

# Dairy Value Chain in West Amhara

(Bahir Dar Zuria and Fogera Woreda case)



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## List of Abbreviations and Acronyms

AACCSA	- Addis Ababa Chamber of Commerce and Sectorial Association
AGP	- Agriculture Growth Program
AgroBIG	- Agro-Business Induced Growth program
AI	- Artificial Insemination
BZW	- Bahir Dar Zuria Woreda
CAADP	- Comprehensive Africa Agriculture Development Program
CIF	- Cost, Insurance and Freight
CSA	- Central Statistics Agency
ETB	- Ethiopian Birr
EU	- European Union
FAO	- Food and Agriculture Organization of the United Nations
FEED	- Feed Enhancement for Ethiopian Development
FGD	- Focal Group Discussion
FSP	- Food Security Program
FTC	- Farmers Training Center
GTP II	- Second Growth and Transformation Plan
KI	- Key Informants
KM (km)	- Kilo Meter
LIVES	- Livestock and Irrigation Value chains for Ethiopian Smallholders
LMD	- Livestock Market Development
LMP	- Livestock Master Plan
Ltr (ltr)	- Liter
PIF	- Policy and Investment Framework
USD	- United States Dollar

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## Executive summary

**Background and Objectives:** Agro-Business Induced Growth programme is a bilateral agribusiness development program of the Ethiopian and Finish governments, which mainly operating in Amhara regional state. The programme first phase was implemented in Fogera and Mecha Woredas, that ended in 2017, the second phase is running for four and a half years until 2021. The second phase covers North Achefer, South Achefer, North Mecha, South Mecha, Bahir Dar Zuria, Dera, Fogera and Libo Kemkem Woredas. From livestock value chains, dairy, small ruminant fattening and poultry added and the project intended to address bottlenecks hindering producers, traders, processors, retailers and consumers to get the best value from their participation using the Value Chain Development Approach. The study conducted to assist the VC actors in dairy to identify their business opportunities and competitive advantages, and to address the shortcomings that pose a risk for their business initiatives to prosper.

**Methodology:** The study used both primary and secondary data sources using Participatory Value Chain Analysis with Gender, Green and Governance Lens (PVCA+G3). For the primary data collection two sample Woredas (Bahir Dar Zuria and Fogera Woreda) taken mainly for the upstream actors. Conducted interviews and group discussions with actors at different segment of the value chain that includes small-scale dairy producers, dairy and multipurpose cooperatives and unions, processors, supermarkets, hotels, different sector offices and experts from Kebele to national level. To assess the overall existing situation, Ethiopia and other countries trends and benchmarks thoroughly reviewed.

**Value Chain Situation:** Ethiopia is the second-most populous nation of Africa following Nigeria, with 102 million population as per 2016 World Bank's estimate. As per IMF projection, the Ethiopian economy is expected to remain robust until 2019 at 7.6% that implies increasing number of emerging middle class in the country. Accordingly, population of the study area and surroundings, i.e. South Gondar and West Gojam, has exceeded over 5 million as per the 2017 CSA projection. The total cattle population for the country estimated to be about 59.5 million. Out of this total cattle population, the female cattle constitute about 55.5 percent (CSA 2017). The total volume of milk produced in Ethiopia increased over the last 15 years from less than 1 billion liters to 3.13 billion liters in 2016/17. However, such increasing milk production emanating from the rural dairy system, which contributes 98% of total production. Ethiopians' fresh milk consumption is only about 29.5kg per capita, on average, for the whole income group that is very low in comparison with even the neighboring African countries despite expected increase in connection with population and income increase.

**Value chain constraints and interventions:** The main constraints in the value chains exhibited in all segments of the value chain. The constraints include feed supply and distribution, low quality and reliability of AI service, shortage of medical supplies and weak health service provision, limited financial supply for dairy producer, collectors and processors, ineffective market linkage, low consumption habit, and weak coordination among value chain actors. In order to address the constraints of the VC, improving the feed supply with different interventions like promotion of nearby suppliers (youth groups or cooperatives), Quality Feed Suppliers – Dairy Processors – Dairy Farmers business linkage development and enhancing feed production efficiency of feed mills proposed. Capacitating public AI technicians and promotion of private AI providers, improving animal health service delivery, facilitate financial service, functionalizing dairy collection points and strengthening dairy cooperatives, developing dairy products and distribution system, and creating sustainable market linkage and related interventions proposed.

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## Introduction

### 1.1. Programme Background and Assignment Objective

Programme for Agro-Business Induced Growth in Amhara regional state (AgroBIG) is a bilateral agribusiness development programme of the Ethiopian and Finnish governments. The first phase of AgroBIG (2013–2017) was implemented in Fogera and Mecha woredas of the Amhara region. The second phase of AgroBIG is running for 4.5 years (2017–2021) and designed to sustain the gains and achievements of Phase I, and further strengthen agribusiness development within the Tana sub-basin.

The geographical focus of the second phase of AgroBIG is 89 kebeles in eight woredas: North Achefer, South Achefer, North Mecha, South Mecha, Bahir Dar Zuria, Dera, Fogera and Libo Kemkem, those falling under the Koga-Gilgel Abay, Gumara and Rib catchments. The Programme targets approximately 300,000 direct beneficiaries classified into three main groups: (1) Individual farmers and farming household members; (2) Agricultural cooperatives and associations; and (3) Other private sector value chain actors.

AgroBIG uses the Value Chain Development Approach, addressing the bottlenecks that hamper producers, traders, processors, retailers and eventually consumers to get the best value from the product they are either producing, processing, trading or consuming. In addition to promoting vegetable and crop value chains, AgroBIG Phase II is intended to include other potential value chains from within the livestock sub-sector for the Programme support to help the targeted beneficiaries diversify their income sources. The initial assessments made by the Programme team suggest that small ruminant fattening, dairy and poultry production have the desired potential for job and income generation, considering women and youth in particular.

The value chain analysis designed to produce comprehensive analyses to assist the VC actors to identify their business opportunities and competitive advantages, and to address the shortcomings that pose a risk for their business initiatives to prosper. The results of the analysis will also guide AgroBIG decision makers and management to ensure resources for interventions that have the best potential to help developing the selected value chains. The dairy value chain analysis as one the livestock sub-sector value chain conducted taking Fogera and Bahir Dar Zuria as sample areas for the project.

The specific objectives of the VCA analysis were:

- a) To determine potential activities for increased income related to dairy value chain that enhance the attainment of the targets of AgroBIG.
- b) To identify the potential of the dairy value chain – at their all stages – to create jobs, with specific focus on women and youths.
- c) To review the support packages and operational guidelines developed by the Livestock Promotion Agency to assist youth groups' engagement in livestock production. Assess the potential and observed challenges of the respective support and interventions in job creation for youth.
- d) To identify the existing and potential value chain actors, supporters and enablers (focused on downstream) having capacity to create sustainable markets for the Programme beneficiaries (smallholder farmers, their cooperatives, service providers, women and youth groups).
- e) Carry out in-depth analysis on various aspects of the value chain opportunities, constraints, show causes & effect of the chains (root-immediate causes), propose market-based solution (interventions) and the actors expected to be part of the solution.
- f) To indicate the value addition activities along each node of the value chain(s).
- g) Include successful business models or cases to ensure chain optimization.

## 1.2. Methodology

Both primary and secondary data sources used for the study.

**Secondary Sources:** Review of secondary information conducted to assess existing value chain situation, country specifics and trends, other countries benchmarks.

**Primary Sources:** Interview and key informant discussion conducted with primary value chain actors, existing different private and public service providers using semi-structured questionnaire and guiding questions. Representative respondents' type identified at the beginning of the study and additional actors added during the process of the study to get more comprehensive opinions and information. The respondents include small-scale dairy producers with different scale of operation, dairy cooperatives, multipurpose cooperatives and unions, processors, supermarkets, hotels, different sector offices and experts from Kebele to national level. In consultation with the project team and partners for upstream respondents the following Kebeles and samples taken for primary data collection.

TABLE 1. NUMBER OF RESPONDENTS INTERVIEWED

	Woreda	Sample Kebeles	FGD - in selected Kebeles	KII from different segments and organizations	Individual producers Detail Interview
	Fogera	Woreta zuria; Tihuazakena;	2	20+	5
	Bahir Dar Zuria	Yigoma hulut/andasa; Robit;	2		
	<b>Total</b>		<b>4</b>	<b>20</b>	<b>5</b>

**VCA Data Collection and Analysis Process:** for data collection and analysis process Participatory Value Chain Analysis with Gender, Green and Governance Lens (PVCA+G<sup>3</sup>) frame used. Both quantitative and qualitative data collection tools employed. For actors' data aggregation and estimation summary format and excel sheet employed. Detail method used and data collection instruments attached as annex in the report.



## 2. Market (Supply and Demand)

### 2.1. Main Market Segments and Driving Factors

Ethiopia fresh milk consumption ranges from 16.85Kg per capita for poorest quintile to 40.5Kg for the richest quintile with average of 29.5Kg per capita<sup>1</sup> for the whole income group. As indicated in Table 1, not all HHs consume dairy products in the different income group. Local milk consumption is low as compared to many other countries, tenfold less than the big milk consumer countries like Finland, Sweden, Netherlands and less than 1/3<sup>rd</sup> that of Kenya. The low consumption may be due to lack of awareness on the nutritional aspect, high price and extended fasting seasons. The future of the dairy sector in Ethiopia in general and in the study area is more positive with different driving factors, which includes the population growth, positive economic outlook, life style changes and urbanization.

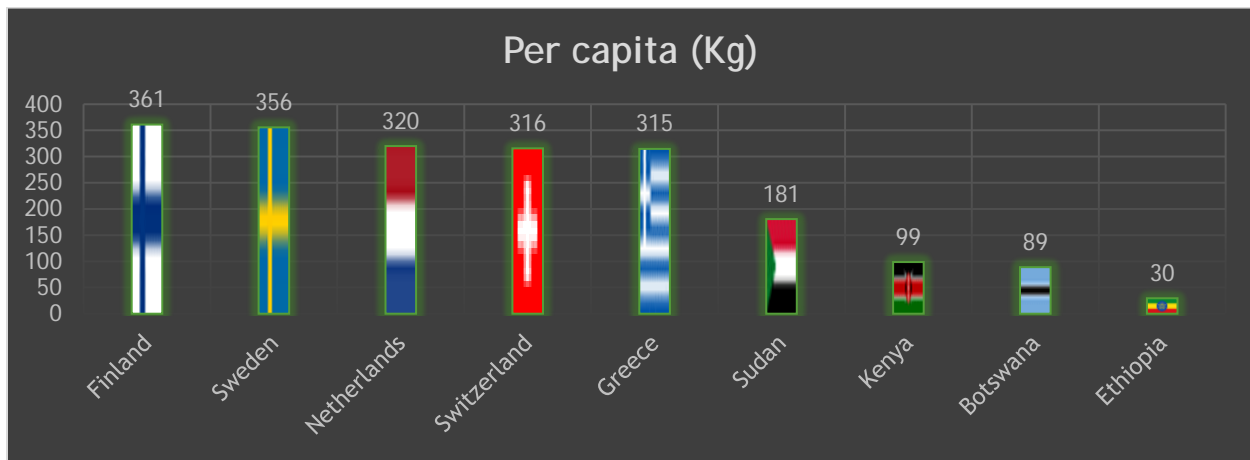


FIGURE 1. PER CAPITA MILK CONSUMPTION (KG/CAPITA/YEAR)

Data Source: Wikipedia<sup>2</sup>

Ethiopia has an estimated population of approximately 94.35 million with CSA projection as of July 1, 2017<sup>3</sup> and more than 102 million as of 2016 as World Bank estimate. The second-most populous country of Africa after Nigeria. The economy expected to remain robust from 2016 to 2019 at 7.6% as per IMF projection. In line with the economic growth, the emerging middle class consumer segments are willing to embrace new products and services that include livestock products. The population Bahir Dar, Gondar and other Zonal/Woreda towns in the study area are the main potential market for dairy products from target Kebele producers. As per CSA projection, the population of South Gondar and West Gojam reached 2.484 and 2.542 million as of July 2017.

In addition to the population growth, purchasing power increase, urbanization, and consumer awareness will increase the demand for quality, volume, graded and standardized dairy products and with interest for traceable products. 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%. Survey results conducted by LMD project show the average per capita consumption for four towns (Bahir Dar, Hawassa and Dire Dawa) to be 28.86 liters per annum. The consumption in Addis Ababa is very high (51.85 liters) as compared to the national and

<sup>1</sup> FAO, 2018

<sup>2</sup> [https://en.wikipedia.org/wiki/List\\_of\\_countries\\_by\\_milk\\_consumption\\_per\\_capita](https://en.wikipedia.org/wiki/List_of_countries_by_milk_consumption_per_capita)

<sup>3</sup> CSA, 2017 - <http://www.csa.gov.et/>

other towns' figure<sup>4</sup>. As per LMP projection, milk consumption of the country will reach 5,466 million liters in 2019/20 (Figure 2).

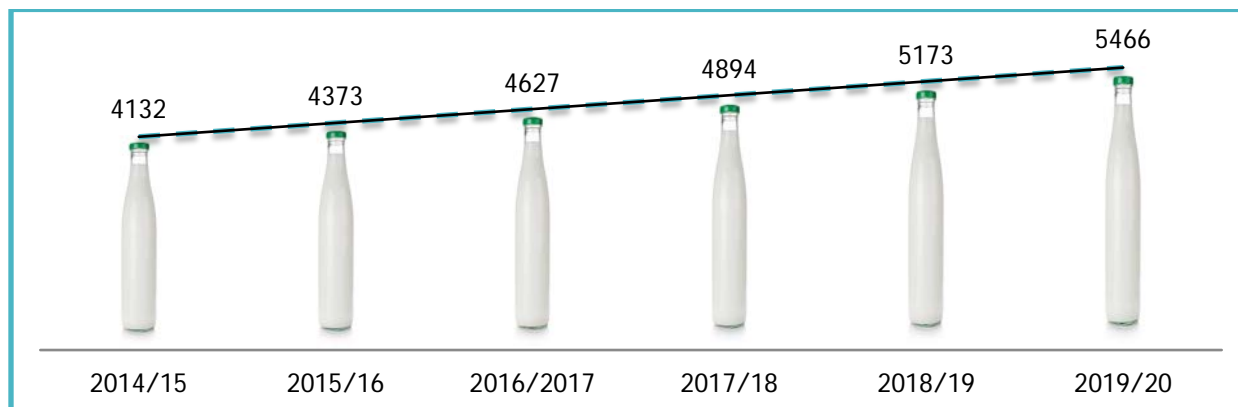


FIGURE 2. NATIONAL MILK CONSUMPTION PROJECTION IN MILLION LTS. (2015-2019/20)

Data source: Livestock Master Plan, 2015

As per FAO per capita milk consumption estimate is less than the master plan projection and the quantity consumed different with the different quintile as indicated in Table 2.

TABLE 2. DAIRY PRODUCTS CONSUMPTION PER INCOME GROUP

Income group	Consuming dairy	Consumption per capita per year (Kg)
Poorest quintile	30%	16.85
Moderately poor quintile	34%	22.20
Middle quintile	45%	30.78
Moderately rich quintile	44%	37.13
Richest quintile	57%	40.51

Data source: FAO, 2018

The consumption trend is different among rural and urban HHs as indicated in the country (Figure 3).

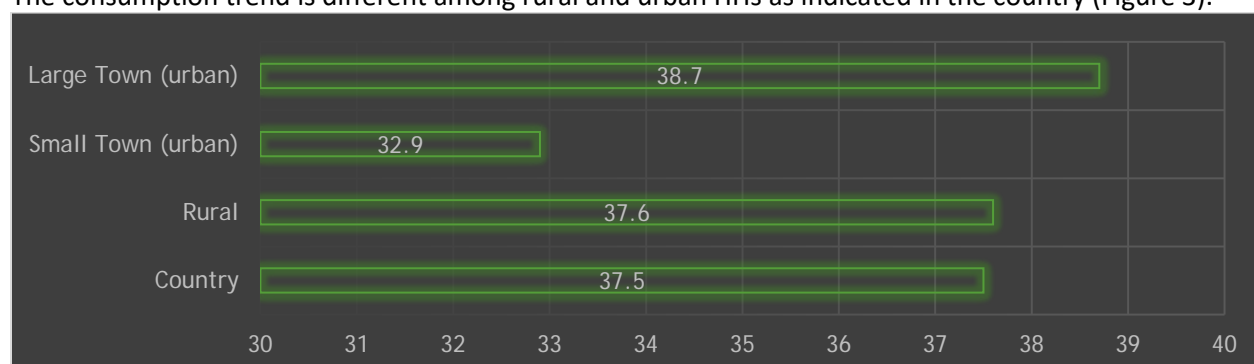


FIGURE 3. MILK-YOGURT-CHEESE-OTHER DAIRY CONSUMPTION (%HHs)

Data source: CSA/World Bank, 2017

<sup>4</sup>LMD VCA

**Imports:** Ethiopia official dairy products import was more than 26 million USD (CIF value) during 2017. As indicated in Figure 4 imports of dairy products have an increasing trend.

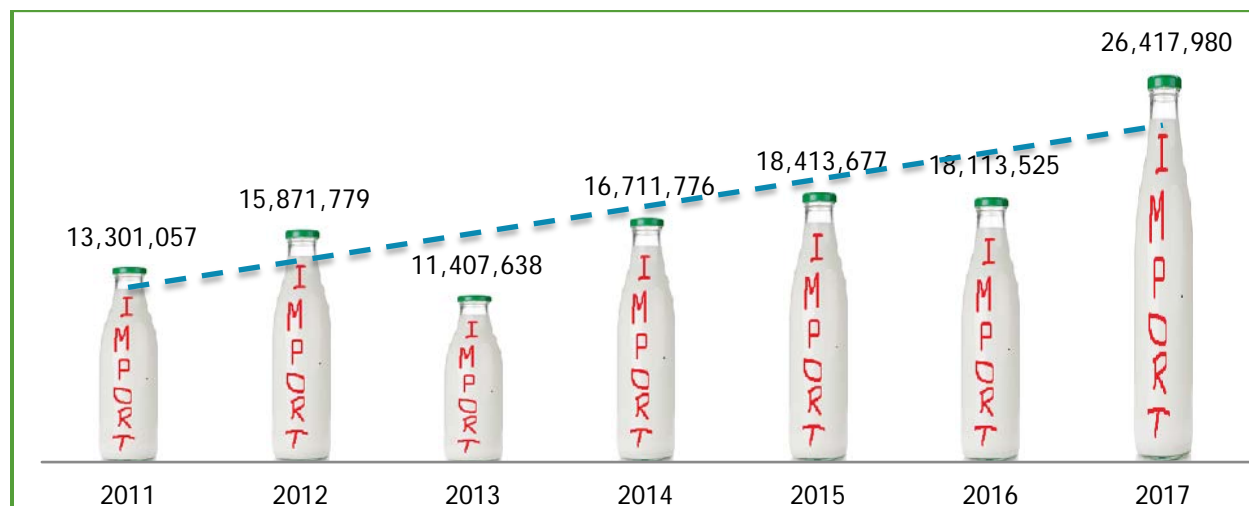


FIGURE 4. ETHIOPIAN DAIRY PRODUCTS IMPORT VALUE-CIF USD (2011-2017)

Data Source: ERCA, 2017

Over the last six years, the country spent more than 17 million USD on average for imported dairy products. The main products imported are cheese and powder milk. Importing done mainly from Netherlands, Switzerland, Poland, France, Ireland, New Zealand. The main share of the dairy products import spending was for milk powder.

**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 estimated at approximately 735 billion liters annually. The largest producers are Europe (EU) countries at ~156 billion liters annually, India at ~131 billion liters and the United States (US) at ~91 billion liters. New Zealand is the eighth largest producer at 21 billion liters annually.

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.

**Market Trend and Driving Factors:** taking the study areas findings the local milk market divided, into three, (i) buyers in the village and at Woreda level (ii) buyers in Zonal and regional towns (Gondar, Debera Tabor and Bahir Dar) and (iii) Addis Ababa and other towns. At Woreda and village level, there are civil servants, traders and other peri-urban dwellers in Woreda towns and at village that are buying milk and other dairy products (mainly butter) on daily basis or renting on contractual basis for their children throughout the year and family members during non-fasting season. Hotels and cafes in the Woreda towns are buying fresh milk from individual farmers and primary cooperatives (from 10 – 50 ltr/day).

Buyers in Bahir Dar get their milk and other dairy products from dairy cooperative in the town and surrounding area producers. Few of the customers buy pasteurized milk (about 1,000 ltr) from nearby distribution shops.

Butter and cheese supplied in small quantities in regular market days to buyers in Woreda town and beyond. Farmers sell their butter buyers in the village, nearby markets during market day. Butter selling price ranges from 120-180Birr/Kg. The demand for all dairy products will decrease during the fasting seasons.

TABLE 3. LOCAL MARKET SEGMENTS AND BUYERS REQUIREMENT (QUALIFYING FACTOR)

	Market size and demand driving factors	Requirement and procurement process/qualifying factor
<b>Individual buyers in the urban village and Woreda town</b>	The public servants and per-urban areas residents buy fresh milk on regular basis for their children. On average, there are 30-45 thousand urban dwellers in each Woreda. Based on small town consumption population estimate (33%) with 29.5 per capita consumption, daily existing Woreda urban household consumption estimated about 1,067ltr and 6,849ltr as per FAO minimum diet requirement consumption level;	Regular, known suppliers (quality assurance), nearby supply/distribution
<b>Cafes and Hotels in Woreda town</b>	There are about 10 hotels and 10 cafes in Woreda towns like Woreda towns that retail fresh milk, <i>maceyato (coffee with milk)</i> and milk with tea mainly in non-fasting days.	Prefer door to door regular supply; Known suppliers/traceable (quality assurance);
<b>Bahir Dar Town individual buyers</b>	There are about 362,297 residents in Bahir Dar as per CSA projection, with minimum per capita of 29.5ltr existing consumption of milk estimated 11,419ltr per day and with FAO minimum diet requirement about 62,037 ltr/day.	Needs good collection and distribution. Suppliers from other area can compete as a big market and good road access.
<b>Hotels, restaurants and cafes</b>	There are about 32 big hotels and many more restaurants and cafes that buy milk for <i>maceyato (coffee with milk)</i> and fresh milk. The big hotels on average buy about 10-30ltr/day fresh milk; With about 1500-2000ltr total fresh milk aggregate demand; 25-50kg cheese/week; 35Kg butter/week for each big hotel.	Prefer door to door regular supply; Known suppliers/traceable (quality assurance);
<b>Institutional buyers – Bahir Dar University; Gondor University student café and lounges</b>	There are about BDU about 53,000 students in Bahir Dar university different campuses. Milk is not in the regular menu except for special case students. Students and staff lounge services are buyers of fresh milk. About 30,000 regular students are attending in Gondar university. Debre Tabor University, Public hospitals, school feeding programs and outpatients could be potential buyers of milk.	Regular, on tender based procurement

## 2.2. Production and Supply

The total cattle population for the country estimated to be about 59.5 million. Out of this total cattle population, the female cattle constitute about 55.5 percent (CSA 2017). When classified with purpose from which 11.83 million are milking cows. The total volume of milk produced in Ethiopia increased over the last 15 years from less than 1 billion liters to 3.13 billion liters in 2016/17. The milk is produced by 11.83 million milking cows are kept within five different dairy farming systems. These are, (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 that is practiced in GZW; (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.

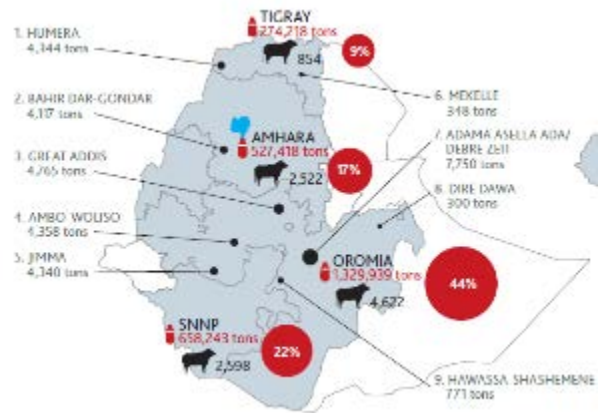


FIGURE 5. ETHIOPIA'S MAIN MILK SHED

SOURCE: DAIRYBIZZ RAPPORT

Bahir Dar – Gondar milk shed is among the nine high milk shed known in the country. West Gojam, South Gondar and North Gondar are the three zones that constitute Bahir Dar-Gondar milk shed. As per CSA 2016/17, survey results from 11.83 million milking cows 2.73 million, which is 23%, found in Amhara region.

As indicated in 6, Amhara region contributing 19% of 3.13 billion-ltr national cow milk production. South Gondar Zone and West Gojam contributes 8% and 13% of Amhara region production.

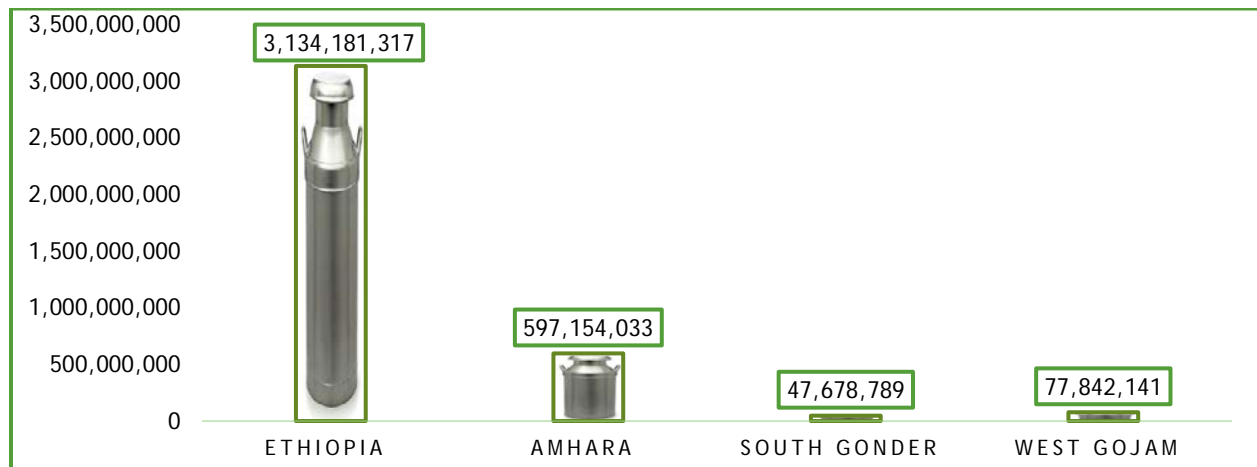


FIGURE 6. MILK PRODUCTION VOLUME (LTS.) IN 2017 OF ETHIOPIA AT NATIONAL LEVEL, AMHARA REGION, AND OF SOUTH GONDAR AND WEST GOJAM ZONE

Source: CSA, 2017

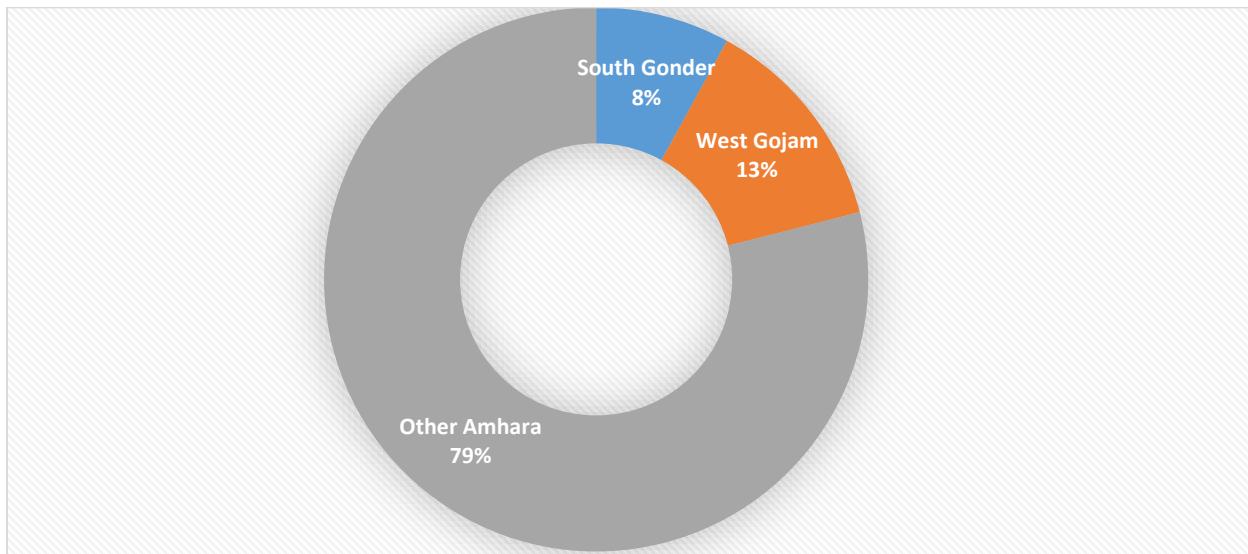


FIGURE 7. MILK PRODUCTION PERCENTAGE (%) SHARE OF SOUTH GONDAR AND WEST GOJAM ZONES

There are 45,000 – 120,000 cows with majority (96%) local breeds (Figure 8). The interviewed households has 2-4 milking cows, part of them keep crossbred (Figure 8). The common dairy cow holding at household level ranges from 1-4 from that less than 5% is cross breed mostly 50% and below. As in the case of North Mecha MHH has 5% local breeds and FHH 3% cross breeds.

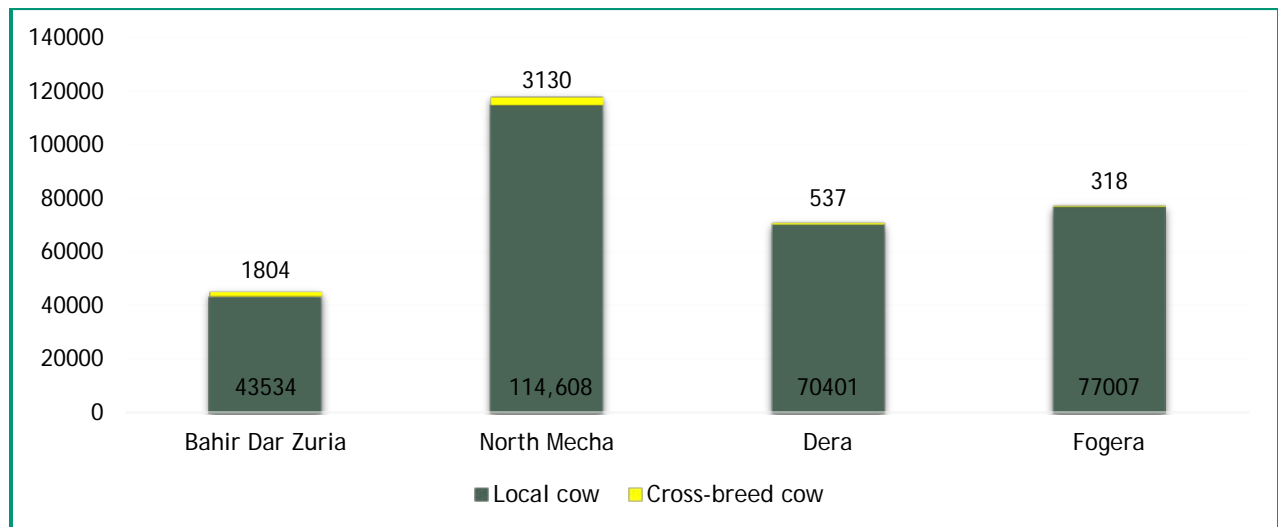


FIGURE 8. NUMBER OF DAIRY COWS (LOCAL AND CROSSBREED) IN TARGET WOREDAS

Source: Woreda statistics and livestock office

Demand and supply comparison: taking FAO minimum milk requirement of 62.5Kg there will be supply deficit to satisfy the demand at zonal and regional level. With the current consumption level estimate (29.5Kg) of milk, there is no significant additional demand for milk at Woreda, Zone and National level. However, with the national LMP projection estimate, there will be supply deficit to satisfy the expected demand (Figure 10). The expected demand increase will create market opportunity for existing actors and new comers (youth and women).

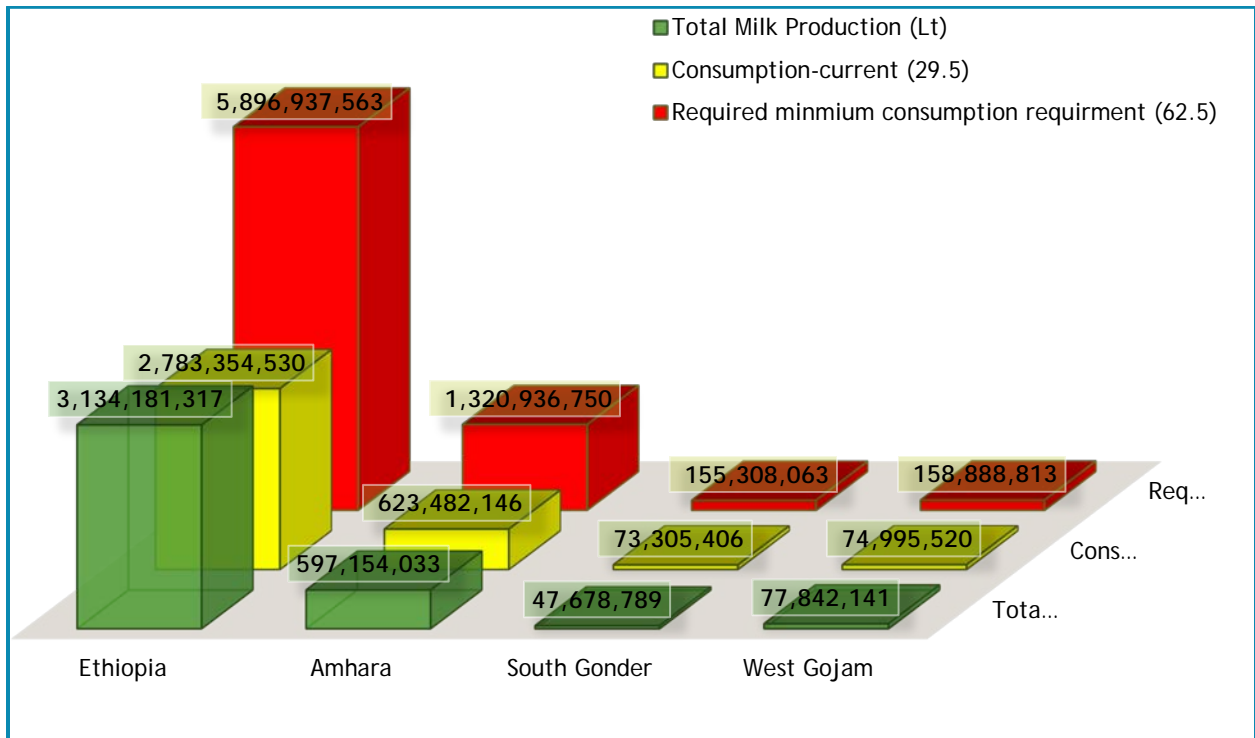


FIGURE 9. PROJECTION OF MILK PRODUCTION AND CONSUMPTION IN ETHIOPIA AT NATIONAL LEVEL, AMHARA REGION, AND SOUTH GONDAR AND WEST GOJAM ZONES

### 3. Functions and Actors in the Value Chain

As indicated in the value chain map, most of the milk and milk products supplied from small-scale dairy farmers. Main actors that have links and potential ones (in broken line) mapped in Figure 10. The main function in the value chain and actors' role described in next sub-sections.

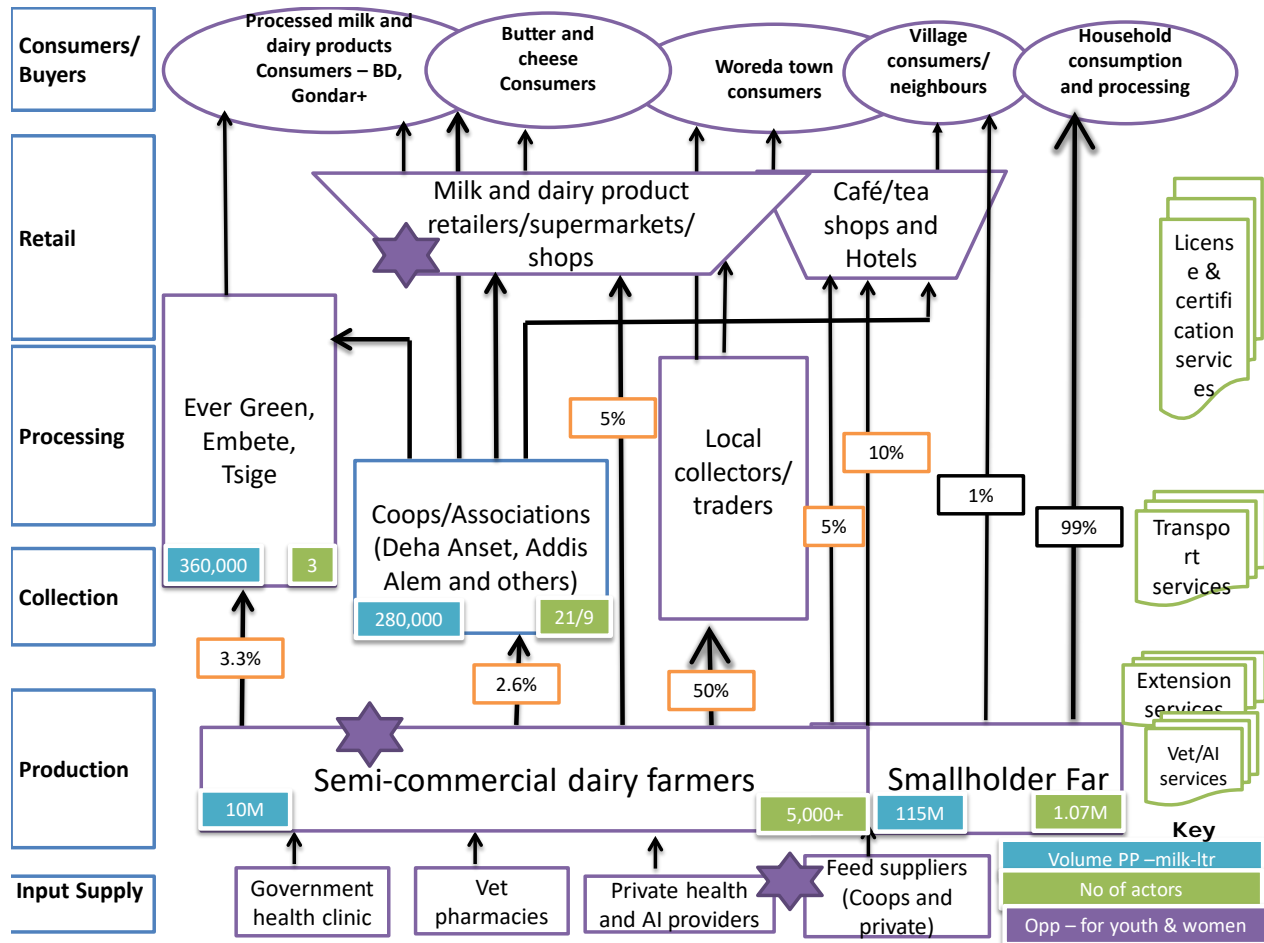


FIGURE 10. MILK AND MILK PRODUCTS VALUE CHAIN MAP IN GZW

#### 3.1. Input Supply and Services

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

**Feed:** with similar pattern with other part of the country, the feed in the study area coming from green fodder (grazing) and crop residue (e.g. chopped maize straw and remains of maize crop). Farmers interviewed mentioned a combination of animal feeding practice, cut-and-carry system and grazing and browsing on communal or private natural grazing land as the dominant practice and stall-feeding done by few farmers. During the dry season most of the dairy farmers use supplementary feed like mixed commercial feed, wheat bran, oilcake, which sourced from mill houses and traders in the local market. Farmers also keep hay and crop residue. Few farmers also practice forage plantation (elephant grass and others). Supplementing feed is a significant cost for the farmers. Interviewed farmers spend cash from 2,000 to 3,000 Birr minimum per annum for their existing dairy cow size (average 2). There are concentrate



suppliers, grinding mills who supply by-products for animal feed. Primary cooperative also supply dairy cow concentrate that is sourced from Merkeb Union. Feed availability and price is one of the critical issue raised by interviewed dairy farmers.

**AI and Veterinary Services:** Veterinary health and AI service provided mainly by government. Farmers get the service with nominal payment (0.5 cents – 1.5Birr/cow) for vaccination 2-3 times in a year and 5ETB for AI service. The generic vet service accessed in nearby Kebele or Woreda animal health office during working days and hours. When their cow becomes sick, they will make additional payment for treatment based on the diagnosis. When they face problem during the non-working days and for immediate advice they visit private health service providers and local veterinary drug store. There are 1-3 private health service providers in Woredas visited. Farmers interviewed paid from Birr 5 to 50 ETB in case of public and 50 to 150 ETB for private provider based on the cases.

There are private AI technicians in some areas that are recognized by the region. The private AI service providers provide AI service charging about 250ETB. The farmers raise the low success rate of AI in their village and on time availability of government assigned AI technicians. Experts and office heads in livestock and fishery office also confirmed the low success rate of synchronization service that is linked with different factors (clear detection, technician skill, quality of semen and management of farmers). There are farmers that provide bull service for their neighbors free with local non-acceptance of payment for such kind of service and others charging from 100-300ETB for their service. Not much specialized bull service providers observed in the study area. Some village accepts the service with fear of profitability and others suggest communal bull service by covering the feed cost in FTC. Ever Green/Agere Wotete in collaboration with Land Ó lakes started a project to train and use 20 private AI technician that covers the project Woredas. As private providers expected to be more flexible and working with the processing company leadership as end buyer of the product with traceable and responsible services. As per the plan in addition to AI service, the technician will provide advisory service to farmers. They will access required liquid nitrogen and other support from existing regional sources.



FIGURE 11. GOVERNMENT ANIMAL HEALTH SERVICE CENTER AND PRIVATE VET DRUG SHOP

Source: Survey

### Improved breeds/heifers

There is limited source of heifers in the area. The major source of heifers is farmer to farmer and with AI service. As per farmers response getting good quality cross breeds or local dairy cow from the market is difficult. The average improved and local cows buying price varies depending on the status/productivity of cow and location. Buying price of indigenous milking cow ranges from 10,000 to 15,000 on average while crossbreed in the area sold on average from 30,000 - 60,000 Birr. Heifers cost from 5,000 - 8,000 for indigenous and 12,000 - 30,000 Birr for crossbreed ones as indicated in Table 4.

TABLE 4. BUYING PRICE OF DAIRY COW WITH CASES INTERVIEWED (IN BIRR)

	A	B	C	D	E
<b>Indigenous cow</b>	10-13,000	10-12,000	12-15,000	12-20,000	10-12,000
<b>Cross breed cow</b>	30-50,000	35-45,000	55-60,000	55-60,000	50-60,000
<b>Indigenous heifer</b>	6-8,000	6-7,000	5-7,000	5-6,000	6-8,000
<b>Cross breed heifer</b>	12-20,000	15-16,000	28-32,000	28-30,000	20-22,000

Source: Detail Interview

**Training and Advice (Extension Service):** As per the individual farmers interview, most farmers did not get any special training in dairy management. There are farmers who confirmed receiving training in the past and advice from Kebele and Woreda experts. Amhara Region Agricultural Research Institute and projects are sources of technical support for some farmers in the area. 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 farmers. For the dairy farmers in the study area skills on dairy cow management, feeding, housing, health, hygiene, milk handling, marketing and business management need enhancement.

**Financial Service:** Special loan for dairy business not observed as a common financial service in the area.

**Research and Technology Promotion:** Under ARARI the research centers conduct different research and pre-scaling promotion to develop the livestock sector in the region. Andasa Livestock Research Center that mandated for research and pre-scaling promotion of technology in the study area conducts research trial and develop technology in dairy and other livestock development. They have dairy improvement technology activities like feed digestibility improvement treatments, different feed seed trial and promotion, Lactoperoxidase System trial to prolong unprocessed evening milk intermediate shelf life.

### 3.2. Production

**Enterprise Size:** As indicated above common dairy cow holding ranges from 1-4 per household in the target area. Similar to the national and local situation, most of the cattle they keep are indigenous, only 3-5% are cross breeds (Figure 12).

There is basic exposure for better feeding, improved breed and management in visited villages. Except the basic exposure, there is no improved management practice by most farmers with limited investment with risk aversion and limited business orientation practice. Feeding, cleaning and milking practiced by all family members.

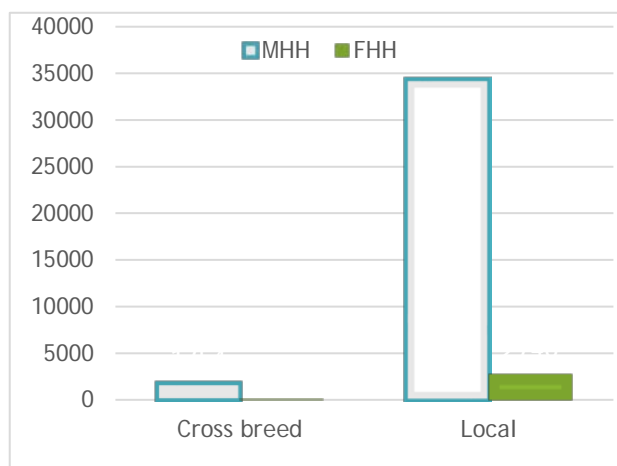


FIGURE 12. BREED TYPE HOLDING BY HEAD OF HH (%)

**Milking:** For milking the most common practice mentioned by the respondents are, calves allowed to suck their dams before (to initiate milk letdown) and after milking, (to drain whatever left in the udder). Other also practice traditional hand milking by washing of teats before milking. Milking done mainly by men but women and matured children also do milking. The volume may vary but milking done only twice in both wet and dry season by most of the farmers in the area.

**Productivity:** With existing practice in the area lactation length of local cow (month) ranges from four to 7 months and for the cross breeds 8-12 months. The productivity level varies in the different lactation periods. As per interviewed farmers’ response, the local cow (Fogera and other) gives on average 1.33-4.33 liter per day during the three periods and the cross breeds (mainly 50% Holstein Friesians) 5.2 – 11 with the cases assessed during the study. There are good performing farmers with good management that get 14-20ltr/day from the crossbreed and 5-6ltr from Fogera breed. The productivity observed in most cases below the local benchmark and expected productivity mainly in relation to the management practice (sub-optimal feeding and handling).

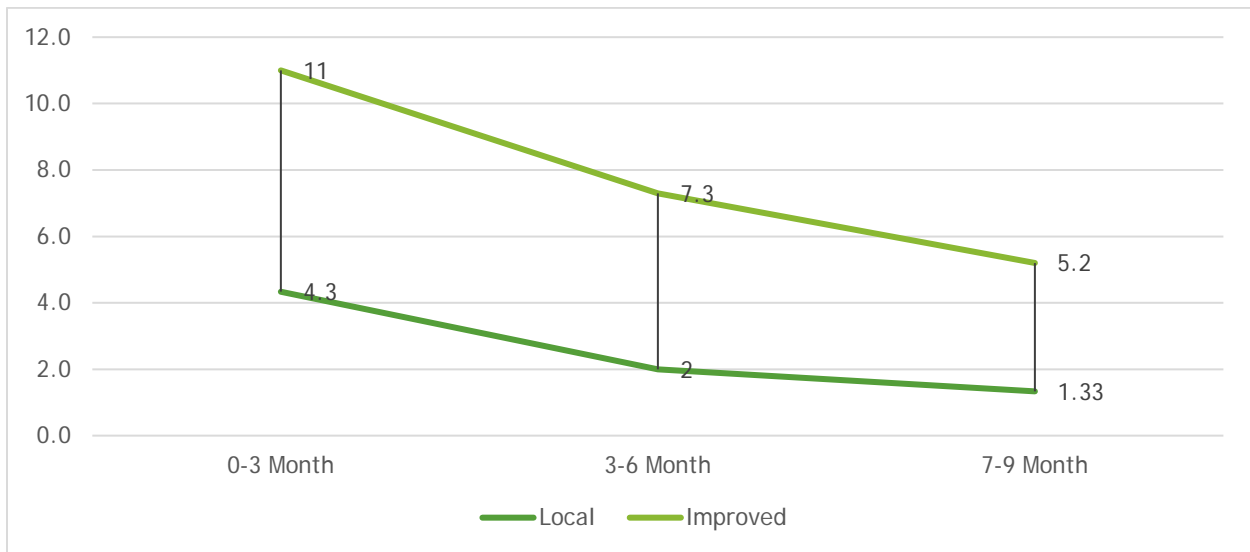


FIGURE 13. MILK PER DAY PER COW (IN LTR.) IN DIFFERENT LACTATION PERIOD  
 Source: Detail Interview Results

Productivity is far below the global practice. Existing productivity of Ethiopia is about 265Kg taking 2016/17 production situation per year, which is about 1/36 times of productivity in Canada (Figure 14). Based on the cases reviewed, target Kebeles practice is better than the national, regional and zonal figures as indicated in Figure 13, which is still far from global and countries in Africa productivity level like Tanzania or Zambia.

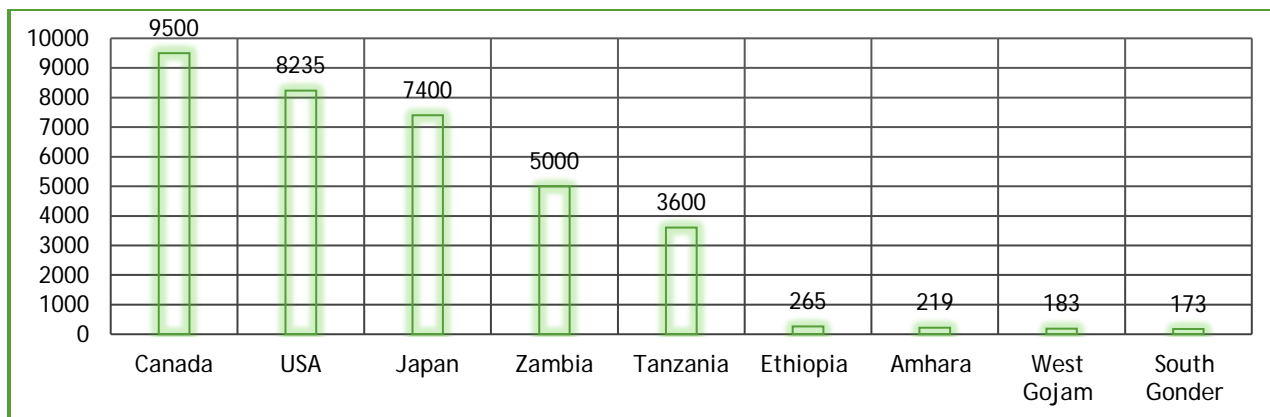


FIGURE 14. MILK PRODUCTIVITY PER COW PER YEAR OF ETHIOPIA AT NATIONAL LEVEL, AMHARA REGION, WEST GOJAM AND SOUTH GONDAR ZONES, AND OF BENCHMARKS

Source: CSA 2017 and others

**Milk Production:** With the current herd size the total milk production of households interviewed, vary from 8-30 ltr/day (commonly 15-20 on average depending on the season); most producers' daily production may be less than that. Farmers believe they can increase the milk production if feed shortage and breed issues addressed and sustainable market created. There are local cases where farmers produce significantly higher than cases reviewed.

**Butter and Other Milk Products:** In the cases reviewed, butter production is not a preferred option. Farmers go for butter only where they do not have market outlet and where they are far from the market area. The crossbreed milk fat content is low and they can get 1Kg of butter from 22-30litre of milk, selling milk if by far profitable. The local cow fat content is better than the crossbreed, they can get 1Kg butter from 12-15ltr of milk.

**Market Supply and Marketing:** most farmers near to the market supply milk to the market, all of the interviewed cases supply milk to the market including evening milk either immediately or next morning keeping in cold place or in a rented refrigerator as one of the cases mentioned. The farmers supply to their cooperative or directly to their customers (individuals and cafes/restaurants). As per the KI, there are farmers that does not have buyer for their milk production. Even cooperative members could not able to sell their full production. Farmers during the group discussion mentioned there were cases where they recollected unsold milk that is processed at the cooperative level. During fasting period the volume demanded reduced and the price decline (about 1-2 Birr less than the non-fasting season). Butter supplied to the local market and selling of local cheese (Ayib) is not common with the limited demand. Small percentage of milk consumed at the household level 0.5-2 ltr (about 10% of production). Small part of butter in all the cases and local cheese (Ayib) consumed at home. As indicated in the group discussion, usually after processing the butter, farmers give *Agyote* to the calves or cows. Cooperatives and individual producers in Bahir Dar town have stronger link with buyers in Bahir Dar with different shop outlets in the town.

**Market Distance:** Most of the dairy farmers interviewed sell their milk to dairy processing companies or cooperative collection point, or their customers' house/café or milk collectors that supply to Bahir Dar market with a distance of 1-4Km radius. However, they sell butter in the nearby market on market day.

### 3.3. Collection, Bulking, and Transporting of Milk

**Cooperatives:** In the study Woredas, 1-2 dairy cooperatives established but not fully functional. As per regional data, there are 60 active dairy cooperatives in the region. From the four dairy cooperatives visited (Genet Lerobit, Addis Alem-Yeguma Hulet, Deha Anste, Alem Bere-Yabibale), three of them collect milk and supply to buyers. They collect 180-300ltr/day from their members (65-120 individuals with 10-20% women) and from non-members in some instances. Cooperative supply collected milk to dairy processing company (Ever Green/Agere Wotete), local café and individual buyers using their distribution point like in case of Deha Anste. The dairy cooperatives supported in the past with different projects and part of the facility provided is not functional (cooling tank, transport Bajaje, generator). The dairy cooperative sometimes supply dairy feed for their members and serve as entry point to provide training to farmers.

TABLE 5. CAPACITY AND EXISTING SITUATION OF VISITED DAIRY COOPERATIVES

Cooperative	Location (Woreda-Kebele)	Membership	Daily collection (ltr)	Existing facility	Main buyer	Main issues raised
<b>Addis Alem</b>	BZW-Yegoma-Hulet (Andasa)	120 (110M+10F) and collecting from 100 non members	1500	4 collection points with testing kit; Supported Bajaje; Milk tank, generator but not functional	Ever Green – Agere Wotete	Limited outlet; Not functional facility (Spare part; power; maintenance service); Quality feed supply; Technician quality service and breed improvement
<b>Genet Le Robit</b>	BZW-Robit Kebele	25	180-200	Own milk testing kit	Ever Green – Agere Wotete	No demand for processed products) (i.e. Ayib); Quality feed supply; Reliable AI and health service
<b>Deha Anset</b>	Fogera-Woreta Zuria	65 (53M+12F)	180-300	3 selling outlet and 1 collection point; Testing kit (Lactometer and alcohol); small manual processor; 8 staff with support of projects	Hotels (5) and Cafes (5); Individual consumers	Limited market outlet and low profitability of processed products (about 50% of fresh milk price); Low demand during Kirmet period and fasting seasons ;Governance - Leaders lack of trust on staff (e.g. Bajae driver – stopped); Willingness to pay full staff cost; Transport for home delivery; Outlet location is not in preferred areas;
<b>Alem Bere-Yabibale</b>	Fogera-Alem Bere		Not functional	Has selling and collection place	NA	Sustainable buyers and limited/discontinued support to make the cooperative

Cooperative	Location (Woreda-Kebele)	Membership	Daily collection (ltr)	Existing facility	Main buyer	Main issues raised
						functional; Governance and members commitment
<b>Total (West Gojam and South Gondar) – Total</b>		21 cooperative with 990 members (883M+107F)	9 engaged in sales – 281,741 ltr collection in 2017	Different status	Processing companies; Hotel/café; Individual consumers and processed dairy products sales	Sustainable buyer; members supply fluctuation and price sensitivity; Governance and cooperative overall capacity

Source: Interview



FIGURE 15. FACILITIES IN VISITED DAIRY COOPERATIVE

### 3.4. Processing of Milk

There are three dairy processing companies that source milk from the study area Woredas. One of the dairy processing company, *Ever Green/Agere Wotete* located in Bahir Dar Zuria Woreda Andasa/ Yeguma Huletu Kebele has capacity of processing 60,000ltr/day with pasteurized milk, flavored milk, yogurt, cheese and butter processing lines. The other two located in Bahir Dar town (Embete and Tsege) currently operating with small-scale processing facility with an investment in process to install higher capacity

processing facility. The processing companies are not functioning in full capacity for example Ever Green operating in less than 10% of its capacity with supply inconsistency and demand fluctuation. The processing companies collect raw milk from farmers through cooperatives, youth groups and own collection points in about 150Km radius (BZW, South Gondar, West and East Gojam). The processing companies supply pasteurized milk, yoghurt, cheese mainly buyers in Bahir Dar and Gondar town. They supply Cheese to Addis Ababa and other towns like Hawassa in small quantity with strategy of expanding customer base, planning for their other products too (pasteurized milk like in case of Ever Green).

TABLE 6. EXISTING CAPACITY, PRODUCTS, OUTREACH AND ISSUES OF DAIRY PROCESSING FIRMS

Description	Ever Green (Agere Wotete)	Embate and Children Dairy Products	Tsege Girma
<b>Existing processing capacity (ltr/day)</b>	60,000	Processing plant with 45,000-60,000 capacity with lease financing in process	150 ltr, can be expanded to 1,000 ltr with existing land access
<b>Existing average daily collection</b>	Less than 6,000	4,000 ltr daily different cheese processing	150
<b>No of collection points</b>	Now 5 collection point target to reach 20; Working with cooperative (4) and youth groups	Home delivery mainly from Bahir Dar cooperative and collection from cooperatives in Zenzelma, Merawe, Dangla; Collection point in Hamuste,	Farmers in BZW-Zenzelma
<b>Existing main products and destination</b>	Milk, cheese, butter, yogurt; Bahir Dar, Gondar, Addis (Cheese)	Cheese (mozzarella and other types), table butter and yogurt; Bahir Dar, Gondar, Addis Ababa, Hawassa, Dire Dawa	Whole milk, yogurt, butter and local cheese (regular Ayib and spiced/sour Ayib); Bahir Dar, Gondar
<b>Main issues raised</b>	Farmers supply volume fluctuation; Demand reduction during fasting season; dairy production and cooperative quality service – feed, AI and health service; Dairy products strong promotion	Farmers knowledge and practice; Machinery and equipment technician – difficult to get personnel for maintenance and losing the whole equipment; Finance for investment and working capital-soft loan for farmers and investors; Hard currency to finalize processing investment; Power and water fluctuation; Consumption level of pasteurized milk (promotion).	Milk and other dairy products consumption habit - awareness creation & promotion; Feed supply – expensive and mixing skill at farmers level; collaboration among value chain actors (producers, processors and feed suppliers)
<b>Existing initiatives</b>	Feed processing plant investment; Expanding collection and selling points; Farmers quality AI and health service (working with projects for private AI service-20 AI technicians)	New processing plant investment in process with DBE; Collaboration with other actors, Amhara region chamber of commerce to address common sector issues	Expanding the processing capacity; Testing new products (sour and spiced Ayib)

Source: Interview



FIGURE 16. FACILITY OF EVER-GREEN DAIRY PROCESSING COMPANY

Source: Factory Visit

At country level, there are more than 35 active dairy processors. The processors collect raw milk from dairy farms, private milk collectors, cooperatives and unions. The common practice done by dairy processors in the country includes the raw milk collection using collection points and transportation to the processing plant. Then the milk collected processed into pasteurized milk, cheese, butter and yogurt. The dairy processing companies in the country 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. There is no Ethiopian company processing milk powder, although some processors are planning to invest in such facilities. Anchor, New Zealand's leading milk brand has begun producing fortified milk drink in Ethiopia with quick gain of market share. At the same time imported dairy products, showed increasing trend, cheese and powder milk as the main imported products.

Most of the dairy processing companies work under capacity for most of the product types. 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% for the different products as indicated in the following graph.

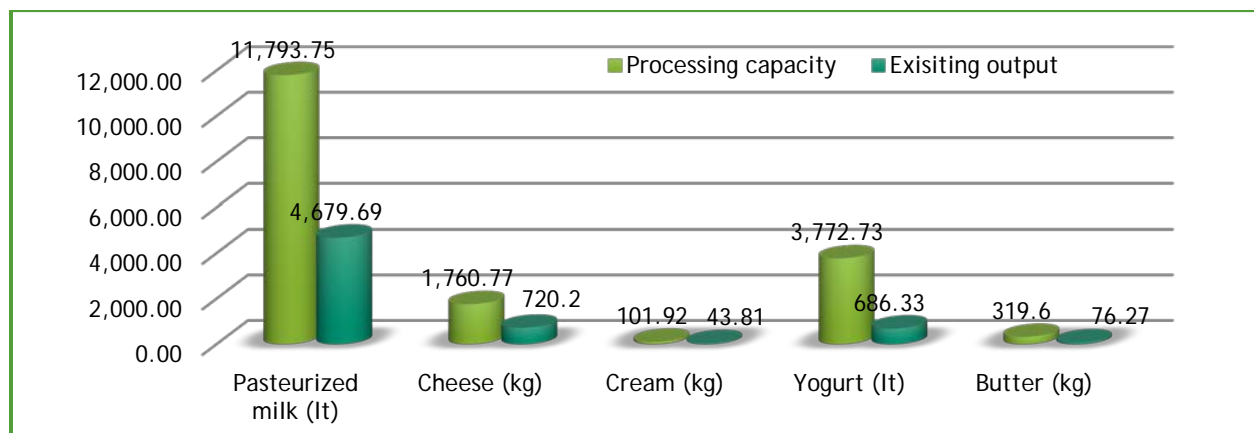


FIGURE 17. EXISTING OUTPUT AND AVERAGE CAPACITY USED FOR DIFFERENT MILK PRODUCTS

Data Source: TaP/AACCSA, 2016



The main factors mentioned for the under capacity operation are lack of collection facilities (chillier, vehicles, refrigerator), 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, in high milk production areas some farmers perceive that there is lack of demand, which prevents them from expanding production.

### 3.5. Wholesaling and Retailing

There are retail shops that are managed by dairy cooperatives and processing companies. Pasteurized milk and other milk products pass mainly through supermarkets and retail shops channel. Raw milk also retailed in distribution shops. There are cafes and restaurants retail milk, which they collect milk from farmers and retail to consumers. For homemade butter and local cheese (*Ayib*), the open market during the market days is the main outlet. Restaurants and distributors are the next important outlets for the processed products. University, hospitals, restaurants, cafes and hotels located in major urban centres are also important market segments. For products like *Ayib* (local Cheese) and butter customers come to the processing companies' factory gate or selling outlets. The bigger supermarkets in towns have dedicated refrigerated shelves/corners for different type of dairy products for locally produced and imported ones. Most traditional cooking butter and cheese are supplied through the informal market channel, the main one in Addis Ababa is *Markato* butter market (*Kebe Berenda*) and in most cases, there are specific location for selling butter in most markets. Raw milk is sold through retailers or door-to-door distributors in big towns where there are crowded houses like in condominium houses. Individual traders, dairy farms and cooperatives in different village corners in Addis and other big towns also has raw milk retailing shops.

## 4. Supporters and Enablers

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

**Regional, Zonal and Woreda Livestock and Fishery Offices:** organizations like Woreda livestock and fishery office service provide different support services especial to smallholder farmers. The service includes, (i) treatment, vaccination and laboratory services; (ii) AI services; (iii) facilitate forage seed and feed market linkage, equipment supply for producers; (v) provide training services for producers; (vii) Provision of Support to producers in feed composition, Animal handling and management (ex: Health, hygiene, housekeeping, waste management).

**AARI and Bahir Dar University:** organizations like AARI-Andasa research center and Bahir Dar University in line with the research and community outreach service are engaged in provision of training and technology promotion in dairy management, feed and forage production, animal health with limited outreach.

## 5. Value Chain Actors Relationships and Governance

Dairy farmers especially who owns cross breeds organized in cooperatives and have links with Vet clinics, owners of grinding and oil pressing mills, AI technicians and veterinary staff of the Office of livestock and fishery. The three dairy processing companies has link with the dairy cooperatives. The dairy processing companies and cooperatives discuss on the product quality and price issues. Even though the price revised from 10 ETB to 12 ETB during fasting and 13 ETB for non-fasting days, the farmers still not satisfied on the

price level taking the raw milk retail price in Bahir Dar as a reference. The cooperatives membership is low as compared to the total dairy farmers in the area. Not all members strictly supply their milk to the cooperative, part of the milk supplied to Cafes/restaurants, individual collectors and consumers that pay better price. The cooperatives are not very strong to reduce irregularity of members supply and to have stronger saying in the value chain. There is no local stakeholder platform to discuss the main issues and actions needed in the dairy value chain.

## 6. Analysis of Policy Environment, Institutes and Initiatives

### 6.1. Policies Review

Policies and strategies that focused on agricultural and livestock development include the Growth and Transformation Plan (GTP II), 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.
- 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).

## 6.2. 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 and demonstration activities. 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.

**Amhara Agricultural Research Institutes (AARI):** AARI conduct required regional research and demonstration in selected areas of the region. Andasa Livestock Research Center under ARARI is the nearby mandated research center in the project area.

**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 and currently conducting livestock market infrastructure diagnosis's study.

**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.

## 6.3. Existing Initiatives and Projects

**Integrated Agro-industrial Park Development:** from the four pilot integrated agro-industrial park (IAIP), the one in Amhara located in Bure, which expected to source products with about 100Km radius that includes part of the project area. Horizontal infrastructure under development in 260ha of land. Dairy is one of the products selected for possible investment. Even though promotion and registration of companies not yet started, there are companies that show interest to invest in other value chains.

**AGP II:** AGP II that is aligned with GTP II under implementation with overall objective to increase agricultural productivity and commercialization of smallholder farmers targeted by the Program and also contributes to dietary diversity and consumption at HH level in 157 Woredas (41 in Amhara). Dairy development is part of AGP II activity in high potential area of the country and there are activities that are under implementation like construction of dairy collection point (17 in Amhara from which six in Bahir Dar Zuria Woreda) with the public implementation component. USAID support component that is contracted to Fintrac supporting the dairy sector partly continuing some activities that is started in AGP I – LMD project.

**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 funded by the Embassy of the Kingdom of the Netherlands. It focused 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. The project expected to have second phase from 2018-2022.

**DairyBIZZ (2015–2018):** A three-year project aims to establish a dairy business platform to initiate and monitor activities in business development, capacity building, and business information development. Proofs of concept to 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 under implementation by Wageningen University and is funded by the Embassy of the Kingdom of the Netherlands.

**Livestock Genetics Improvement Program by Land O'Lakes (from 2015):** Land O'Lakes running 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.

## 7. Economic Analysis and Business Opportunities

### 7.1. Small Dairy Enterprise Profitability

The smallholder dairy profitability assessed with different scale from 2 or 5 dairy cows with different cross breed levels and management practice. With 5 years average replacement year, with current milk production and price the enterprise is profitable. By improving, the management and/or breed type the profitability of the enterprise can be improved significantly as indicated in Table 7 for individual smallholder farmers or new youth groups.

The dairy enterprise can generate about **Birr 56,090** and **Birr 137,900** with 2 and 5 improved management of cross breed respectively more than triple with the current profitability level (Table 7).

TABLE 7. PROFITABILITY ASSESSMENT OF DAIRY ENTERPRISE

Cow milk production	With existing practice – 2 cow cross breed	With existing practice- 2 Fogera breed	With improved management/good performing farmers – 2 cow cross breed	With improved management/good performing farmers – 5 cross breed
Number of Milking Cows	2	2	2	5
Productivity (ltr/cow/day)	8	4	18	18
Average daily milk production	16	8	36	90
Average farm gate price	12	12	12	12
Total milk sales per year	51,840.00	20,160.00	116,640.00	291,600.00
Other income (dung, calve, cow sales)	13,300.00	7,650.00	16,950.00	33,250.00
Total income	65,140.00	27,810.00	133,590.00	324,850.00
Expense				
Feed and mineral	25,200	7,200	54,000	135,000
Vet service	200	200	200	1,000
Cow replacement (Total value - selling price)/five years	16,000	4,800	16,000	40,000
Labor (managing, milking and marketing done by one person with opportunity cost of quarter of a day 10Birr/0.25day)	7,300.00	3,650.00	7,300.00	10,950.00
Total cost	48,700.00	15,850.00	77,500.00	186,950.00
Gross Margin Value Per Year (ETB)	<b>16,440.00</b>	<b>11,960.00</b>	<b>56,090.00</b>	<b>137,900.00</b>
Gross Margin (%)	25%	43%	42%	42%

## 7.2. Cost of Production and Other Actors Margin

The major cost factor is feed (50-70%) in cross breed dairy cows. The labor cost varies based on the intensity of management. The management of the crossbreed is more intensive (more feeding, providing water and cleaning).

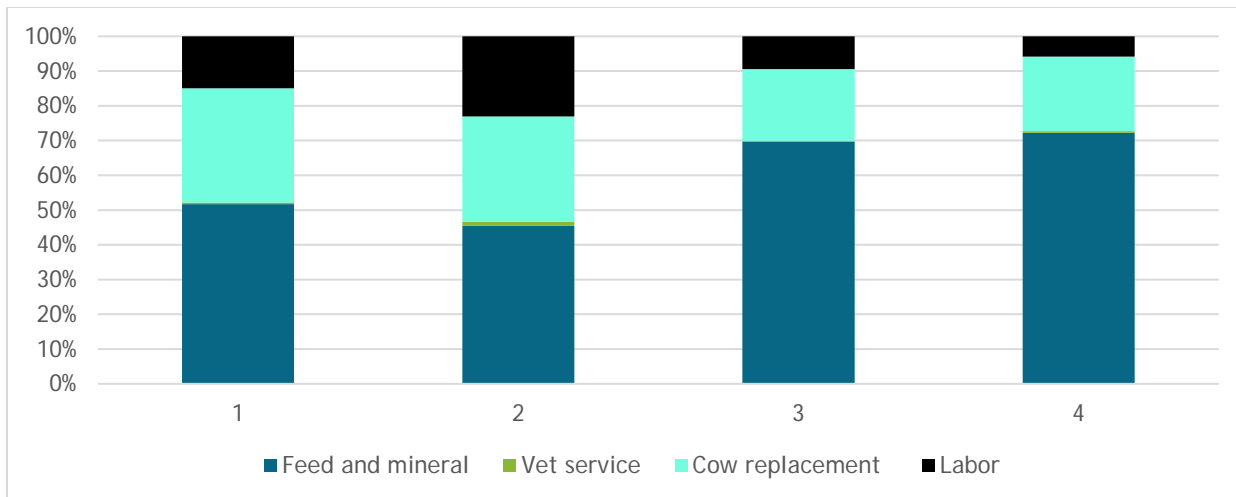


FIGURE 18. PERCENTAGE (%) SHARE OF MAIN COST ELEMENTS IN DAIRY BUSINESS

Source: Own Computation

The feed cost and low productivity makes the production cost of milk very high in case of Ethiopia in general. In the current practice 2 cross breed the production cost estimated about Birr 11.30 and with increasing performance the cost of production can be reduced to about Birr 8 (Figure 19).

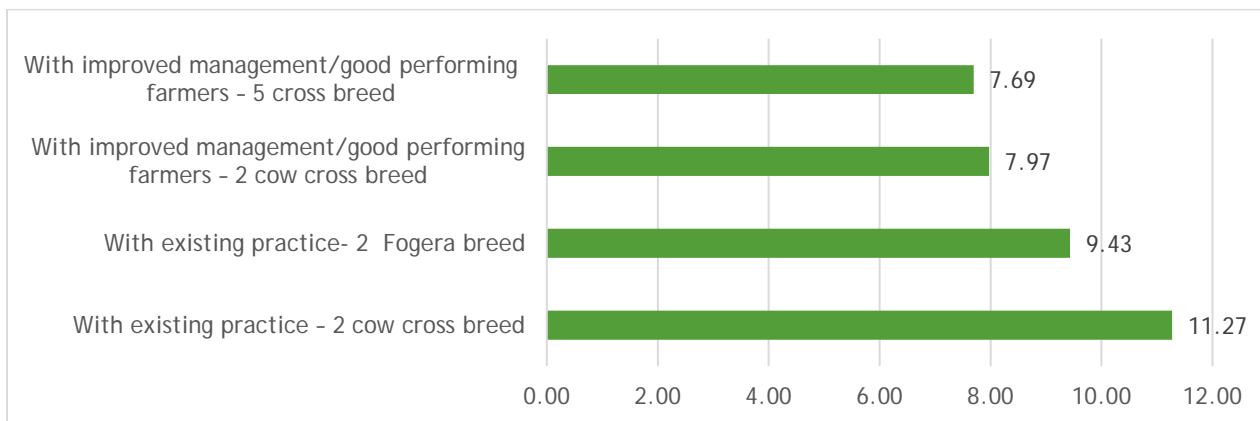


FIGURE 19. PRODUCTION COST OF MILK AT DIFFERENT SCALE OF OPERATION (BIRR/LTR)

Source: Own Computation

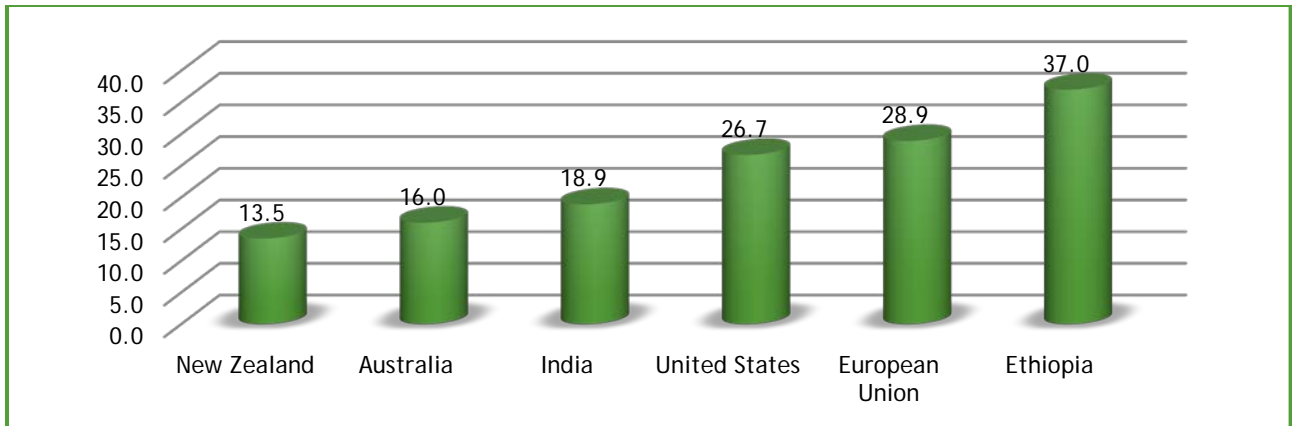


FIGURE 20. AVERAGE PRODUCTION COST OF MILK OF DIFFERENT COUNTRIES (US CENTS/KG)

Source: GDS

**Other Value Chain Actors' Margin:** raw milk retailed in Bahir Dar town from 15-20 Birr and half liter pasteurized milk retailed at 15 Birr. There is 3-8 Birr variation with the common farm gate price. When farmers sell to Cafes they fetch about 15 Birr/ltr. As per KII response except cheese other dairy products profit is not attractive with the current milk price. The dairy processing companies indicated their gross margin is less than 25%.

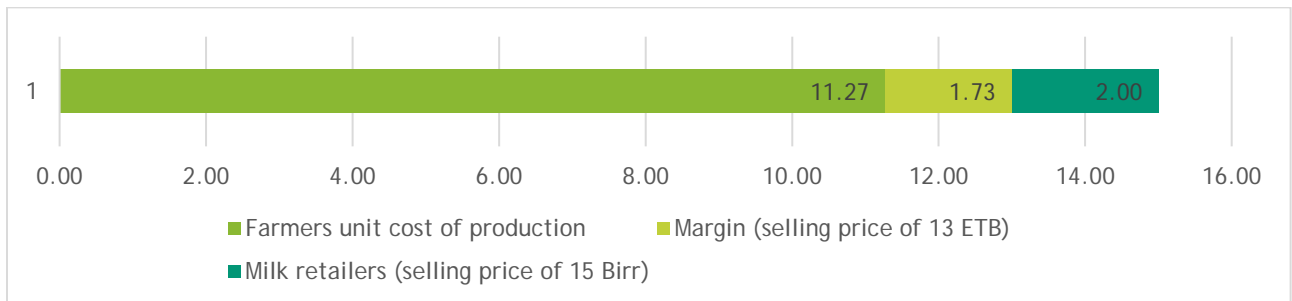


FIGURE 21. GROSS MARGIN OF FARMERS AND RETAILERS (ETB)

The gross margin for different value chain actors depends on their sourcing channel and products they supply. While buying pay different prices depending the supplier type and the costs vary. Fresh milk is profitable but part of the milk collected may not be sold as fresh milk, rather processed to other dairy products, which is sold, with lower process than fresh milk. For typical chains for processors, cooperatives and traders gross margin estimate indicated in Figure 22, cooperatives, traders and processors get 1, 1 and 4 Birr gross margin respectively.



FIGURE 22. GROSS MARGIN ESTIMATE FOR TYPICAL CHAINS OF COOPERATIVES, TRADERS, AND PROCESSORS

### 7.3. Business Opportunity for Youth and Women Groups

Unemployed youth and women number in the study areas is significant and their involvement in the value chain can be enhanced by engaging them with the business opportunity. As indicated in Fig 8, semi-commercial dairy farming, feed supply, AI and health service, milk collection and retailing are business opportunity areas for youth and women groups. As indicated in section 7.1 and 7.2 semi-commercial dairy farm and milk trading are profitable business ventures. Local feed supply with reliable sourcing and distribution service can be a profitable venture and will contribute to address the value chain constraint. AI and health service promotion in collaboration with the value chain actors and stakeholders can be an area to engage graduates in animal health giving priority for women. Business orientation and management skill needs emphasis in all business ventures.

The regional livestock agency to create job opportunity for youth in the region formulated a package that includes dairy. As indicated in the package planned to organize 14 enterprises with five members in the selected Woreda with 140 dairy cows (10 cows per enterprise). The planned support includes provision of 1 month practical training for the enterprise members in collaboration with training institutes, availing working premise, loan and other supports. As per the team review, while promoting the package organizing and providing support mentioned for all enterprises at a time may be difficult. Some of the expected challenges includes getting enough cross breeds and availing working premise. Most of the assumptions made are logical while in the profitability assessment, some of the major cost elements underestimated like buying price of dairy cows and heifer (estimated at 22,000 Birr while during the survey cross breed dairy cow is with a range of 30,000 - 60,000 while heifer from 15,000-30,000 Birr. The quality of training, youth recruitment process considering the group dynamics and role sharing needs attention. Assuring the market linkage and outlet needs attention before engaged the youth into operation as part of the training session.

## 8. Gender and Environment

**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. Mostly women make butter selling in the rural areas and manage the 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. Dairy development in (peri-) urban areas could enhance the development of zoonotic diseases, (including through miss use of hormones) and smell pollution. Development of dairy in rural areas may have a negative environmental impact, as the crop residue is becoming a major feed resource at the cost of soil fertility. Zero grazing on the other hand may encourage the development of grazing areas. The development of area closures and hence development of cut and carry systems may also encourage the rehabilitation of the grazing areas and increased biodiversity plant species. This will also have a positive impact on the overall environment because of reduced erosion<sup>5</sup>.

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<sup>5</sup> Lives project diagnosis study report, 2013



## 9. SWOT Analysis

TABLE 8. SWOT MATRIX

<b>Strength</b>	<b>Weakness</b>
<p>Big dairy cow population (Fogera and others) and introduction of cross breeds            Water, feed resource            Government ambitious plan (GTP II)            Institutes supporting the sector, projects and partners supporting dairy sector            Farmers experience and presence of cooperatives            Presence of dairy processing companies</p>	<p>Low quality of AI service            Limited cross breed source            Limited and no appropriate financial service            Limited capacity of cooperatives            Limited actors linkage            Market demand fluctuation            Feed price increase and fluctuation supply and quality assurance            Weak service providers - machinery and equipment maintenance            Financial service (investment and working capital)</p>
<b>Opportunities</b>	<b>Threat</b>
<p>Population and income increase for additional consumption            Urbanization, that is expected to increase processed dairy products consumption            Emerging middle class consumer segments that are willing to embrace new products and services</p>	<p>Safety and quality trust from buyers</p>

## 10. Interventions/Recommendation

TABLE 9. MAIN CONSTRAINTS AND SHORT, MEDIUM AND LONG-TERM INTERVENTIONS MATRIX

Segment	Constraints	Short Term Solutions/Interventions	Long and Medium Term Interventions	Potential Partner/Lead Organizations
<b>Feed supply</b>	<ul style="list-style-type: none"> <li>• Limited commercial feed supply and distribution;</li> <li>• Feed price increase, farmers willingness to pay, working capital shortage and awareness/risk sensitivity;</li> <li>• Feed quality;</li> <li>• Limited feed plantation</li> </ul>	<ul style="list-style-type: none"> <li>• Business linkage development for credit based feed supply and quality assurance (Quality Feed Suppliers – Dairy Processors – Dairy Farmers business linkage)</li> <li>• Feed suppliers quality feed production capacity and distribution system development with business model refinement and facilitation of investment expansion</li> <li>• 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</li> </ul>	<ul style="list-style-type: none"> <li>• Lobby for better incentives from government in the feed industry and promote the business venture to potential investors</li> <li>• Promotion of nearby suppliers (youth groups or cooperatives)</li> <li>• Expansion of feed forage plantation demonstrated in different villages with facilitation of access to improved forage seeds</li> <li>• Improve the utilization of crop by-products with different nutrient and digestibility improvement treatments</li> <li>• Train and demonstrate optimum use of feed and improved management systems</li> </ul>	<ul style="list-style-type: none"> <li>• Merkebe Union; Dairy Processing Companies – Agere Wotete/Embete/Tsege;</li> <li>• Trade, Industry and Market Development Office</li> <li>• Livestock Office</li> <li>• Cooperatives and youth groups</li> </ul>

Segment	Constraints	Short Term Solutions/Interventions	Long and Medium Term Interventions	Potential Partner/Lead Organizations
<b>Breed improvement</b>	<ul style="list-style-type: none"> <li>• Low quality and reliability of AI service</li> <li>• Limited bull service</li> <li>• Limited known heifer supply and price increase</li> </ul>	<ul style="list-style-type: none"> <li>• Enhance public AI technicians capacity and motivations</li> <li>• Assure supply of timely quality semen and other required inputs</li> <li>• Promote quality private AI service</li> </ul>	<ul style="list-style-type: none"> <li>• Encourage private cross breed heifer production with joint venture and other business arrangements</li> <li>• Support Fogera breed improvement initiatives and commercial heifer suppliers development</li> </ul>	<ul style="list-style-type: none"> <li>• Livestock office</li> <li>• Dairy Processing Companies</li> <li>• Other Projects – AGP/USAID-FtF-Fintrac</li> </ul>
<b>Health Service</b>	<ul style="list-style-type: none"> <li>• Timely health service provision</li> <li>• Shortage of medical supply</li> </ul>	<ul style="list-style-type: none"> <li>• Enhance public animal health service delivery, better service incentive and accountability development</li> <li>• Lobby and facilitate timely required critical medical supply</li> <li>• Promote recognized private animal health service providers (refreshment training and recognition of service)</li> </ul>	<ul style="list-style-type: none"> <li>• Promotion of private animal health service provision</li> </ul>	<ul style="list-style-type: none"> <li>• Livestock office</li> </ul>
<b>Financial services</b>	<ul style="list-style-type: none"> <li>• Limited financial service for dairy producers, collectors and processors (investment and working capital)</li> </ul>	<ul style="list-style-type: none"> <li>• Work with financial service providers to refine products for dairy sector (loan and insurance) and implement value chain financing for better financial access to different actors for investment and working capital</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce lending risk by developing better and replicable business models with support organizations and improving companies' business management</li> </ul>	<ul style="list-style-type: none"> <li>• Credit and Saving Cooperatives; ACSI and Commercial Banks;</li> </ul>
<b>Production</b>	<ul style="list-style-type: none"> <li>• Less optimal dairy management practice</li> </ul>	<ul style="list-style-type: none"> <li>• Improve production practice by working with model farmers for better</li> </ul>	<ul style="list-style-type: none"> <li>• Promote better use of improved breeds, AI, health</li> </ul>	<ul style="list-style-type: none"> <li>• Livestock office and dairy processing companies</li> </ul>

Segment	Constraints	Short Term Solutions/Interventions	Long and Medium Term Interventions	Potential Partner/Lead Organizations
		<p>management practice demonstration.</p> <ul style="list-style-type: none"> <li>• Conduct business awareness creation and exposure visits with better performing farmers</li> </ul>	<p>service and management skill at producers level</p>	
<b>Collection</b>	Limited collection points and low volume of aggregated milk and market linkage	<ul style="list-style-type: none"> <li>• Making functional existing dairy collection points and facility in the hands of cooperatives and dairy processing companies</li> <li>• Improve technical and management skills of cooperatives</li> <li>• Enhance collaboration of collection point construction by different projects (AGP and others) and dairy processing private companies collection strategy</li> </ul>	<ul style="list-style-type: none"> <li>• Organize collection groups (youth/women) and points for better quality and collection of milk in collaboration with dairy processors and distributors</li> <li>• Improve collection centers buying arrangements and outreach to enable more milk to reach formal market</li> <li>• Encourage better business linkages between producers and processing companies with additional services like provision of feed and other services</li> </ul>	<ul style="list-style-type: none"> <li>• Dairy processing companies; Livestock office; Trade, Industry and Market Development Office</li> </ul>
<b>Processing, product development and distribution</b>	Low consumption habit – processed products and fasting season demand reduction	<ul style="list-style-type: none"> <li>• Traceable and quality assured milk and other dairy products distribution/retailing outlet development (women/youth groups)</li> <li>• Market linkage facilitation with local institutional buyers (Hotels, Cafes and others) in big towns (Bahir</li> </ul>	<ul style="list-style-type: none"> <li>• Reduce the fluctuation in demand (seasonality, fasting periods) for milk products, by producing and packing products for longer shelf life (cheese, butter and others)</li> <li>• Facilitate joint effort of processing companies for better logistics to reduce costs through increased</li> </ul>	<ul style="list-style-type: none"> <li>• Dairy processing companies</li> </ul>

Segment	Constraints	Short Term Solutions/Interventions	Long and Medium Term Interventions	Potential Partner/Lead Organizations
		Dar, Gondar) for different dairy products (milk, cheese, ayib, butter, table butter)	<ul style="list-style-type: none"> <li>• volume and greater supply chain efficiencies (collection and distribution)</li> </ul>	
<b>Consumption and product development</b>	Low consumption habit – processed products and fasting season demand reduction	<ul style="list-style-type: none"> <li>• Promote consumption of milk and milk products with mass-media campaign and other promotions for different consumer groups (children, youth, adult)</li> </ul>	<ul style="list-style-type: none"> <li>• Encourage different more affordable, better, more diverse packaging and product size</li> <li>• Fortified and flavored dairy products development</li> </ul>	<ul style="list-style-type: none"> <li>• Dairy sector stakeholders and chamber of commerce; Trade, Industry and Market Development Office</li> </ul>
<b>Sector coordination and enabling environment</b>	Limited coordination of value chain actors		<ul style="list-style-type: none"> <li>• Promote shared public-private vision among the dairy industry actors in the region</li> <li>• Work with sector actors to have effective platforms for public-private dialogue for identified critical issues and facilitate coordination and collaboration between the various value chain actors in dairy value chain</li> </ul>	<ul style="list-style-type: none"> <li>• Dairy sector stakeholders and chamber of commerce</li> </ul>

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## Annex

**Annex-1: Number and Existing Status of Dairy Cooperatives in Target Region**

Zone		South Gondar	Gondar Town	West Gojam	Bahir Dar town	Region-Total
<b>No of Cooperatives</b>		7	4	14	3	125
<b>Kebele Covered</b>		12	16	0	0	161
<b>Members</b>	Male	189	339	694	125	5468
	Female	27	106	80	14	1975
	Total	216	445	774	139	7443
<b>Sales</b>	Cooperatives engaged in sales	4	2	5	2	64
	Purchase (Ltr/year)	70114	12,021	211,627	757,368	4,551,443
	Sales Value (Birr)	829527	132,231	1,904,643	7,923,296	41,200,141
	Sales Volume (Ltr)	68705	12,021	211,627	648,041	2,723,551
	Sales Value (Birr)	881437	240,424	2,176,168	7,925,638	28,668,693

Annex-2: Prioritization of Proposed Interventions and Stakeholders (Impact and Time/Urgency Level)

Dairy VC Segment	Proposed Solutions/Interventions	Impact - High (Green), Medium (Yellow), Low (Red)	Time - Short (Green), Medium (Yellow), Long (Red)
Feed Supply	Business linkage development for credit based feed supply and quality assurance (Quality Feed Suppliers – Dairy Processors – Dairy Farmers business linkage)	High	Short
	Feed suppliers quality feed production capacity and distribution system development with business model refinement and facilitation of investment expansion	High	Short
	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	High	Short
	Lobby for better incentives from government in the feed industry and promote the business venture to potential investors	High	Short
	Promotion of nearby suppliers (youth groups or cooperatives)	High	Short
	Expansion of feed forage plantation demonstrated in different villages with facilitation of access to improved forage seeds	High	Short
	Improve the utilization of crop by-products with different nutrient and digestibility improvement treatments	Medium	Medium
	Train and demonstrate optimum use of feed and improved management systems	High	Short
Breed Improvement	Enhance public AI technicians capacity and motivations	High	Short
	Assure supply of timely quality semen and other required inputs	High	Short
	Promote quality private AI service	High	Short
	Encourage private cross breed heifer production with joint venture and other business arrangements	High	Short
	Support Fogera breed improvement initiatives and commercial heifer suppliers development	Medium	Medium
Health Service	Enhance public animal health service delivery, better service incentive and accountability development	High	Short
	Lobby and facilitate timely required critical medical supply	High	Short
	Promote recognized private animal health service providers (refreshment training and recognition of service)	High	Short
	Promotion of private animal health service provision	High	Short
		High	Short
Financial Services	Work with financial service providers to refine products for dairy sector (loan and insurance) and implement value chain financing for better financial access to different actors for investment and working capital	High	Short



Dairy VC Segment	Proposed Solutions/Interventions	Impact - High (Green), Medium (Yellow), Low (Red)	Time - Short (Green), Medium (Yellow), Long (Red)
	Reduce lending risk by developing better and replicable business models with support organizations and improving companies' business management	High	Short
		High	Short
Production	Improve production practice by working with model farmers for better management practice demonstration.	High	Short
	Conduct business awareness creation and exposure visits with better performing farmers	High	Short
	Promote better use of improved breeds, AI, health service and management skill at producers level	High	Short
		High	Short
Collection	Making functional existing dairy collection points and facility in the hands of cooperatives and dairy processing companies	High	Short
	Improve technical and management skills of cooperatives	High	Short
	Enhance collaboration of collection point construction by different projects (AGP and others) and dairy processing private companies collection strategy	High	Short
	Organize collection groups (youth/women) and points for better quality and collection of milk in collaboration with dairy processors and distributors	High	Short
	Improve collection centers buying arrangements and outreach to enable more milk to reach formal market	High	Short
	Encourage better business linkages between producers and processing companies with additional services like provision of feed and other services	High	Short
Processing, Product Development and Distribution	Traceable and quality assured milk and other dairy products distribution/retailing outlet development (women/youth groups)	Medium	Medium
	Market linkage facilitation with local institutional buyers (Hotels, Cafes and others) in big towns (Bahir Dar, Gondar) for different dairy products (milk, cheese, ayib, butter, table butter)	High	Short
	Reduce the fluctuation in demand (seasonality, fasting periods) for milk products, by producing and packing products for longer shelf life (cheese, butter and others)	Medium	Medium
	Facilitate joint effort of processing companies for better logistics to reduce costs through increased volume and greater supply chain efficiencies (collection and distribution)	High	Short
		High	Short
Consumption and Product Development	Promote consumption of milk and milk products with mass-media campaign and other promotions for different consumer groups (children, youth, adult)	High	Short

Dairy VC Segment	Proposed Solutions/Interventions	Impact - High (Green), Medium (Yellow), Low(Red)	Time - Short (Green), Medium (Yellow), Long(Red)
	Encourage different more affordable, better, more diverse packaging and product size	Medium	Medium
	Fortified and flavored dairy products development	Medium	Medium
Sector Coordination and Enabling Environment	Promote shared public-private vision among the dairy industry actors in the region	High	Short
	Work with sector actors to have effective platforms for public-private dialogue for identified critical issues and facilitate coordination and collaboration between the various value chain actors in dairy value chain	High	Short