount of milk produced per day
       - 1/3 of the amount of milk produced per day
       - 1/4 of the amount of milk produced per day
       - 3/4 of the amount of milk produced per day
   3.2 The proportion of cow milk consumed per day per household during dry season
       - 1/2 of the amount of milk produced per day
       - 1/3 of the amount of milk produced per day
       - 1/4 of the amount of milk produced per day
       - 3/4 of the amount of milk produced per day
       - the household does not participate in milk marketing

4. Proportion of butter consumed out of weekly butter produced per household
   4.1 During wet season---------------------- kg per week
       - 1/2 of the amount of butter produced per week
1/3 of the amount of butter produced per week
1/4 of the amount of butter produced per week
3/4 of the amount of butter produced per week
☐ The household does not consume the butter produced but sale all

4.2. During dry season------------------kg per week
☐ 1/2 of the amount of butter produced per week
☐ 1/3 of the amount of butter produced per week
☐ 1/4 of the amount of butter produced per week
☐ 3/4 of the amount of butter produced per week
☐ The household does not consume the butter produced but sale all

F. Milk and milk product marketing system
1. Do you supply milk to the market? -------------------------------
   1.1. If yes, what is the volume of the supply
       Rainy season.........
       Dry season ..........

2. What is the trend in the supply of milk compared to the last 5 years?
   ☐ Increasing
   ☐ decreasing
   ☐ steady

3. Is it possible for the household to supply more than what currently supply to market?
   ☐ Yes
   ☐ No
   3.1. If there is possibility why only supplying the above quantity?----------------------------------

3.2. If no possibility why?----------------------------------

4. Is the household happy with its milk and milk products current marketing?
   ☐ Yes ☐ No
   4.1. If no what are the major problems encountered by the respondent and mention possible solutions----------------------------------

5. For whom you sale your cow milk at present?
   ☐ Selling to local individual milk collectors
   ☐ Nearby milk collection center
   ☐ Dairy milk marketing cooperative
   ☐ Individual customers in the nearby local market
   ☐ Individual customers in woreda capital city
   ☐ Individual customer found in Zonal market
   ☐ Hotel/ cafeteria/ hospital found in woreda main city or zone main city or other city near to zonal town
   ☐ Other specify ----------------------------------

6. Who is direct buyer of the butter produced by the household at present?
   ☐ Selling to individual traders in the village
Whole sellers in woreda main town
Whole sellers in near market place
Marketing cooperative
Individual customers in the nearby local market
Individual customers in woreda main town
Individual customer found in Zonal market
Wholesalers in zonal main town and or other town next to zonal town
Hotel/ cafeteria/ hospital found in woreda main town or zone main city or other city near to zonal town
Other specify ________________________________

7. Distance travelled per day (km) to sell milk and milk products
- less than one km
- 1 to 3 km
- 3 to 5 km
- 5 to 7 km
- 7 to 9 km
- 10 to 12 km

8. What kind of transportation system producer uses to transport milk and milk products?
- Mule or horse transport
- Donkey
- bicycle
- motorbike
- cart
- car
- walk on foot
- other specify

9. What is the container you use:
   While milking ________________________________
   Keeping in the house ___________________________
   To transport to the market _______________________

10. Constraints in cow milk and butter marketing faced by producers
- Small milk quantity
- Distance to market 
- cultural restriction 
- high transport cost
- spoilage
- No market
- competition
- No attractive price for the products
- lack of access to market information
- there is no any constraint
- other specify ---------------------------------------

11. How much you are selling your milk and milk product (milk/butter) during dry and wet season?
   11.1 In dry season
   Cow Milk: From Birr------------------to -------------- birr per liter
Butter: From Birr------------------ to ----------- birr per kg

11.2 In wet season
Cow Milk: From Birr------------------to ----------- birr per liter
Butter: From Birr------------------ to ----------- birr per kg

11.3 Fasting season
Cow Milk: From Birr------------------to ----------- birr per liter
Butter: From Birr------------------ to ----------- birr per kg

11.4 Non fasting season
Cow Milk: From Birr------------------to ----------- birr per liter
Butter: From Birr------------------ to ----------- birr per kg

12. Do you think you are getting fair price for your products? □ Yes □No
why? ---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

13. Where do think the potential market (more demand) for the cow milk?
a. □ local market nearby to production site
b. □ woreda main city
c. □ Zonal capital city
d. □ Addis Ababa
e. □ Other town bigger than zonal town
f. □ All of the above
g. □ Other (specify) ---------------------------------------

G. Related Services

1. Do you get veterinary health service in nearby locality?
a. Yes □; If yes How much cost you incur for one round treatment to get this service?
   From: Birr ------------------ to Birr ----------- per cow.
b. No □ If no why? -----------------------------------------------------------------------------------------------------------------------------------

2. How many rounds in one year in average you take the cow to get veterinary health service per year?
   □ Only 1 round per year
   □ 2 to 3times
   □ 4 to 5 times
   □ 6 to 7 times
   □ More than 7 times

3. Have you obtained training and technical advice regarding dairy production, marketing, dairy product processing?
a. Yes □ If yes, who gave you-------------------------------------------------------------------------------------------------------------------------------
b. No □ If no, if the answer is no why?---------------------------------------------------------------------------------------------------------------

4. Ranking of problems associated with dairy animal production according to level of importance (increasing order)
   Forage and pasture shortage ---------------
   Water shortage ---------------
   Security problem ---------------
   Poor access to vet. Service ---------------
   Lack of transport ---------------
   Lack of improved dairy breeds ---------------
Absence of credit service
Poor extension service
Lack of buyer/market
Price fluctuation
Other

5. Reasons for feed shortage in kebele of by the respondent
☐ Poor feed conservation practices
☐ Lack of forage seed
☐ Expansion of cropland
☐ Lack of rain
☐ other specify

6. Distance travelled by the respondent in search of animal feed or grazing area?
   Maximum about ___________km
   Minimum about ___________km

7. Did you get financial service for your dairy business?
☐ Yes
☐ No
7.1. If yes for what (multiple choices)
☐ Loan to buy dairy cow/heifer
☐ Loan for feed, medication or other input
☐ Insurance for dairy cow
7.2. If yes from whom ______________________________________________________________________________
7.3. If no, why ___________________________________________________________________________________

H. General recommendation

1. What you recommend to improve dairy business for you and other actors?
_________________________________________________________________________________________________
_________________________________________________________________________________________________
_________________________________________________________________________________________________

2. Any other comment
_________________________________________________________________________________________________
_________________________________________________________________________________________________
_________________________________________________________________________________________________
_________________________________________________________________________________________________

Thank you for your time and very valuable input!
## Annex 3: List of Contacted Organizations & Persons

<table>
<thead>
<tr>
<th>NO.</th>
<th>COMPANY NAME</th>
<th>CONTACTED PERSON</th>
<th>TELEPHONE</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>ADANE W/SENBET KILTU</td>
<td>ADANE W/SENBET</td>
<td>116462895</td>
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<td></td>
<td></td>
<td></td>
<td>911201776</td>
</tr>
<tr>
<td>2</td>
<td>ALMAZ AYELE WOSSENE</td>
<td>YIRDAW W/SEMAYAT</td>
<td>114339748</td>
</tr>
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<td></td>
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<td>911223349</td>
</tr>
<tr>
<td>3</td>
<td>BULALA DINKITI AGRICULTUR TRADE &amp; INDUSTRY PLC</td>
<td>ESHETE YIGZAW</td>
<td>114396378</td>
</tr>
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<td>4</td>
<td>HELEN AGRO INDUSTRY P.L.C</td>
<td>HELEN MULUGETA H/MARIAM</td>
<td>116632861</td>
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<tr>
<td>5</td>
<td>HUDA TRADING</td>
<td>HUSANIA HUDAD</td>
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<td>6</td>
<td>LABACO AGRO-INDUSTRY S/C</td>
<td>HAILU MULUGETA MULAT</td>
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<td>911840656</td>
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<tr>
<td>7</td>
<td>LAME DAIRY P.L.C</td>
<td>HAILE ASEGIDE HAILE</td>
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